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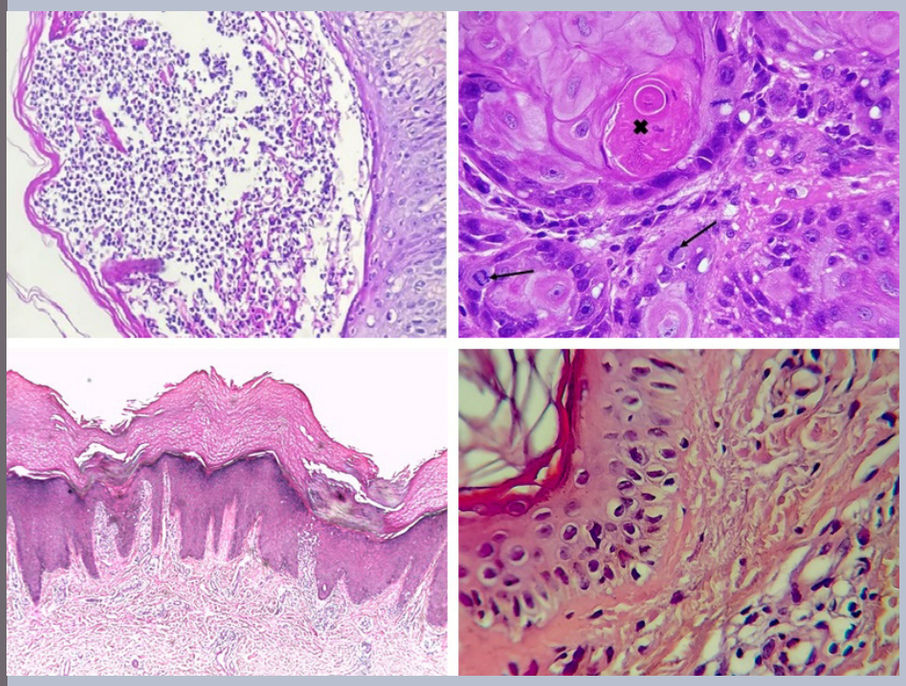

- A study on the quality of life of patients with leprosy: A cross-sectional study;

- Eruptive pseudoangiomatosis: An epidemiological and clinical study;

- Psoriasis worsening related to COVID-19 vaccination: A single-center report;

- Comorbidities as prognostic factors in the healing of venous ulcers;

- Screening for ocular toxicity of hydroxychloroquine;

- Pregnancy and cutaneous changes;

- Topical steroid menace: A case series of severe debilitating infections during the COVID-19 pandemic;

- Erythrodermic psoriasis eruption following COVID-19 vaccination

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Editorial Pages

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Original Article

A study on the quality of life of patients with leprosy: A cross-sectional study

Kavana Krishna Nayak[1], Namratha Cholenahalli Manjunath[2]

[1]Department of Dermatology, Venereology and Leprosy, Kodagu Institute of Medical Sciences, Madikeri, India, [2]Department of Dermatology, Venereology and Leprosy, Kempegowda Institute of Medical Sciences Hospital and Research Centre, K R Road, Makalakuta Circle, V V Puram, Bangalore, Karnataka, India

Corresponding author: Kavana Krishna Nayak, MD, E-mail: kavanaknaikmedico@gmail.com

ABSTRACT

Background: Leprosy is a chronic infectious disease caused by *Mycobacterium leprae*. If not detected early and treated adequately, it leads to disabilities and deformities, in turn leading to social stigma and discrimination. Hence, leprosy has an impact on the Quality of Life (QoL) of the affected. **Materials and Methods:** This study was conducted at the Dermatology Department and Leprosorium Hospital. A total of 164 leprosy patients were assessed for QoL with the Dermatology Life Quality Index (DLQI) questionnaire. **Results:** Among the total of 164 patients, leprosy had no effect on the QoL of 14 (8.54%) patients, a small effect on the QoL of 34 (20.73%) patients, a moderate effect on the QoL of 47 (28.66%) patients, a large effect on the QoL of 64 (39.02%) patients, and an extremely large effect on the QoL of 5 (3.05%) patients. Among the demographic variables, age, occupation, and socioeconomic status had an impact on the QoL of patients with leprosy. **Conclusion:** Leprosy is an ancient disease and continues to be the most feared due to deformities and the social stigma associated with it. The clinical spectrum, reactions, deformities, and disability have a profound impact on the QoL of patients with leprosy.

Keywords: Leprosy; DLQI questionnaire; Quality of life

INTRODUCTION

Leprosy is a common chronic infectious disease known worldwide and mentioned as early as 600 BC in the Indian literature in the Sushruta Samhita [1]. Leprosy is a chronic disease caused by *Mycobacterium leprae*, infectious in some cases, affecting the peripheral nervous system, the skin, and other tissues, such as the reticuloendothelial system, bones, joints, mucous membranes, eyes, testes, muscles, tendons, kidneys, adrenal glands.

The WHO launched the Global Leprosy Strategy 2016–2020 "Accelerating towards a leprosy-free world" in 2016. Its goal is to strengthen efforts to combat leprosy and prevent disability, especially in children impacted by the disease living in endemic countries [2]. There were 127,558 new cases of leprosy detected worldwide in 2020 according to official figures from 139 countries in six WHO regions. Among the new leprosy cases, 7,198 new cases were detected with grade 2 disabilities (G2D), and the new G2D rate was recorded at 0.9 per million in the population. At the end of the year 2020, the prevalence was 129,389 cases on treatment, and the prevalence rate corresponded to 16.7 per million of the population [3].

Leprosy is the most ostracized disease due to its resultant physical deformity and social stigmatization associated with it. The disabilities and physical deformities are due to reactions, delayed treatment, and the insidious progression of the disease. These disabilities may lead to social stigmatization, resulting in the isolation of the patient from society, adversely affecting their interpersonal relationship, marriage, employment, and social activity, leading to a decrease in QoL [4].

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According to the WHO, quality of life is the individual's view of their position in the perspective of the culture and value systems in which they live and in relation to their goals, standards, expectations, and concerns [5]. Leprosy-related QoL may be impacted by a number of variables, including the onset and progression of the disease, duration of the disease, social factors, and clinical variables, such type of leprosy, reactions, nerve involvement, disability grade, deformity, and systemic involvement. There are several studies on the assessment of QoL of patients with leprosy, in eastern India [6], Brazil [7], and China [8]. However, similar studies of QoL have not been done in south India. Therefore, this study was conducted to evaluate the QoL of patients with leprosy in our population.

MATERIALS AND METHODS

The study was conducted at the Dermatology Department and Leprosorium Hospital after taking approval from the institutional ethics committee. The cases were documented over twelve months from April 2020 to March 2021. A total of 164 patients with leprosy were included in our study. After receiving consent, all patients exhibiting the cardinal signs of leprosy who were eighteen years of age or older, of either sex, and willing to engage in the study were included in our study. In each case, detailed history taking and thorough general, physical, local, and systemic examinations were done with regard to the clinical features of leprosy. In all cases, necessary investigations were performed if required. Patients who did not give consent to the study, pregnant women, and lactating mothers were excluded from the study. The Dermatology Life Quality Index (DLQI) questionnaire developed by Finlay et al. [9] was employed to assess the QoL of the patients with leprosy. It was a simple, validated, ten-question questionnaire, each question with three marks. The DLQI was determined by summing the results of each question, which yielded a minimum score of 0 and a maximum score of 30. A score of 0–1 indicated no effect on the patient's life. A score of 2–5 indicated a small effect on the patient's life. A score of 6–10 indicated a moderate effect on the patient's life. A score of 11–20 indicated a large effect on the patient's life. A score of 21–30 indicated an extremely large effect on the patient's life. The greater the score was, the more the QoL is impaired [9].

Statistical Analysis

This was a cross-sectional study and the collected data was entered in Microsoft Excel and analyzed with descriptive statistics expressed in terms of frequencies in the form of tables and charts. For statistical significance, the chi-squared test was employed.

RESULTS

Among the total of 164 patients, leprosy had no effect on the QoL of 14 (8.54%) patients. There was a small effect in 34 (20.73%) patients, followed by a moderate effect in 47 (28.66%) patients, a large effect in 64 (39.02%) patients, and an extremely large effect in (3.05%) patients.

In total, there were 126 (76.82%) male patients and 38 (23.17%) female patients. Leprosy had no effect on the QoL of 13 (10.3%) male patients. There was a small effect in 25 (19.8%), a moderate effect in 33 (26.2%), a large effect in 51 (40.5%), and an extremely large effect in 4 (3.2%) male patients. Leprosy had no effect on the QoL of 1 (2.6%) female patient, a small effect in 9 (23.7%) female patient, a moderate effect in 14 (36.8%), a large effect in 13 (34.2%), and an extremely large effect in 1 (2.6%) female patient (Table 1).

Among the 164 patients included in the study, the youngest patient was nineteen years old and the oldest one was 92 years old. Most of the patients (61; 37.2%) were in the age group of 21– 40 years, followed by 55 (33.5%) patients in the group of 41–60 years, 38 (23.2%) in the group of 61–80 years, 6 (3.7%) in the group of 18–20 years, and 4 (2.4%) above 80 years of age (Table 1).

The study included 164 patients. The mean ± SD of the age of the patients was 47.33 ± 17.47 and the mean ± SD of the DLQI score was 9.24 ± 4.72. The median age and DLQI score were 46.50 and 10.00, respectively (Table 2).

Among the 164 patients, 72 (43.9%) were laborers, followed by 31 housewives (18.9%), 21 farmers (12.8%), 10 students (6.1%), 8 vendors (4.9%), 8 office workers (4.9%), and 14 others (8.5%).

Among the 164 patients, a majority belonged to the upper lower (78; 47.56%) socioeconomic class, followed by the lower middle (48; 29.26%), upper middle (17; 10.36%), lower (12; 7.32%), and upper (9; 5.49%) (Table 1 and Fig. 1).

Among the 164 patients, the number of patients belonging to tuberculoid leprosy (TT), borderline tuberculoid leprosy (BT), borderline leprosy (BB),

Table 1: Association of sociodemographic variables with the DLQI.

Sociodemographic variable	No effect	Small effect	Moderate effect	Large effect	Extremely large effect	Total	*p* value
Sex							
Male	13 (10.3%)	25 (19.8%)	33 (26.2%)	51 (40.5%)	4 (3.2%)	126 (100%)	0.447
Female	1 (2.6%)	9 (23.7%)	14 (36.8%)	13 (34.2%)	1 (2.6%)	38 (100%)	
Age							
18–20 yrs.	0 (0%)	0 (0%)	6 (100%)	0 (0%)	0 (0%)	6 (100%)	0.000
21–40 yrs.	7 (11.5%)	15 (24.5%)	22 (36.15%)	17 (27.9%)	0 (0%)	61 (100%)	
41–60 yrs.	5 (9.09%)	13 (23.6%)	13 (23.6%)	21 (38.2%)	3 (5.4%)	55 (100%)	
61–80 yrs.	2 (5.3%)	4 (10.5%)	5 (13.2%)	26 (68.4%)	1 (2.6%)	38 (100%)	
> 80 yrs.	0 (0%)	2 (50%)	0 (0%)	1 (25%)	1 (25%)	4 (100%)	
Occupation							
Laborer	5 (6.9%)	15 (20.8%)	20 (27.8%)	30 (41.7%)	2 (2.8%)	72 (100%)	0.006
Housewife	1 (3.2%)	7 (22.6%)	12 (38.7%)	11 (35.5%)	0 (0%)	31 (100%)	
Farmer	1 (4.8%)	4 (19%)	4 (19%)	11 (52.4%)	1 (4.8%)	21 (100%)	
Student	2 (20%)	5 (50%)	3 (30%)	0 (0%)	0 (0%)	10 (100%)	
Vendor	3 (37.5%)	0 (0%)	3 (37.5%)	2 (25%)	0 (0%)	8 (100%)	
Office worker	0 (0%)	3 (37.5%)	4 (50%)	1 (12.5%)	0 (0%)	8 (100%)	
Others	2 (14.3%)	0 (0%)	1 (7.1%)	9 (64.3%)	2 (14.3%)	14 (100%)	
Socioeconomic status							
Lower	2 (16.7%)	0 (0%)	1 (8.3%)	8 (66.7%)	1 (8.3%)	12 (100%)	0.426
Upper lower	5 (6.4%)	17 (21.8%)	21 (26.9%)	33 (42.3%)	2 (2.6%)	78 (100%)	
Lower middle	4 (8.3%)	11 (22.9%)	13 (27.1%)	18 (37.5%)	2 (4.2%)	48 (100%)	
Upper middle	2 (11.8%)	4 (23.5%)	8 (47.1%)	3 (17.6%)	0 (0%)	17 (100%)	
Upper	1 (11.1%)	2 (22.2%)	4 (44.4%)	2 (22.2%)	0 (0%)	9 (100%)	

Table 2: Mean, median, and SD of age.

Variable	Mean ± SD	Median	Range
Age (yrs.)	47.33 ± 17.47	46.50	73
DLQI score	9.24 ± 4.72	10.00	23

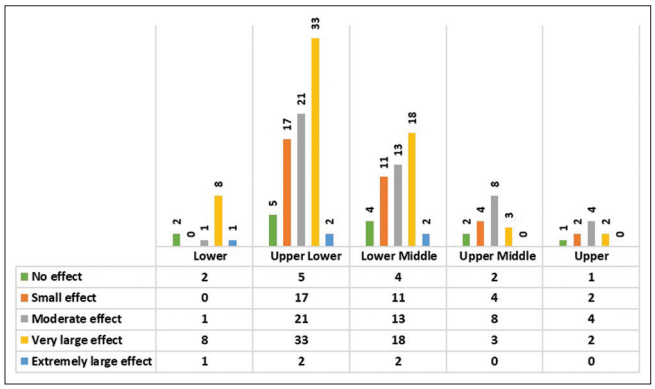

Figure 1: Socioeconomic status of patients with leprosy and the DLQI score.

borderline lepromatous leprosy (BL) and lepromatous leprosy (LL) was 12 (7.32%), 49 (29.87%), 2 (1.22%), 28 (17.07%), and 73 (44.51%), respectively. The majority of the cases with the LL type of leprosy (58; 79.5%) were found to have a large effect in the DLQI and were also statistically significant ($p = 0.000$) (Table 3 and Fig. 2).

A reaction (type 1 or type 2) was present in 63 (38.41%) patients, was associated with a moderate effect in the DLQI, and was found to be statistically significant ($p = 0.000$) (Table 3).

Deformities were present in 78 (47.55%) patients and absent in 86 (52.44%) patients. Among the 78 patients, a grade 1 deformity was present in 9 (5.48%) and a grade 2 deformity was present in 69 (42.07%). A majority of the patients with grade 2 deformities were found to be associated with a large effect (57; 82.6%) in the DLQI and were found to be statistically significant. Deformities had a positive correlation with the DLQI score. The presence of deformities led to a higher impact on the quality of life (Table 3 and Fig. 3).

Among the demographic variables, age (correlation coefficient: 0.434) and occupation (correlation coefficient: 0.015) had a positive correlation with the DLQI. Age was found to have a statistically significant impact in the DLQI ($p < 0.05$). Socioeconomic status (correlation coefficient: -0.234) was found to have a negative correlation.

DISCUSSION

The patient with leprosy, if not treated early and adequately, progresses with deformities and disabilities leading to the stigmatization of the disease and the impairment of their quality of life. However, few studies have attempted to identify and evaluate the actual impact of the illness on the patient's quality of life.

Table 3: Association of the spectrum of leprosy, reactions, and deformities with respect to the DLQI.

	No effect	Small effect	Moderate effect	Large effect	Extremely large effect	Total	*p* value
Leprosy type							
LL	0 (0%)	0 (0%)	10 (13.7%)	58 (79.5%)	5 (6.8%)	73 (100%)	0.000
BL	0 (0%)	6 (21.4%)	17 (60.7%)	5 (17.9%)	0 (0%)	28 (100%)	
BB	0 (0%)	1 (50%)	1 (50%)	0 (0%)	0 (0%)	2 (100%)	
BT	7 (14.3%)	23 (46.9%)	18 (36.7%)	1 (2%)	0 (0%)	49 (100%)	
TT	7 (58.3%)	4 (33.3%)	1 (8.3%)	0 (0%)	0 (0%)	12 (100%)	
Leprosy reaction							
Type 1	0 (0%)	12 (31.6%)	23 (60.5%)	3 (7.9%)	0 (0%)	38 (100%)	0.000
Type 2	0 (0%)	0 (0%)	12 (48.0%)	12 (48.0%)	1 (4.0%)	25 (100%)	
No reaction	14 (13.9%)	22 (21.8%)	12 (11.9%)	49 (48.5%)	4 (4.0%)	101 (100%)	
WHO disability grading (1998)							
Grade 0	14 (16.3%)	31 (36.0%)	35 (40.7%)	6 (7.0%)	0 (0%)	86 (100%)	0.000
Grade 1	0 (0%)	2 (22.2%)	6 (66.7%)	1 (11.1%)	0 (0%)	9 (100%)	
Grade 2	0 (0%)	1 (1.4%)	6 (8.7%)	57 (82.6%)	5 (7.2%)	69 (100%)	

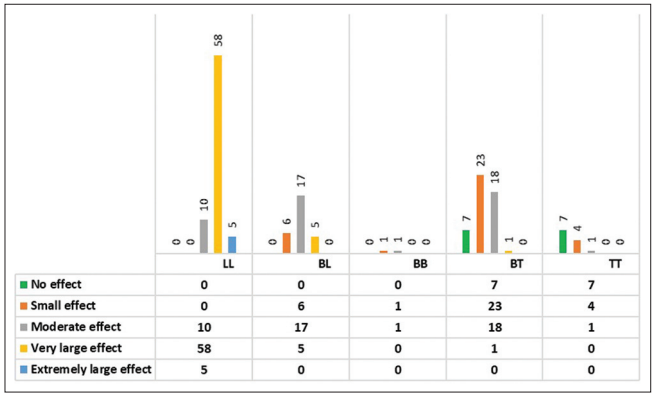

Figure 2: Clinical spectrum of leprosy and the DLQI score.

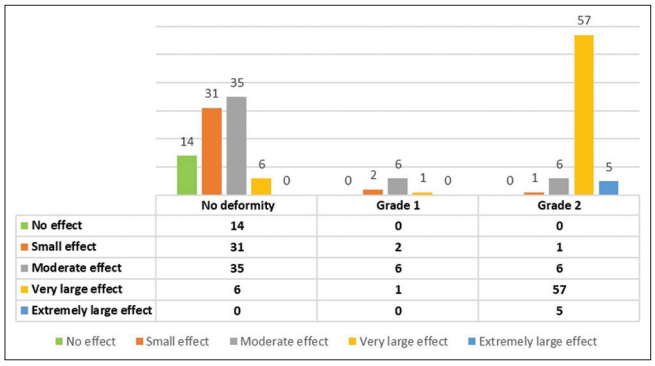

Figure 3: WHO disability grading of leprosy and the DLQI score.

The majority of the cases in our study had some adverse impact on their quality of life due to leprosy. The disease had a large effect on the QoL of 64 (39.02%) patients, followed by a moderate effect in 47 (28.66%) patients. In a study conducted by Nirmalya et al. [6], the disease had a very significant impact on 39 (34.21%) patients' QoL. Numerous other studies have demonstrated that leprosy has an adverse impact on the patient's QoL [10,11].

In the present study, the mean ± SD of the age of the patients was 47.33 ± 17.47 and the mean ± SD of the DLQI score was 9.24 ± 4.72. In studies done by Budel et al. [12] and Nirmalya et al. [6], the mean DLQI scores were 10.23 ± 7.79 and 8.48 ± 5.48, respectively.

In our study, leprosy was more frequent in male patients (76.82%) than female (23.17%). Our study was in concordance with other studies. In a study done by Kalita et al. [13], males constituted 71.43% and females constituted 28.57%. In a study by Raghavendra et al. [14], 78% were males and 22% were females. Leprosy affects both sexes, yet, in most parts of the world, males are more likely to contract leprosy than females [14]. This increased incidence among males may be explained by the fact that it is the males who tend to go more often for outdoor work for earning than females. Hence, males have higher chance of exposure to infection and contracting the disease.

A majority of the patients (67; 40.85%), were in the age group of 18–40 years, followed by 55 (33.53%) in the group of 41–60 years. The mean ± SD of the age of the patients was 47.33 ± 17.47. In a study by Nirmalya et al. [6], a majority of the patients (32; 28.07%) were in the age group of 41–50 years, and the mean age was 38.11 ± 12.16 years. In our study, age had a positive correlation and statistically significant impact in the DLQI ($p < 0.05$). Meanwhile, in a study by Nirmalya et al. [6], there was no strong correlation and no significant effect on the QoL.

In our study, a majority of the patients belonged to the upper lower (78 (47.56%)) socioeconomic class, followed by the lower middle (48; 29.26%). Socioeconomic status was found to have a negative correlation with the DLQI score. Similar observations were seen in a study by Anil Kumar et al. [15] and Singh

et al. [16]. Thus, by most of the studies, leprosy is more common in the low-income group, as the lower class is associated with overcrowding, malnutrition, illiteracy, poor personal hygiene, heavy work, and ignorance of injuries, which are the important factors in the acquisition of disease in the case of leprosy [17,18].

Among the total 164 patients in our study, 73 (44.51%) patients had lepromatous (LL) leprosy, followed by 49 (29.87%) patients with borderline tuberculoid (BT) leprosy. A majority of LL-type leprosy (58, 79.5%) were found to experience a large effect on the DLQI and were also statistically significant ($p = 0.000$). Similar observations were seen in studies by Vara and Marfatiya [19] (LL in 52%, BT in 36%) and Jindal et al. [20] (LL in 33%, BT in 28%). However, in a study by Nirmalya et al. [6], LL was in 16.67% and BT was in 35.07% [6]. Thus, the clinical spectrum of leprosy observed has varied from study to study and place to place.

In our study, a leprosy reaction (type 1 and type 2) was present in 63 (38.41%) patients, was associated with a moderate effect in the DLQI, and was found to be statistically significant ($p < 0.05$) (Table 1). A similar observation was seen in a study by Nirmalya et al. [6], in which a leprosy reaction (type 1 and type 2) was present in 51 (44.74%) patients and had a positive correlation with the DLQI score.

In our study, deformities were present in 78 (47.55%) patients and absent in 86 (52.44%). Among the 78 patients, grade 1 deformities were present in 9 (5.48%) patients and grade 2 deformities were present in 69 (42.07%). A majority of the patients with grade 2 deformities were found to be associated with a large effect (57; 82.6%) in the DLQI and were also found to be statistically significant ($p < 0.05$) (Table 2).

Deformities had a positive correlation with the DLQI score. A higher DLQI score resulted from the existence of deformities. Similar findings were made in a study by Nirmalya et al. [6], who found that deformities were present in 44 (38.60%) patients and absent in 70 (61.40%).

CONCLUSION

Leprosy is an ancient disease and continues to be the most feared due to deformities and the social stigma associated with it. Our study attempted to reveal the impact of leprosy on quality of life. Among the demographic variables, age, occupation, and socioeconomic status were found to have an impact on QoL. Clinical aspects such as the spectrum of leprosy, reaction, deformities, and disability have a profound impact on the QoL of the patients. Therefore, the early detection of leprosy and adequate treatment along with grade 1 disability assessment and management will prevent patients with leprosy from going into grade 2 disability and also improves their quality of life.

REFERENCES

1. Ramu G. The Indian classification of leprosy. J Nihon Rai Gakkai Zasshi. 1981;50:226-32.
2. Rao PN, Suneetha S. Current situation of leprosy in India and its future implications. Indian Dermatol Online J. 2018;9:83-9.
3. Daribaevich PY. Preventive measures directed by modern medicine to fight leproa. Europ J Interdiscipl Res Develop. 2022;3:90-5.
4. Wong ML. Designing programmes to address stigma in leprosy: Issues and challenges. Asia Pac Disab Rehabilit J. 2004;15:3-12.
5. Whoqol Group. Development of the World Health Organization WHOQOL-BREF quality of life assessment. Psychol Med. 1998;28:551-8.
6. Das NK, De A, Naskar B, Sil A, Das S, Sarda A, et al. A quality of life study of patients with leprosy attending the dermatology OPD of a tertiary care center of Eastern India. Indian J Dermatol. 2020;65:42-6.s
7. Santos VS, Oliveira LS, Castro FD, Gois-Santos VT, Lemos LM, Ribeiro MD, et al. Functional activity limitation and quality of life of leprosy cases in an endemic area in Northeastern Brazil. PLoS Negl Trop Dis. 2015;9:4-5.
8. An JG, Ma JH, Xiao SX, Xiao SB, Yang F. Quality of life in patients with lepromatous leprosy in China. J Eur Acad Dermatol Venereol. 2010;24:827-32.
9. Finlay AY, Khan G. Dermatology Life Quality Index (DLQI): A simple practical measure for routine clinical use. Clin Exp Dermatol. 1994;19:210-6.
10. Geetha AJ, Sundar Rao PS. Impact of leprosy on the quality of life. Bull World Health Organ. 1999;77:515-7.
11. Proto RS, Machado Filho CD, Rehder JR, Paixão MP, Angelucci RI. Quality of life in leprosy: A comparative analysis between patients in the Amazon region and patients in Santo André in the ABC region of São Paulo, Brazil. Anais Brasileiros de Dermatologia. 2010;85:939-41.
12. Budel AR, Raymundo AR, Costa CF, Gerhardt C, Pedri LE. Profile of patients affected by Hansen's disease seen at the Outpatient Clinic of Dermatology at Hospital Evangélico de Curitiba. An Bras Dermatol. 2011;86:942-6.
13. Kalita JM, Nag VL, Yedale K. Spectrum of leprosy among suspected cases attending a teaching hospital in Western Rajasthan, India. J Family Med Prim Care. 2020;9:2781-4.
14. Raghavendra BN, Aneesh S, Yarramachu S, Gopal AD, Muneer M. Clinical pattern of deformities and disabilities in leprosy patients in rural Bangalore: A two year study at tertiary level hospital. Indian J Clin Exp Dermatol. 2017;3:101-9.
15. Anil Kumar, Anita G, Yadav VS. Some epidemiological observations on leprosy in India. Int J Lep. 2001;69:234-40.
16. Singh S, Sinha AK, Banerjee BG, Jaswal N. Participation level of the leprosy patients in society. Indian J Lepr. 2009;81:181-7.
17. Mangala HC, Jeyaraman M, Chaudhari K, Dhorde V, Likhith D. A study on prevalence of deformities in leprosy in a tertiary care hospital at davangere. J Mycobact Dis. 2019;9:1-7.
18. Khapre M, Mudey A, Mesharam R, Naik AR, Wagh V. Determinants

and associated disability of leprosy patients attending GMLF, Sevagram. Online J Health Allied Sci. 2013;12:2-4.
19. Vara N, Marfatiya Y. A study on the impact of FD-MDT on 200 leprosy patients. Indian J Lepr. 2005;77:15-25.
20. Jindal N, Shanker V, Tegta GR, Gupta M, Verma GK. Clinico-epidemiological trends of leprosy in Himachal Pradesh: A five year study. Indian J Lepr. 2009;81:173-9.

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Our Dermatology Online

Original Article

Light-emitting diode therapy for the management of radiodermatitis

Fouzia Hali[1], Asmaa El Kissouni[1], Soumiya Chiheb[1], Meryem Charkaoui[2], Yasmina Berreda[2], Nadia Benchakroune[2], Souha Sahraoui[2]

[1]Department of Dermatology and Venereology, HUC Ibn Rochd, University Hassan II of Casablanca, Morocco, [2]Mohamed VI Cancer Treatment Center, HUC Ibn Rochd, University Hassan II of Casablanca, Morocco

Corresponding author: Asmaa El Kissouni, MD, E-mail: elkissouniasmaa@gmail.com

ABSTRACT

Background: Light-emitting diode (LED) is a process by which specific sequences of low-energy light are employed to regulate cellular activity without a thermal effect. The aim of this study was to evaluate the use of LED light in the treatment of radiodermatitis. **Materials and Methods:** This was a prospective study that included twenty patients with chronic or acute radiation dermatitis regardless of the grade or underlying neoplasia. All these patients received two LED sessions per week according to the following protocol: 660 + 850 nm, total fluence: 36 J/cm^2, total energy: 21.6 KJ. The evolution was judged from the data of the clinical examination and photography. **Results:** Three patients had chronic radiodermatitis (CRD) and seventeen patients had acute radiodermatitis (ARD). The lesions appeared after ten sessions on average: a cumulative dose of 26.7 Gy. Evolution after LED treatment: For CRD, no significant improvement was noted. For ARD, regression of erythema and epidermalization of the lesions were observed after an average of six sessions (2–8 sessions). **Discussion:** Vitro studies have demonstrated that LED light accelerates wound healing by increasing procollagen synthesis and decreasing inflammatory mediators. In our study. we noticed an improvement in patients with ARD regardless of the site or the underlying neoplasia. However, no improvement was observed in patients with CRD. **Conclusion:** LED therapy may be an effective therapeutic option in the management of ARD, yet studies with a larger sample are necessary.

Key words: LED Light; Photobiomodulation; Radiodermatitis; Acute Radiodermatitis; Radiotherapy

INTRODUCTION

After Marie Curie's discovery of radium, the invention of radiotherapy marked the beginning of a new era in medicine, giving a new glimmer of hope to patients with cancer. Nevertheless, one of its most frequent and debilitating side effects is radiodermatitis (RD). In fact, 95% of patients with cancer who receive radiotherapy may experience RD in some form, including erythema, dry scaling, and moist scaling [1,2]. These skin reactions to radiation cause a myriad of problems that delay treatment and lower the quality of life.

Light emitting diodes (LEDs) are sophisticated semiconductors that transform electrical current into incoherent, narrow-spectrum light, which may be absorbed by molecular chromophores or photoreceptors on the skin and activate the mitochondrial respiratory chain, triggering a cascade of cellular reactions with no thermal effect [3,4].

The aim of this study was to assess the effectiveness of LED light in the management of radiodermatitis.

MATERIALS AND METHODS

From June 2021 to January 2022, we conducted a prospective study at our dermatology department in partnership with a cancer treatment center. All patients included had histologically proven cancer for which

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radiotherapy was required and who had developed RD as a side effect.

Patients with RD, regardless of chronicity or severity, were recruited for this study, except minors, pregnant and breastfeeding females, and patients with a photosensitizing condition or a personal history of melanoma or lupus.

After receiving explicit written consent from the patients and performing an initial clinical evaluation as well as the staging of the RD, we used the Triwings® device (Biophoton SRL, Saint Alban, France) twice a week according to the following protocol: 660 + 850 nm, total fluence: 36 J/cm^2, total energy: 21,6 KJ, total time per session: 8 minutes.

The evolution was assessed with the data from the clinical examination and photography, such as the regression of skin lesions and functional symptoms such as pain, as well as the patient's satisfaction.

Ethics Statement

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

RESULTS

Study Population

This study included twenty patients, with an average age of 50.4 years, ranging from 31 to 70 years. There was a significant female predominance, with a sex ratio (M/F) of 0.2. Among these patients, fifteen were monitored for breast cancer, four for cavum cancer, and one for cervical cancer. Thus the sites irradiated were the breast and axillary area (n = 15), the cervical region (n = 4), and the pelvis (n = 1). Each of these patients received between 15 and 40 radiotherapy sessions, with an average of 30. The total dose administered ranged between 40 and 70 Gy, with an average of 2.67 Gy per session.

In our study group, three patients had chronic radiodermatitis (CRD), whereas seventeen had acute radiodermatitis (ARD), among which nine had grade 1 ARD, five had grade 2 ARD, and one had grade 3 ARD. Radiodermatitis lesions emerged after an average of ten sessions, resulting in a cumulative dose of 26.7 Gy. It ought to be highlighted that none of the patients' radiotherapy sessions were interrupted. In fact, three patients received LED sessions simultaneously with their radiotherapy sessions, while seventeen patients began LED sessions after the radiotherapy sessions ended.

Evolution after LED Sessions

When assessing the evolution of patients after LED sessions, we noted no significant improvement in patients with CRD (Fig. 1a). While, for patients with ARD, an improvement was noted over the course of the sessions. In fact, for patients with grade 1 ARD, a regression of erythema and skin whitening was observed after an average of three sessions (2–5 sessions) (Fig. 1b). Meanwhile, in those with grade 2 ARD, the epidermalization of the lesions was observed after an average of six sessions (4–8 sessions) (Figs. 1c and 1d). On the other hand, the patient with grade 3 ARC healed her lesions after eight sessions of LED light.

DISCUSSION

Radiodermatitis is defined as any skin reaction caused by ionizing radiation (photons, electrons, and so forth) [1,5]. In terms of appearance, undifferentiated basal layer keratinocytes are radiosensitive: ionizing rays cause an inflammatory reaction and oxidative stress (OS), which interact and reinforce each other, leading to radiation-induced cellular damage and even cell death. In the chronic phase, inflammation and OS may cause alterations in numerous cytokines, cell cycle modifications, and DNA damage, sustaining the cascade and leading to late responses [1,6,7].

ARD occurs within days or weeks of radiation exposure. There are three subtypes of ARD: dry radiodermatitis, exudative radiodermatitis, and acute radionecrosis. A severity classification of five grades was proposed by the European Organization for Research and Treatment of Cancer [8] (Table 1). CRD, on the other hand, develops months or even years after irradiation and worsens over time, with no relation to the severity of ARD. There are several subtypes: radiodystrophy, late radionecrosis, and cancer, emphasizing the significance of lifelong surveillance [9-11].

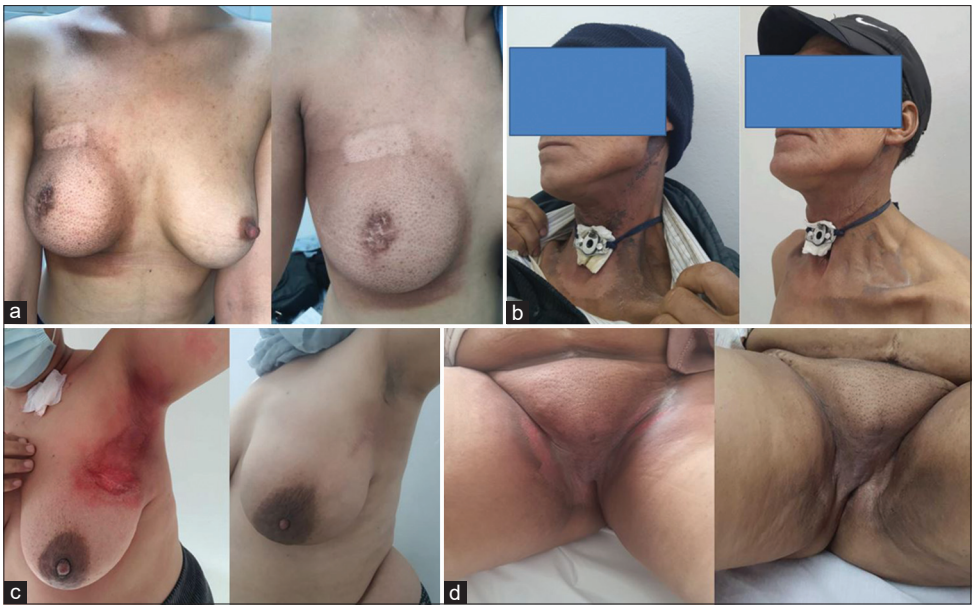

Figure 1: (a) Chronic radiodermatitis before and after eight LED light sessions. (b) Grade 1 acute radiodermatitis before and after four LED light sessions. (c) Grade 2 acute radiodermatitis before and after five LED light sessions (axillary area). (d) Grade 2 acute radiodermatitis before and after six LED light sessions (pelvic area).

Table 1: Grading system for acute radiodermatitis (ARD)

ARD Grade 1	ARD Grade 2	ARD Grade 3	ARD Grade 4	ARG Grade 5
Faint erythema or dry desquamation	Moderate erythema, edema, patchy, moist desquamation	Moist desquamation in areas other than the skin folds, bleeding by minor trauma	Skin necrosis Spontaneous bleeding	Death

LED light has been demonstrated to stimulate fibroblasts and play a role in expediting and enhancing wound healing. Indeed, *in vitro* studies have demonstrated that LED light accelerates wound repair, enhances procollagen production, decreases inflammatory mediators, and decreases dermal matrix metalloproteinase (MMP) in cultured fibroblasts exposed to irradiation [12], motivating various authors to test LED light against the treatment of radiodermatitis [13,14]. Thus, Camargo et al. [15] investigated the effect of LED light in an experimental model of radiodermatitis in ten rats. The animals were irradiated with 20 Gy in a single session and, fifteen days later, they were divided into two groups: a control group (five rats) and a group receiving LED sessions (660 nm) every two days for twenty-one days. The authors observed a clinical and even histological improvement in the LED group, since histologically they noticed that LED sessions improved the division and migration of cells in the basal layer of the epidermis, thus increasing the speed of epithelialization, which proved the regenerative potential of this treatment.

The efficacy of LED has been also evaluated in radiodermatitis prevention. In fact, Strouthos et al. [16] conducted a prospective study with a control group of seventy patients with breast cancer treated with radiotherapy following conservative surgery. The study revealed that LED light sessions (660 + 850 nm) applied twice a week before radiotherapy could be beneficial in minimizing the incidence and sequelae of radiation-induced skin damage as well as pain in patients with breast cancer.

LED light therapy was employed not only in patients with breast cancer yet also in patients with head and neck cancer (HNC). In one case report study, two HNC patients had grade 3 radiodermatitis following RT treatment. LED light was employed every day following a protocol (660 nm, 27.77–35.71 J/cm^2, 40–100 mW). After 48 hours, one of the patients' skin responses improved. The second patient whitened entirely after seven LED light sessions [17], which was similar to our findings.

To the best of our knowledge, our study was the first to assess the efficiency of LED light in the management of RD, regardless of the type/grade or the underlying neoplasia. We witnessed a marked improvement and healing of lesions in ARD after 2–8 sessions of LED

light. Healing was faster in grade 1 ARD, while grade 3 ARD required more sessions, yet the overall evolution was favorable regardless of the site of irradiation. Nevertheless, no improvement was observed in CRD.

CONCLUSION

RD is a significant handicap that affects the patient's quality of life and poses a major management challenge. Despite therapeutic advances and a plethora of treatment options proposed, few therapies have proven to be effective in the management of RD. In this study, we found that LED light therapy could be a beneficial option for patients with ARD, given its effectiveness, safety, ease of use, and low cost. However, additional prospective studies, particularly, randomized, double-blind studies with a larger sample size, are required to confirm these findings.

Statement of Human and Animal Rights

All the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the 2008 revision of the Declaration of Helsinki of 1975.

Statement of Informed Consent

Informed consent for participation in this study was obtained from all patients.

REFERENCES

1. Ginex PK, Backler C, Croson E, Horrell LN, Moriarty KA, Maloney C, et al. Radiodermatitis in patients with cancer: Systematic review and meta-analysis. Oncol Nurs Forum. 2020;1:225-36.
2. Bray FN, Simmons BJ, Wolfson AH, Nouri K. Acute and chronic cutaneous reactions to ionizing radiation therapy. Dermatol Ther. 2016;6:185-206.
3. Barolet D. Light-emitting diodes (LEDs) in dermatology. Semin Cutan Med Surg. 2008;27:227-38.
4. Oh PS, Jeong HJ. Therapeutic application of light emitting diode: Photo-oncomic approach. J Photochem Photobiol B. 2019;192:1-7.
5. Singh M, Alavi A, Wong R, Akita S. Radiodermatitis: A review of our current understanding. Am J Clin Dermatol. 2016;17:277-292.
6. Hymes SR, Strom EA, Fife C. Radiation dermatitis: Clinical presentation, pathophysiology, and treatment. J Am Acad Dermatol. 2006;54:28-46.
7. Wei J, Meng L, Hou X, Qu C, Wang B, Xin Y, et al. Radiation-induced skin reactions: Mechanism and treatment. Cancer Manag Res. 2019;11:167-77.
8. Russi EG, Bensadoun R-J, Merlano MC, Bourhis J, Ricardi U, Giralt J, et al. Bio-radiation dermatitis: The need of a new grading, Ann Oncol. 2013;24:2463-5.
9. Robijns J, Laubach H-J. Acute and chronic radiodermatitis: Clinical signs, pathophysiology, risk factors and management options. J Egypt Women's Dermatol Soc. 2018;15:2-9.
10. Spałek M. Chronic radiation-induced dermatitis: Challenges and solutions. Clin Cosmet Investig Dermatol. 2016;9:473-82.
11. Davis MM, Hanke CW, Zollinger TW, Montebello JF, Hornback NB, Norins A. Skin cancer in patients with chronic radiation dermatitis. J Am Acad Dermatol. 1989;20:608-16.
12. Chang L-Y, Fan SM-Y, Liao Y-C, Wang W-H, Chen Y-J, Lin S-J. Proteomic analysis reveals anti-fibrotic effects of blue light photobiomodulation on fibroblasts. Lasers Surg Med. 2020;52:358-72.
13. Robijns J, Lodewijckx J, Mebis J. Photobiomodulation therapy for acute radiodermatitis. Curr Opin Oncol. 2019;31:291-8.
14. Posten W, Wrone DA, Dover JS, Arndt KA, Silapunt S, Alam M. Low-level laser therapy for wound healing: Mechanism and efficacy. Dermatol Surg. 2005;31:334-40.
15. Camargo CP, Carvalho HA, Maluf FC, Sousa A, Perin P, Perin M, et al. Light-emitting diode stimulates radiodermatitis recovery. Acta Cir Bras. 2021;20:608-16.
16. Strouthos I, Chatzikonstantinou G, Tselis N, Bon D, Karagiannis E, Zoga E, et al. Photobiomodulation therapy for the management of radiation-induced dermatitis: A single-institution experience of adjuvant radiotherapy in breast cancer patients after breast conserving surgery. Strahlenther Onkol. 2017;193:491-8.
17. Rocha BA, Simões A, Lima LMC, Teixeira MMS, Martinez AS, Melo MR, et al. Treating acute cervical radiodermatitis with photobiomodulation therapy: A report of two cases. Photobiomodul Photomed Laser Surg. 2020;38:19-23.

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Our Dermatology Online

Original Article

Febrile diseases in patients hospitalized at the Department of Dermatology and Venereology of the Yalgado Ouédraogo University Hospital (CHUYO): Epidemiological, etiological, and therapeutic aspects

Moussa Harouna[1], Eric Arnaud Diendere[2], Laouali Salissou[3], Muriel Ouédraogo/Ouédraogo[4,5], Gilbert Patrice Tapsoba[4,5], Amina Zoungrana/Ouédraogo[4,5], Apolline Ouédraogo/Sondo[4,6], Nina Korsaga/Somé[4,5], Abdoul Kadir Ibrahim Mamadou[7], Jean Baptiste Andonaba[8], Pascal Niamba[4,5], Adama Traoré[4,5]

[1]Department of Dermatology-Venereology, Dosso Regional Hospital, Niger, [2]Department of Internal Médicine, Bogodogo University Hospital, Ouagadougou, Burkina Faso, [3]Department of Dermatology-Venereology, National Hospital of Niamey, Niger, [4]UFR/SDS Joseph KI ZERBO University, Ouagadougou, Burkina Faso, [5]Department of Dermatology-Venereology, CHU Yalgado Ouédraogo Ouagadougou, Burkina Faso, [6]Department of Infectious Diseases, CHU Yalgado Ouédraogo Ouagadougou, Burkina Faso, [7]Department of Internal Médicine, Dosso Regional Hospital, Niger, [8]Department of Dermatology-Venereology, CHU Souro Sanou, Bobo Dioulasso, Burkina Faso

Corresponding author: Laouali Salissou, MD, E-mail: danmata@yahoo.com

ABSTRACT

Introduction: Fever is an important problem at the Department of Dermatology and Venereology of CHUYO. The aim of our study was to analyze the epidemiological, etiological, and therapeutic aspects of fever. **Materials and Methods:** This was a cross-sectional study with retrospective data collection lasting from January 1, 2017, to December 31, 2018. **Results**: Ninety-four patients out of 235 patients collected were febrile, giving a prevalence of 40%. The mean age of the patients was 42.7 ± 4.008 years, with a sex ratio of 1.08. The clinical diagnoses were predominantly bullous dermatoses, including pemphigus and Lyell's syndrome. Infectious causes were found in 37.3% of the patients, non-infectious causes in 32.9%, and fevers of undetermined etiology in 9.6%. The main germs isolated were *Pseudomonas aeruginosa*, *Escherichia coli*, and *Klebsiella pneumoniae*. Antibiotic therapy was administered in 86.7% of the cases, mainly aminopenicillins, in 51.1% and third-generation cephalosporin in 22.3%. Thirteen patients (13.8%) died, with mortality being related to advanced age ($p = 0.006$) and to recognized pathologies of serious prognosis complicated by nosocomial infection ($p = 0.046$). **Conclusion**: The cause of fever in hospitalized dermatology patients should be determined.

Key words: fever; hospitalization; bullous dermatoses; CHU Yalgado Ouédraogo, Burkina Faso

INTRODUCTION

At the Department of Dermatology, fever in hospitalized patients is a major concern for the staff. Although it is suspected and proven to be related to infections, various etiologies may explain the fever [1,2]. It is observed in more than 30% of hospitalized patients [1]. The prevalence of fever varies according to the literature [3-5].

Fever is a common symptom among adult care seekers in sub-Saharan Africa [6], yet it has not been studied epidemiologically by dermatology.

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The objective of our study was to analyze the epidemiological, etiological, and therapeutic characteristics of fever in patients hospitalized at the Department of Dermatology and Venereology of Yalgado Ouédraogo CHU in Burkina Faso from January 1, 2017, to December 31, 2018.

MATERIALS AND METHODS

This was a retrospective, cross-sectional study conducted at the Department of Dermatology and Venereology from January 1, 2017, to December 31, 2018. We collected all records of patients hospitalized during this period. This was a simple, exhaustive sample. All patients with fever on admission or during hospitalization were included. The variables studied were socio-demographic characteristics (age, sex, socio-professional status, origin) and clinical and paraclinical data.

We considered the following etiological groups:

- Community infection: any patient admitted with fever with or without an infectious sign of call.
- Nosocomial infection: any patient whose fever occurred more than forty-eight hours after hospitalization with no signs of infection on admission.
- Non-infectious/infectious: a febrile patient admitted with the diagnosis of a non-infectious condition with superinfected lesions and no other infectious sites.
- Indeterminate: any patient with fever on admission and/or hospitalization without a clinical or paraclinical diagnosed focus.
- Non-infectious: patients with fever on admission and/or hospitalization in whom paraclinical investigations did not support an infectious cause.

The data collected was processed and analyzed with SPSS, version 20. The search for a significant difference in the level of knowledge between the different variables was performed with the chi-squared statistical test. The significance level was 5%. The confidentiality of the patients was respected during the exploitation of the files.

RESULTS

Sociodemographic Characteristics

Two hundred and thirty-five patients were hospitalized during the study period. Fever was found in 94 patients, giving a prevalence of fever of 40% (94/235). The mean age was 42.7 ± 4.008 years with extremes of 9 and 90 years. The sex ratio (male-to-female) was 1.13. Housewives and farmers were the most represented, with 27.7% (26/94) and 19.1% (18/94), respectively. The patients resided in the city of Ouagadougou in 50% of the cases; the rest came from regions outside Ouagadougou, with the majority residing in the Sahel region and the middle east (Table 1).

Clinical, Etiological, and Paraclinical Characteristics

Table 2 and Fig. 1 summarize the clinical and etiologic features.

Pemphigus vulgaris (18.1%) and Lyell's syndrome (17%) were the predominant etiologies for hospitalization (Fig. 2).

Infectious causes predominated in 37.3% of the cases (community-acquired infection in 30.9% and nosocomial infection in 6.4%).

Table 1: Sociodemographic characteristics

Variable	Number (%)
Sex	
Male	50 (53.2)
Female	44 (46.8)
Sex ratio	1.1
Age (yrs.)	
Average	42,7
Extremes	9–90 yrs.
1–14 years	6 (6.4)
15–9 years	19 (20.2)
30–44 years	26 (27.7)
45–59 years	23 (24.5)
60–74 years	14 (14.9)
75 years and older	6 (6.4)
Marital status	
Married	64 (68.1)
Divorced	2 (2.1)
Widowed	4 (4.3)
Single	24 (25.5)
Activity class	
Pupils/students	15 (16)
Civil servants	15 (16)
Shopkeeper	16 (17)
Farmer	18 (19.1)
Entrepreneur	4 (4.2)
Housewife	26 (27.7)
Place of residence	
Ouagadougou	47 (50)
Other*	47 (50)

*: North and Central North Region: 36%; East and Central East Region: 18%; Central West Region: 10%; Central Plateau: 6%; Cascade Region: 4%; Central South Region: 4%; South West Region: 4%; Ivory Coast: 4%; Boucle de Mouhoun: 2%

Community infections occurred in patients with no underlying dermatological pathology in 51.6% of the cases.

Nosocomial infections predominated in patients with the diagnoses of pemphigus vulgaris and Lyell's syndrome in 50% and 33.3%, respectively.

Patients with pemphigus vulgaris predominated with 31.6% (6/19) in non-infectious/infectious etiologies.

Pemphigus vulgaris and Lyell's syndrome were predominant in the same proportions (22.2%) in the dermatological field of occurrence of fever of undetermined etiology.

Drug-related causes predominated with 51.6%, followed by autoimmune causes (22.5%) in non-infectious etiologies (Fig. 1).

Table 2: Clinical and etiological characteristics

Variables	Number (%)
Different etiological groups of febrile illnesses (n = 94)	
Non-infectious	31 (32.9)
Community infection	29 (30.9)
Nosocomial infection	6 (6.4)
Non-infectious/infectious	19 (20.2)
Undetermined	9 (9.6)
Dermatological background of community infection (n = 29)	
None	17 (58.6)
Pemphigus foliaceous	4 (13.7)
Pemphigus vulgaris	2 (6.9)
Erythroderma	3 (10.3)
Lyell's syndrome	1 (3.4)
Erythema nodosum leprosum	1 (3.4)
Generalized AEP	1 (3.4)
Dermatological background of nosocomial infection (n = 6)	
Pemphigus vulgaris	3 (50)
Lyell's syndrome	2 (33.3)
Pellagra	1 (16.7)
Dermatological background of occurrence of fever of non-infectious/infectious cause (n = 19)	
Pemphigus vulgaris	6 (31.6)
Bullous pemphigoid	3 (15.8)
Lyell's syndrome	3 (15.8)
Erythroderma	2 (10.6)
Pemphigus foliaceous	1 (5.3)
Dermatitis herpetiformis	1 (5.3)
NET intermediate form	1 (5.3)
Systemic lupus erythematosus	1 (5.3)
EKBOOM syndrome	1 (5.3)
Dermatological background of fever of undetermined etiology (n = 9)	
Pemphigus vulgaris	2 (22.2)
Lyell's syndrome	2 (22.2)
Bullous pemphigoid	1 (11.1)
Pemphigus foliaceous	1 (11.1)
NET intermediate form	1 (11.1)
Erythroderma	1 (11.1)
Myositis	1 (11.1)

AEP: acute exanthematous pustulosis; NET: toxic epidermal necrolysis

In addition, cutaneous sites were the most frequent (in 31 cases), followed by pulmonary and systemic sites in 11 and 8 cases, respectively.

In the three infectious situations, cutaneous sites were the most frequent (in 31 cases), followed by pulmonary and systemic sites in 11 and 8 cases, respectively (Table 3).

The most frequently isolated pathogenic bacteria were equally *Pseudomonas aeruginosa* 12.5% (3/24) and *Escherichia coli* 12.5% (3/24), followed by *Staphylococcus aureus* 8.3% (2/24) (Table 3).

Therapeutic and Evolutionary Characteristics

A total of 86.2% (81/94) patients had been treated with antibiotics, among which nine had received several families of antibiotics. The most frequently prescribed antibiotic classes were aminopenicillins and third-generation cephalosporin. Amoxicillin + clavulanic acid, ceftriaxone, and metronidazole were the most prescribed antibiotics (Table 4).

The majority of our patients (79/94; 84%) were cured or improved, yet 13/94 (13.8%) died (Fig. 3).

The age of the patients was statistically correlated with the observed deaths (p = 0.006), and the diagnosis of febrile patients had a significant influence on deaths (p = 0.046) (Tables 5 and 6).

DISCUSSION

The main limitations of our study were the fact that some complementary examinations were not

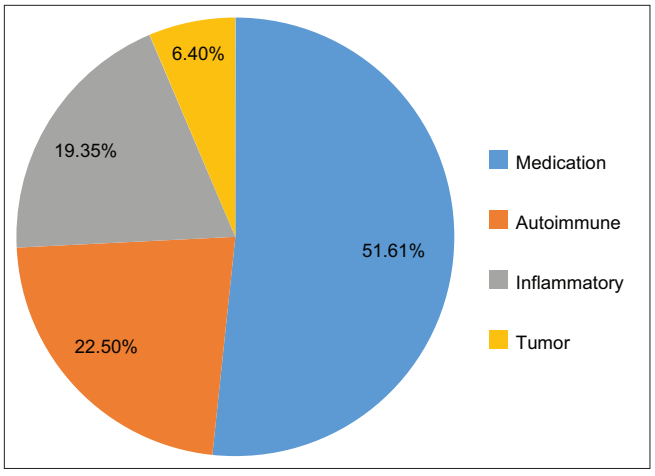

Figure 1: Distribution of febrile uninfected patients by diagnostic group.

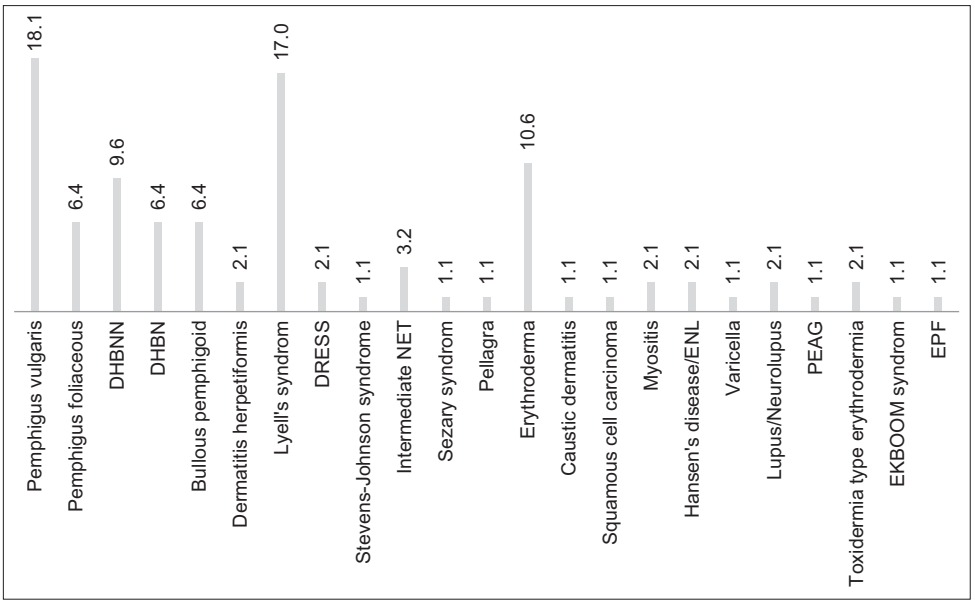

Figure 2: Distribution of the different dermatological diagnoses.

Table 3: Etiological groups and isolated germs according to infectious site

Etiological groups	Source of infection						
	Cutaneous	Pulmonary	Urinary	Digestive	Systemic	Not found	Total
Community-acquired infection	19	6	2	1	0	1	29
Nosocomial infection	0	1	0	0	5	0	6
Non-infectious/infectious	12	4	0	0	3	0	19
Total	31	11	2	1	8	1	54
Isolated germs							
Pseudomonas aeruginosa	0	0	0	0	3	0	3
Escherichia coli	1	0	1	0	1	0	3
Streptococcus sp.	1	0	0	0	0	0	1
Staphylococcus aureus	1	0	0	0	1	0	2
Klebsiella pneumoniae	0	1	0	0	0	0	1
Enterobacter cloacae	0	0	1	0	1	0	2
Proteus mirabilis	1	0	0	0	0	0	1
Morganella morganii	0	0	0	0	1	0	1
Candida albicans	0	0	0	1	0	0	1
Acinetobacter sp.	1	0	0	0	1	0	2
(Negative)	3	2	0	0	0	2	7
Total	8	3	2	1	8	2	24

Table 4: Distribution of patients by antibiotic family administered

Antibiotic family	Number	Percentage
Aminopenicillins	48	59.3
Third-generation cephalosporins	21	25.9
Several families of antibiotics	18	22.2
Glycopeptides	2	2.5
Macrolides	1	1.2

Table 5: Distribution of patients by age and deaths

Age Group	Deaths		Total	*p* value
	No	Yes		
1–14 years old	6	0	6	
15–29 years old	19	0	19	$p = 0.006$ (< 0.05)
30–44 years old	25	1	26	
45–59 years old	17	6	23	
60–74 years old	11	3	14	
75 years old or older	3	3	6	
Total	81	13	94	

performed due to the financial constraints of the patients and the highly limited literature on fever by dermatology, particularly in Africa. The prevalence of fever in our study was 40%. This prevalence varies according to the literature. Göktay reported a fever rate of 16.2% [1]. Gowan in Atlanta and Moon in Korea reported 29% and 5%, respectively [3,4]. As observed by Sandwidi et al. in Ouagadougou, Burkina Faso [7], this may be explained by the context of care in our hospital marked by insufficient hygiene and a high frequency of infections associated with care. We

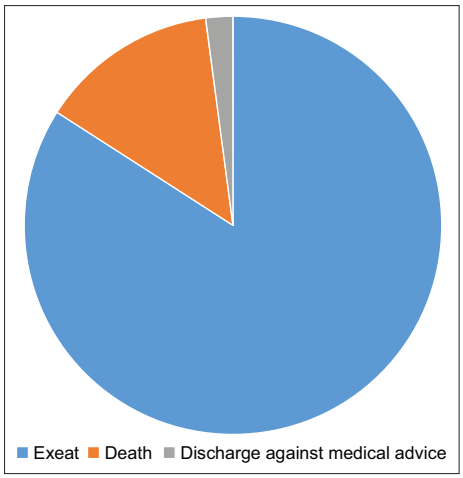

Figure 3: Distribution of patients by outcome/prognosis.

Table 6: Distribution of patients by dermatologic diagnosis and deaths

Diagnosis	Deaths		TOTAL	*p* value
	No	Yes		
Squamous cell carcinoma	1	0	1	(< 0.05)
Dermatitis herpetiformis	2	0	2	
Caustic dermatitis	1	0	1	
Necrotizing bacterial dermohypodermatitis	6	0	6	
DHBNN	9	0	9	
DRESS	2	0	2	
Erythema pigmentosum bullosa (EPF)	0	1	1	
Erythroderma/eczema	4	0	4	
Erythroderma/lichen planus	2	0	2	
Erythroderma/psoriasis	4	0	4	
Systemic lupus erythematosus	2	0	2	
Hansen's disease (erythema nodosum leprosum)	2	0	2	
Myositis	2	0	2	
Toxic epidermal necrolysis (TEN) intermediate form	3	0	3	
Acute generalized exanthematous pustulosis	1	0	1	
Pellagra	1	0	1	
Pemphigoid bullosa	6	0	6	
Pemphigus foliaceous	5	1	6	
Pemphigus vulgaris	9	8	17	
EKBOOM syndrome	1	0	1	
Lyell's syndrome	14	2	16	
Sezary syndrome	0	1	1	
Stevens–Johnson syndrome	1	0	1	
Toxidermia-type erythroderma	2	0	2	
Varicella	1	0	1	
Total	81	13	94	

found a predominance of infectious causes of 37.3% (community and nosocomial infections), which is close to 38.6% obtained in a study by Göktay in Turkey [1]. Meanwhile, Gowan in Atlanta, Circiumaru et al. in London, and Goto in Japan reported 53%, 53%, and 54%, respectively [3,8,9] in patients hospitalized at various departments (medicine, surgery, gynecology, pediatrics). This typology of patients could explain the difference compared to our specifically dermatological study population. The high frequency of infectious causes in our study in dermatology could be explained by the loss of skin barrier defense mechanisms related to skin detachments due to underlying dermatoses. Nosocomial infection was accounted in 6.4% and was lower than in a study by Dridi in Tunisia [10] with 13%, and in a study by Gowan with 9% [4] in patients at various departments. Higher rates have been reported in some studies in Africa: Dissou et al. in Benin in 2016 [11], Amona et al. in Congo-Brazzaville in 2016 [12], Zoungrana in Burkina Faso in 2011 [13], and Keita et al. in Conakry in 2016 [14], in 9.8%, 9.41%, 23.7%, and 20%, respectively. While in Germany in 2003, Dettenkofer reported a prevalence of 2.5% at a dermatology department [15]. This may be explained by a notorious lack of hygiene conditions and management of waste from care in our context [7] on the one hand, and the large skin detachments exposed to germs and other invasive procedures found in our patients on the other hand, which constituted factors favoring nosocomial infections [5]. Community infections represented 30.9% of the cases. This observation is comparable to that by Göktay, who reported 24.4% of community infections with a predominance of skin and soft tissue infections, followed by pulmonary infections [1]. This could be explained by the climatic conditions (heat and humidity), which contribute to the alteration of cutaneous defense mechanisms [16]. A significant number of our patients came from the Sahel region and the middle-eastern part of Burkina Faso, which are areas with a hot and humid climate; yet also the frequent use of traditional treatment complicates the skin lesions in our context. Non-infectious causes accounted for 32.9% of febrile patients with diagnoses of autoimmune bullous dermatoses, severe toxidermia, and erythroderma. Göktay observed a predominance of pustular psoriasis, erythroderma, erythema nodosum, and anticonvulsant hypersensitivity syndrome in this group [1]. This could be explained by the inflammatory context and thermoregulatory disturbances secondary to skin integrity damage. The cause of fever was unknown in (9.6%) of our cases. This rate is higher than that reported by Göktay in Turkey (6.3%) [1]. This could be explained by the retrospective nature of our study and the limited technical facilities in our setting. Patients with the diagnosis of pemphigus vulgaris predominated, with 31.6% (6/19), in this group. Inflammation and superinfection seemed to be interrelated and concomitantly responsible for

the fever [22]. In our study, cutaneous, pulmonary, and systemic foci predominated. These were mainly bacterial dermohypodermatitis, superinfection of the skin lesions of bullous dermatoses, pneumopathy, and Gram-negative bacteremia. This could be explained by the cutaneous portal of entry, invasive procedures, and the selection of germs from the hospital flora, which are favorable conditions for the creation of serious opportunistic germ infection [16]. We reported a bacteriological profile largely dominated by Gram-negative bacteria with a predominance of *Pseudomonas aeruginosa* (12.5%), *Escherichia coli* (12.5%), *Staphylococcus aureus* 8.3%, *Klebsiella pneumoniae* 4.1%, *Acinetobacter sp.* (4.1%), *Proteus mirabilis* (4.1%), and *Morganella morganii* (4.1%). This bacteriological profile was reported by some authors in Africa in varying proportions: Dissou et al. in Benin in 2016 [11], Amona et al. in Congo Brazzaville in 2016 [12], and Bassolé in Ouagadougou [17]. This could be explained in our context by the bare skin, which loses all its defense capacities and, thus, becomes an easy entry point for virulent germs to the hospital flora. The previous antibiotic-based treatment in 43.8% and traditional treatment in 41% were linked to the frequent use of self-medication and traditional therapy in our context [18]. This finding was reported by Moon et al. in Korea, who reported that 90.4% of their patients had received traditional herbal treatment and 29.6% had received empirical antibiotic therapy [4]. Moreover, we observed no correlation between the previous use of antibiotics and the appearance of fever in our patients, which should have led us to think of drug-induced fever [19]. The therapeutic management was antibiotic therapy in 86.2% of the cases based on aminopenicillins (amoxicillin + clavulanic acid), third-generation cephalosporin (ceftriaxone), and a combination of several families of antibiotics (aminoglycosides, imipenem). In a study by Göktay et al., 66.7% of patients had received antibiotic therapy [1]. This could be explained by the predominance of infectious causes and the germs isolated by culture in our study. The average length of stay of our patients was 31 days. This compared with 22.2 ± 15.7 days for Sen [20]. The main diagnoses were toxidermia and bullous dermatoses requiring a long hospital stay. We recorded 13.8% of deaths. Chowdhury reported 31.1% [21] and Pires 25% [22]. The diagnosis of severe pemphigus and toxidermia complicated by nosocomial infection was correlated with mortality ($p = 0.046$) as was advanced age ($p = 0.006$). This may be explained by the complications of skin loss, including sepsis and *Pseudomonas aeruginosa* infection, which as described frequently colonizes oozing or acantholytic dermatosis and is accompanied by high morbidity and mortality [23,24] in addition to the severity of these dermatoses.

CONCLUSION

This is the first study in our context. Fever in hospitalized dermatology patients is associated with an infection that complicates the prognosis of bullous dermatoses and Lyell's syndrome. Invasive procedures were involved in the occurrence of fever in hospitalization. Mortality was (13.8%) attributed to the age and severity of bullous dermatoses complicated by nosocomial infection. Awareness of hygiene and compliance with strict aseptic measures by staff and attendants could reduce the frequency of these infections.

Statement of Human and Animal Rights

All the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the 2008 revision of the Declaration of Helsinki of 1975.

Statement of Informed Consent

Informed consent for participation in this study was obtained from all patients.

REFERENCES

1. Göktay F, Ceran N, Aydıngöz İE, Mansur AT. Characteristics of fever, etiologic factors, antibiotic use and prognosis in febrile dermatology inpatients: Fever in dermatology inpatients. Int J Dermatol. 2013;52:1331-7.
2. Kaul DR, Flanders SA, Beck JM, Saint S. Brief report: Incidence, etiology, risk factors, and outcome of hospital-acquired fever: A systematic, evidence-based review. J Gen Intern Med. 2006;21:1184-7.
3. Gowan Mc, John E, Richard CR, Norman FJ, Dennis RS, Robert WH. Fever in hospitalized patients with special reference in the medical service. Am J Med. 1987;82:582-5.
4. Moon S, Park K-H, Lee MS, Son JS. Hospital-acquired fever in oriental medical hospitals. BMC Health Serv Res. 2018;18:88.
5. Espinasse F, Page B, Cottard-Boulle B. Risques infectieux associés aux dispositifs médicaux invasifs. Rev Francoph Laborat. 2010;2010:51-63.
6. Carugati M, Kilonzo KG, Crump JA. Fever, bacterial zoonoses, and One Health in sub-Saharan Africa. Clin Med. 2019;19:375-80.
7. Sandwidi L, Traore A, Grau D, Morvan M, Paquis MP, Nana FW, et al. Audit en hygiène hospitalière au CHU YALGADO OUEDRAOGO. 3è Colloque GERES en AFRIQUE. Risque infectieux: sécurité des soignants et qualité des soins. Casablanca, Maroc 2016:10.
8. Circiumaru B, Baldock G, Cohen J. A prospective study of fever

in the intensive care unit. Int Care Med. 1999;25:668-73.
9. Goto M, Koyama H, Takahashi O, Fukui T. A retrospective review of 226 hospitalized patients with fever. Intern Med. 2007;46:17-22.
10. Dridi E, Chetoui A, Zaoui A. [Investigation of the prevalence of nosocomial infection in a Tunisian regional hospital]. Sante Publique. 2006;18:187-94.
11. Dissou A, Anthelme A, Faridath M, Frederic S, Angele KA, Severin A, et al. Facteurs associes aux infections bactériennes nosocomiales dans les services de médecine de l'hôpital universitaire Hubert KOUTOUKOU MAGA de Cotonou, Benin. 3è Colloque GERES en AFRIQUE. Risque infectieux: sécurité des soignants et qualité des soins. Casablanca, Maroc 2016:8.
12. Amona M, Kokolo B, Loumouamou ML, Mbita AM, Ayah JP, Konongo ALT, Ibata P, et al. Profil bactériologique des infections nosocomiales au service de médecine interne de l'hôpital central des armées de Brazzaville-Congo. 3è Colloque GERES en AFRIQUE. Risque infectieux: sécurité des soignants et qualité des soins. Casablanca, Maroc 2016:12.
13. Zoungrana KJ, Traore A, Ouédraogo L. Enquête de prévalence des infections nosocomiales au CHUYO de Ouagadougou (BURKINA FASO). ICPIC 2011:16
14. Keita AK, Doumbouya N, Sow MS, Konaté B, Dabo Y, Panzo DA, et al. [Prevalence of nosocomial infections in two hospitals in Conakry (Guinea)]. Sante Publique. 2016;28:251-5.
15. Dettenkoffer M, Wilson C, Ebner W, Norgauer J, Ruden H, Dashner FD. Surveillance of nosocomial infections in dermatology patients in a Germany university hospital. Br J Dermatol. 2003;149:620-3.
16. Boulanger N, Jaulhac B, Lipsker D. Microbiote cutané humain normal etmécanismes de défense contre l'infection. Dermatoses microbiennes dans Saurat J-H Lipsker D, Thomas L, Borradori L, Lachapelle J-M. Dermatol Inf Sexu Transmissib. 2017:92-133.
17. Bassolé I. Profil bactériologique des suppurations post-opératoires dans les services de chirurgie digestive et chirurgie traumatique du Centre hospitalier universitaire Yalgado Ouédraogo. Thèse. Pharm. n°256 UFR/SDS; Ouagadougou 2012:140p.
18. Nicolas J-P. Plantes médicinales pour le soin de la famille au Burkina Faso. 2009;4. Site: www.jardinsdumonde.org
19. Vodovar D, Le Beller C, Lillo-Le-Louet A, Hanslik T, Megarbane B. [Drug-induced fever: a diagnosis to remember]. Rev Med Interne. 2014;35:1838.
20. Sen A, Chowdhury S, Poddar I, Bandyopadhyay D. Inpatient dermatology characteristics of patients and admissions in a tertiary level hospital in Eastern India. Indian J Dermatol. 2016;61:561-4.
21. Chowdhury S, Podder I, Saha A, Bandyopadhyay D. Inpatient mortality resulting from dermatological disorders at a tertiary care center in Eastern India: A record-based observational study. Indian J Dermatol. 2017;62:518.
22. Pires CAA, Viana VB, Araújo FC, Müller SFR, Oliveira MS de, Carneiro FRO. Evaluation of cases of pemphigus vulgaris and pemphigus foliaceus from a reference service in Pará state, Brazil. An Bras Dermatol. 2014;89:556-61.
23. Morand A, Morand J-J. [Pseudomonas aeruginosa in dermatology]. Ann Dermatol Venereol. 2017;144:666-75.
24. Mamoudou S, Lassina D, Fla K. [Pseudomonas aeruginosa infections in the service of infectious diseases at CHU YO, Burkina Faso: about two cases]. Pan Afr Med J. 2015;21:78.

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Our Dermatology Online

Original Article

Atopic dermatitis: Epidemiological and clinical aspects and the associated factors in Yaoundé, Cameroon

Indira Diana Bosso Bosso Ebeng[1], Grace Anita Nkoro[2], Dahlia Noëlle Tounouga[3], Félicité Djuikwo Teukeng[1], Arnaud Ndi Manga[1], Odette Berline Sigha[4], Rose Kotto[5], Defo Defo[6], Martine Nida[5], Emmanuel Armand Kouotou[2]

[1]Higher Institute of Sciences and Health, Université des Montagnes, Cameroon, [2]Faculty of Medicine and Biomedical Sciences, Université of Yaoundé 1, Cameroon, [3]National University Teaching Hospital of Cotonou, Benin, [4]Faculty of Health Sciences, University of Bamenda, Cameroon, [5]Faculty of Medicine and Pharmaceutic Sciences, Université of Douala, Cameroon, [6]Yaoundé Central Hospital, Cameroon

Corresponding author: Dahlia Noelle Tounouga, MD, E-mail: ntounouga@gmail.com

ABSTRACT

Background: Atopic dermatitis (AD) or atopic eczema is a chronic inflammatory dermatosis characterized by intense pruritus and skin xerosis. Its prevalence is increasing in low-income countries and it has a major socio-economic impact. However, very few studies have included all age groups, and knowledge of factors associated with AD remains limited in our context. We, therefore, conducted a study to assess the epidemiological aspects and factors associated with AD in hospitals in Yaoundé, Cameroon. **Methods:** This was a cross-sectional, analytical study conducted from December 2020 to July 2021 in four health facilities in Yaoundé. All patients consulting at dermatology departments with signs of AD and freely consenting were included. Sociodemographic, environmental, and clinical data was studied and analyzed with SPSS, version 26, with a significance level of $p < 0.05$. **Results:** Among the 248 patients enrolled, 84 suffered from AD. These were mainly children (64.3%) and female (sex ratio: 0.4). The mother's occupation (housewife, retired, private sector employee), the participant's and father's level of education, a history of asthma in siblings, and a history of flexural fold lesions were associated with AD. **Conclusion:** AD is more common in children and is strongly related to socio-demographic factors.

Key words: Atopic dermatitis; Sociodemographic factors; Associated factors; Yaoundé, Cameroon

INTRODUCTION

Atopic dermatitis (AD) is a chronic inflammatory dermatosis evolving in flare-ups characterized by intense pruritus and xerosis [1-4]. AD is the most common chronic inflammatory pathology of the skin and represents the first element of the atopic process [3,5-10]. AD occurs in a family and personal context of atopy associated with abnormalities of the skin barrier and environmental factors [8,11-14]. It mainly affects pediatric and female populations yet may be seen during adulthood [3-5,10,14,15]. The worldwide prevalence of AD ranges from 15% to 20% in children and from 1% to 3% in adults; it is 3% in sub-Saharan Africa [1,5-7,15]. In Cameroon, Kouotou et al. found a prevalence of 14.8% in the general population [16,17]. Being on the rise worldwide, including in low-income countries, AD represents a real public health problem [1,3,8,9,18,19]. In addition, there are difficulties in its diagnosis and management due to the inappropriate level of knowledge of the nursing staff, problems in acceptance by patients and difficulties in accessing treatment [2,7-9,16,20-23]. In addition, it has a major socio-economic impact on the lives of patients due to the cost of treatment, stigmatization, sleep disorders, and the inconvenience in professional and personal activities (impaired quality of life in 93.5% of individuals affected in

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Cameroon) [1,15,21,24]. Thus, beyond the studies conducted, very few have focused on all age groups and knowledge of the factors associated with AD.

MATERIALS AND METHODS

We conducted an analytical, cross-sectional, prospective study for the period of eight months (February to June 2021) at four health facilities in Yaoundé, Cameroon, namely, University Teaching Hospital of Yaoundé (UTHY), Gyneco-Obstetrics and Pediatric Hospital of Yaoundé (GOPY), District Hospital of Biyem-Assi (DHBA), and District Medical Center of Elig-Essono (DMCEE). We included patients who freely gave their consent and showed signs of AD. Those without signs of AD or refusing to participate in the study were excluded. The sampling was non-probabilistic and exhaustive with a sample size of 224 patients (74 patients and 150 non-patients) calculated according to the Whitley–Ball formula.

The patients were classified according to the criteria of the United Kingdom Working Party (UKWP). Matching was conducted according to the sex and age of the patients. Three groups of variables were collected by the examiner with a validated questionnaire; these were socio-demographic variables (sex, age, occupation, standard of living and education), environmental variables (clothing, presence of pets, carpets, fans), and clinical variables (history of atopy, early events of life, age of onset and type of lesions).

The data was analyzed with Microsoft Excel and SPSS, version 26. Tables were produced with Microsoft Excel and Word. Quantitative data was expressed as means and standard deviations. Qualitative data was expressed as numbers and percentages. Measures of association were performed using the chi-squared test and the calculation of odds ratio with its 95% confidence interval (CI). A p value less than 5% was considered statistically significant.

Patient and Public Involvement

The patients were not involved in the design, conduct, reporting, or plan dissemination of our research.

Ethics Statement

This study was carried out in compliance with the principles of ethics and medical deontology. We obtained ethical clearance from the Ethics and Deontology Committee of Université des Montagnes, administrative authorizations from the heads of various health facilities, and informed consent from all patients and the parents of the minor patients.

RESULTS

Sociodemographic Data

In total, we recruited 248 participants, including 84 patients. They were mostly female (70.2%), with a male-to-female ratio of 0.4. The population consisted mainly of children (64.3%), with a predominance of infants (22/54). The median age was 10.25 years (2.70–25). The patients were mostly students (46.4%) and preschool children (29.8%) (Table 1). Regarding the level of education, the primary level was the most represented among the participants, while the university level was predominant among the parents (Table 1). The most recurrent sectors of activity among the parents were the public and private sectors, with 40.5% of the mothers and 38.1% of the fathers in the public sector and 29.8% of the mothers and 35.7% of the fathers in the private sector (Table 1).

Environmental Data

Clothes with cotton were the most worn (100%), followed by synthetics (84.5%) (Table 2). Most of our participants did not have pets, air conditioners, or fans (70.2% and 53.6%) yet owned a carpet (61.9%) (Table 2). Regarding their houses, they were mostly built with concrete blocks and tiles surrounded by gardens or fields in 56% of the cases (Table 2). Cleaning was performed on average 6 ± 1.8 times per week.

Clinical Data

A personal history of atopy was allergic conjunctivitis (33.3%), allergic rhinitis (21.4%), AD (16.7%), food allergies (10.8%), and asthma (7.1%) (Table 3). At the family level, we mainly found: asthma in second-degree relatives (21.4%), allergic rhinitis in siblings and in second-degree relatives (17.8%), and allergic conjunctivitis in siblings (11.9%) (Table 4).

Among the 84 patients, 79 (94%) received breastfeeding for a median duration of 10 months (6–12). Food diversification began at an unknown age in 42.9% and before four months in 26.2% (Table 5). The first food introduced was artificial milk (AL) in most of the cases

Table 1: Socio-demographics characteristic of the participants.

Variable	AD		OR	CI 95%	*p* value
	No (%)	Yes (%)			
Age (yrs.)					
≤ 2	32 (12.9)	22 (8.9)	0.70	0.35–1.41	0.323
3 – 12	53 (21.4)	21 (8.5)	1.22	0.63–2.38	0.557
13 – 18	17 (6.9)	11 (4.4)	0.75	0.31–1.79	0.515
≥ 19	62 (25)	30 (12.1)	-	-	-
Residence					
Peri-urban	7 (2.8)	1 (0.4)	3.70	0.45–30.59	0.194
Urban	157 (63.3)	83 (33.5)	-	-	-
Mother's occupation					
Dead	10 (4)	5 (2)	1.89	0.58–6.09	0.287
Student	7 (2.8)	7 (2.8)	0.94	0.30–2.98	0.922
Housewife	26 (10.5)	8 (3.2)	3.07	1.22–7.71	0.017
Retired	16 (6.5)	3 (1.2)	58.04	1.35–18.84	0.016
Informal sector	7 (2.8)	2 (0.8)	3.30	0.64–17.04	0.153
Private sector	54 (21.8)	25 (10.1)	2.04	1.05–3.97	0.036
Public sector	36 (14.5)	34 (13.7)	-	-	-
Participant's education level					
Not applicable	38 (15.3)	25 (10.1)	0.64	0.31–1.34	0.002
Not educated	1 (0.4)	1 (0.4)	0.42	0.02–7.11	0.549
Primary	51 (20.6)	20 (8.1)	1.08	0.51–2.27	0.846
Secondary	29 (11.7)	19 (7.7)	0.64	0.29–1.42	0.275
University	45 (18.1)	19 (7.7)	-	-	-
Father's education level					
Unknown	30 (12.1)	10 (4)	1.36	0.61–3.03	0.450
Not educated	3 (1.2)	3 (1.2)	0.45	0.09–2.34	0.345
Primary	15 (6)	4 (1.6)	1.70	0.53–5.42	0.369
Secondary	19 (7.7)	23 (9.3)	0.37	0.18–0.76	0.006
University	97 (39.1)	44 (17.7)	-	-	-

Table 2: Environmental characteristics.

Variable	AD		OR	CI 95%	*p* value
	No (%)	Yes (%)			
Cotton clothes					
No	1 (0.4)	0	-	-	-
Yes	163 (65.7)	84 (33.9)	-	-	-
Woolen clothes					
No	101 (40.7)	48 (19.4)	1.202	0.705–2.052	0.499
Yes	63 (25.4)	36 (14.5)	-	-	-
Synthetic clothes					
No	26 (10.5)	13 (5.2)	1.029	0.499–2.124	0.938
Yes	138 (55.6)	71 (28.6)	-	-	-
Silk clothes					
No	117 (47.2)	58 (23.4)	1.116	0.629–1.980	0.708
Yes	47 (19)	26 (10.5)	-	-	-
Pets					
No	112 (45.2)	59 (23.8)	0.913	0.515–1.617	0.754
Yes	52 (21)	25 (10.1)	-	-	-
Carpet					
No	72 (29)	32 (12.9)	1.272	0.743–2.177	0.380
Yes	92 (37.1)	52 (21)	-	-	-
Air conditioner or fan					
No	76 (30.6)	29 (15.7)	0.997	0.588–1.688	0.990
Yes	88 (35.5)	45 (18.1)	-	-	-
Garden or field					
No	59 (23.8)	37 (14.9)	0.714	0.418–1.220	0.217
Yes	105 (42.3)	47 (19)	-	-	-

Table 3: Personal history of atopy.

Variable	AD		OR	CI 95%	*p* value
	No (%)	Yes (%)			
Asthma					
No	153 (61.7)	78 (31.5)	1.070	0.381–3.001	0.898
Yes	11 (4.4)	6 (2.4)	-	-	-
Allergic rhinitis					
No	116 (46.8)	66 (26.6)	0.659	0.354–1.226	0.186
Yes	48 (19.4)	18 (7.3)	-	-	-
Allergic conjunctivitis					
No	128 (51.6)	56 (22.6)	1.778	0.990–3.192	0.053
Yes	36 (14.5)	28 (11.3)	-	-	-
Atopic dermatitis					
No	154 (62.1)	70 (28.2)	3.080	1.304–7.273	0. 008
Yes	10 (4)	14 (5.6)	-	-	-
Food allergy					
No	153 (61.7)	75 (30.2)	1.669	0.663–4.202	0.273
Yes	11 (4.4)	9 (3.6)	-	-	-

(40.5%) (Table 5). While the majority of our patients had not been to nursery (85.8%), most had had early infections (54.8%), taken antibiotics (54.8%), and were vaccinated (95.2%) during the first months of life (Table 5). AD occurred mainly after the age of two years (58.33%) for a median duration of the symptoms

Table 4: Family history of atopy.

Variable	AD		OR	CI 95%	*p* value
	No (%)	Yes (%)			
Asthma in the siblings					
No	148 (59.7)	82 (33.1)	0.226	0.051–1.006	0.034
Yes	16 (6.5)	2 (0.8)	-	-	-
Allergic rhinitis in the children					
No	157 (63.3)	75 (30.2)	2.691	0.965–7.504	0.051
Yes	7 (2.8)	9 (3.6)	-	-	-
Allergic conjunctivitis in the mother					
No	141 (56.9)	77 (31)	0.557	0.229–1.358	0.193
Yes	23 (9.3)	7 (2.8)	-	-	-
Allergic conjunctivitis in the grandparents					
No	149 (60.1)	82 (33.1)	0.242	0.054–1.086	0.046
Yes	15 (6)	2 (0.8)	-	-	-
Food allergy in the mother					
No	163 (65.7)	80 (32.3)	8.150	0.896–74.114	0.028
Yes	1 (0.4)	4 (1.6)	-	-	-
Food allergy in the siblings					
No	146 (58.9)	80 (32.3)	0.406	0.133–1.239	0.103
Yes	18 (7.3)	4 (1.6)	-	-	-

Table 5: Life first events.

Variable	AD		OR	CI 95%	*p* value
	No (%)	Yes (%)			
Breastfeeding					
Yes	147 (59.3)	79 (31.9)	1.83	0.65–5.14	0.247
No	17 (6.9)	5 (2)	-	-	-
Nursery					
No	143 (57.7)	72 (29)	1.13	0.53–2.44	0.745
Yes	21 (8.5)	12 (4.8)	-	-	-
Early infections					
No	66 (26.6)	38 (15.3)	0.81	0.48–1.39	0.451
Yes	98 (39.5)	46 (18.5)	-	-	-
Early use of antibiotics					
No	71 (28.6)	38 (15.3)	0.92	0.54–1.57	0.770
Yes	93 (37.5)	46 (18.5)	-	-	-
Vaccination					
No	14 (5.6)	4 (1.6)	1.87	0.59–5.86	0.278
Yes	150 (60.5)	80 (32.3)	-	-	-
Age of AD (yrs.)					
Before 2	100 (40.3)	49 (19.8)	1.12	0.65–1.91	0.688
After 2	64 (25.8)	35 (14.1)	-	-	-
History of lesions on the flexion folds and/or cheeks					
No	130 (52.4)	39 (15.7)	4.41	2.49–7.81	< 0.01
Yes	34 (13.7)	45 (18.1)	-	-	-

of 5 months (1–24). A history of flexion fold lesions was found in 53.6% of the patients (Table 5).

Complaints in patients with AD were mainly pruritus in all and sleep disorders in 45.2% (Fig. 1). The areas most affected were the flexion folds (60.1%), trunk (56%), and neck (52.4%) (Table 6). Regarding physical signs, we mainly found xerosis and palmoplantar hyperlinearity in 98.8%, followed by papules and the

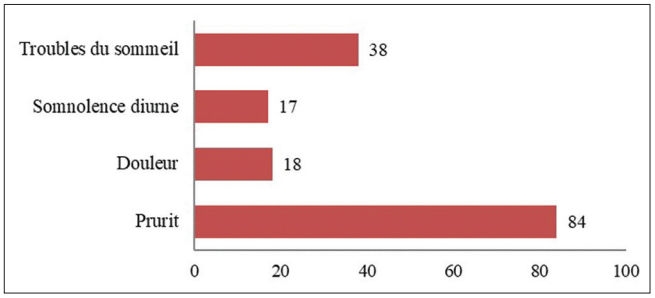

Figure 1: Signs of atopic dermatitis.

Dennie–Morgan sign (84.6%), classic eczema plaques (81%), erythema (65.5%), keratosis pilaris (64.3%), and lichenification (60.7%) (Fig. 2).

Associated Factors

In univariate analyses, the factors associated with AD were the mother's occupation, more specifically, housewife (OR = 3.069; 95% CI = 1.22–7.71; $p = 0.017$), retired (OR = 58.037; 95% CI = 1.35–18.84; $p = 0.016$), and private sector agent (OR = 2.040; 95% CI = 1.05–3.97; $p = 0.036$), which increased the risk (Table 1). On the other hand, children of preschool age (OR = 0.642; 95% CI = 0.31–1.34; $p = 0.002$) and the father's secondary school level (OR = 0.375; 95% CI = 0.18–0.76; $p = 0.006$) reduced the risk (Table 1). While the presence of asthma in siblings (OR = 0.226; 95% CI = 0.05–1.00; $p = 0.034$) and allergic conjunctivitis in second-degree relatives (OR = 0.242; 95% CI = 0.05–1.09; $p = 0.046$) protected against AD, the presence of personal AD (OR = 3.080; 95% CI = 1.30–7.27; $p = 0.008$;) and

maternal food allergies (OR = 8.150; $p = 0.028$) favored it (Tables 3 and 4). Regarding early events in the lives of the patients, a history of lesions on the flexion folds and/or cheeks increased the risk of AD (OR = 4.41; 95% CI = 2.49–7.81; $p < 0.01$) (Table 5).

After multiple regressions, the factors associated with AD were: the mother's occupation: housewife (aOR = 3.35; 95% CI = 1.05–10.66; $p = 0.041$), retired (aOR = 10.07 95% CI = 1.87–54.28; $p = 0.007$), private sector agent (aOR = 2.47; 95% CI = 1.08–5.67; $p = 0.033$); primary school level of the participant (aOR = 4.2; 95% CI = 1.53–11.55; $p = 0.005$) and secondary of the father (aOR = 0.24; 95% CI = 0.09–0.60; $p = 0.003$), a history of asthma in the siblings: (aOR = 0.16; 95% CI = 0.029–0.87; $p = 0.034$) and lesions on the flexion folds and/or cheeks (aOR = 5, 61; 95% CI = 2.58–12.18; $p < 0.01$) (Table 7).

DISCUSSION

The aim of our study was to study epidemiological and clinical aspects and factors associated with atopic dermatitis at a hospital in Yaoundé, Cameroon.

Our population consisted mainly of female patients, with a sex ratio of 0.4. Indeed, in urban areas, women are more sensitive to their appearance and are, therefore, more likely to be seen in dermatological consultations. These results are similar to those obtained by Faye et al. in 2020 in sub-Saharan Africa in adults and children (female predominance in 56.4% and 61.6%) [25,26].

We found more children (64.3%), with a predominance of infants (22/54). This could be explained by the fact that AD flare-ups generally begin in the first months of life, during which the immune system is set up by adapting to environmental stimuli. This is close to the results obtained by Pefura-Yone et al., who found a predominance of infants (52.2%) in sub-Saharan Africa in 2020 [7,17].

In terms of the standard of living and education, the parents were mostly upper-level working in the public and private sectors. Indeed, our results highlight the role of the parents' high level of education in the physiopathology of AD by falling within the framework of the hygienist theory, according to which the more the parents have high-level education, the less the children will be exposed to infectious agents and the more they will be at risk of developing allergic

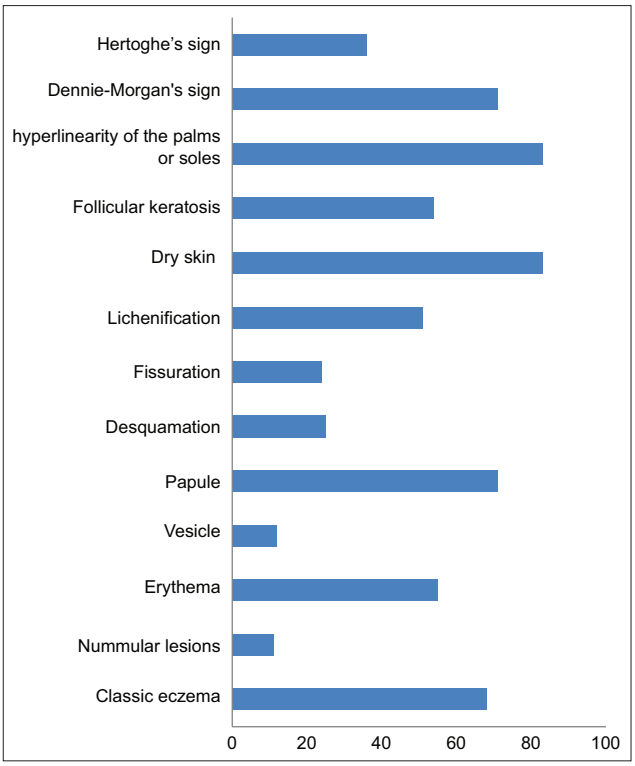

Figure 2: Clinical manifestations of atopic dermatitis.

Table 6: Sites of the lesions.

Variables	Absence of AD (%)	Presence of AD (%)
Scalp	11 (4.4)	12 (4.8)
Convexity of face	32 (12.9)	21 (8.5)
Neck	24 (9.7)	44 (17.7)
Flexion fold	31 (12.5)	53 (21.4)
Extension surface	19 (7.7)	26 (10.5)
Trunk	69 (27.8)	47 (19)

Table 7: Factors associated to AD after logistic regression.

Variable	OR	aOR	CI 95%	*p* value
Mother's profession				
Housewife	3.069	3.35	1.05–10.66	0.041
Retirement	58.037	10.07	1.87–54.28	0.007
Private sector	2.040	2.47	1.08–5.67	0.033
Participant's education level				
N/A	0.642	1.01	0.40–2.53	0.981
Primary	1.077	4.2	1.53–11.55	0.005
Father's secondary education level	0.644	0.24	0.09–0.6	0.003
Asthma in the siblings	0.226	0.16	0.029–0.87	0.034
Allergic conjunctivitis in the grandparents	0.242	0.21	0.04–1.11	0.066
Personal atopic dermatitis	3.080	1.85	0.64–5.34	0.252
Food allergy in the mother	8.150	18.11	0.41–793.93	0.133
History of lesions on the flexion folds	4.41	5.61	2.58–12.18	< 0.01

pathologies including AD. In Ethiopia, Kelbore et al. in 2015 mainly found university-level parents, civil servants, and housewives, while Haileamlak et al. found more farmers [13,27]. This could be explained

by the fact that Cameroon has a higher economic level than Ethiopia (GDP per capita 1324 vs. 755€ for Ethiopia) [28].

From an environmental point of view, the most popular material was cotton (in 100% of the cases), followed by synthetics in 84.5%. This could be explained by the ignorance of the real composition of clothes by the patients. Also, this high synthetic content, because of its irritant effect, may contribute to the triggering or aggravation of AD flare-ups. These results differ from those by Kouotou et al. obtained in 2017, in which cotton was worn by 31.4% of the patients. This difference could be due to the smaller sample size in this study (35 patients) [29].

While the majority of sufferers owned carpets, most did not own pets. Among those who had one, it was mostly cats (52%) and dogs (44%). This could be explained by the fact that carpets retain allergenic elements that may act in triggering AD flare-ups, such as dust and dust mites. Also, early exposure to pets has been described by some authors as protective in AD [30]. These results are similar to those obtained by Kouotou et al. in 2017 and Bagdaban et al. in 2018, who mentioned a rate of 54.3% of carpets as well as the absence of pets in 81.9% [4,19,29].

Residential areas were surrounded by gardens and/or fields in 56% of cases. Indeed, the presence of these causes an increase in the amount of pollen, as well as mosquitoes and other insects, whose bites may be allergenic and, therefore, participate in the triggering of AD. Our results differ from those by Kelbore et al. obtained in 2015 in Ethiopia, in which they were present in 36% and 33% of cases, respectively [13]. This difference could be explained by the fact that these two elements were sought simultaneously in our study.

The personal history of atopy was allergic conjunctivitis (33.3%), allergic rhinitis (21.4%), AD (16.7%), food allergies (10.7%), and asthma (7.1%). This data was partly similar to that obtained by Pefura-Yone et al. and Kouotou et al., who found 26.1% of allergic conjunctivitis, 11.6% of food allergies, and 8.7% of asthma among adults in Cameroon in 2021 [7,15].

We found little family history of AD, while Thorsteinsdottir et al. in 2019 found higher rates in the pediatric population, suggesting a link between these two elements [4]. This difference could stem from the ignorance of the existence of these diseases by the patients questioned in our study.

Among the 84 patients, 79 received breastfeeding, a majority for less than twelve months with an unknown age of diversification. These results were similar to those by Kelbore et al., who found a history of breastfeeding in all patients, with a majority for less than twelve months [13]. These results could highlight the relationship between the duration of breastfeeding and its protective role in the occurrence of AD [13].

While the majority of patients did not attend a daycare unit (85.7%), most took antibiotics (54.8%) and were vaccinated (95.2%) during the first months of life. Indeed, these results were in line with the hygienist theory due to the increase in measures taken to avoid infections (vaccination, antibiotics, the absence of nursery). This data corroborated that obtained by Kelbore et al. and Yemaneberhan et al., who determined the rates of vaccination, early use of antibiotics, and vaccination to be 96.6%, 54.7%, and 77.5%, respectively [13,31].

Complaints by patients with AD were mainly pruritus in all and sleep disturbances in 38 (45.2%). Indeed, pruritus is the major element in the diagnosis of AD and, when it is important, it may have an impact on the quality and duration of sleep of the patient. These results were in agreement with those by Kouassi et al. obtained in 2019 in Ivory Coast in children, determining 100% of pruritus and 90% of sleep disorders [32]. On the other hand, Nakamura et al. in England found pruritus rates of 32% and 37% in the MAAS and Ashford cohorts, respectively [33]. This difference could be explained by the diversity of the clinical presentations of AD depending on the phototype and geographical area.

The areas most affected were the flexion folds (60.1%), trunk (56%), and neck (52.4%). This data was in line with that drawn from a study by Pefura-Yone et al. in 2019, who found 89.9% of limb damage, followed by 65.2% of the trunk, as well as that by Yew et al. in 2018, who found a predominance of flexion zone damage (58.2%) in Africa [7,34].

Also, we mainly found xerosis and palmoplantar hyperlinearity (98.8%), followed by papules and the Dennie–Morgan sign (84.5%) and lichenification (60.7%). These results agreed with those by Yew et al. obtained in 2019 as well as by Kaufman et al. in 2018, who mentioned higher rates of xerosis, papular lesions, lichenified lesions, palmoplantar hyperlinearity, and the Dennie–Morgan sign in Africa [34,35]. This highlights

the existence of clinical characteristics specific to each breed.

Following multiple analyses, we obtained the factors associated with AD: the mother's occupation (housewife (aOR = 3.68; 95% CI = 1.11–12.28; $p = 0.034$), retired (aOR = 10, 21; 95% CI = 1.92–54.38; $p = 0.006$), private sector workers (aOR = 2.92; 95% CI = 1.22–6.96; $p = 0.016$), primary level of education for the participants (aOR = 3.50; 95% CI = 1.22–10.02; $p = 0.02$) and secondary level of education of the fathers (aOR = 0.24; 95% CI = 0.09–0.62; $p = 0.003$), a personal history of conjunctivitis (aOR = 2.20; 95% CI = 1.01–4.81; $p = 0.047$), asthma in the siblings (aOR = 0.14; 95% CI % = 0.02–0.83; $p = 0.030$) and lesions on the flexion folds and/or cheeks (aOR = 5.57; 95% CI = 2.50–12.39; $p < 0.01$). These results were in line with those obtained by Thorsteinsdottir et al. in 2019, who found an association with high social circumstances (parents' income and level of education) (OR = 1.6; 95% CI = 1–2.5; $p = 0.05$), yet not with a family history of atopy or early life events [4,13]. However, they differed from those by Kelbore et al., who found an association with personal atopy (aOR = 10.5; 95% CI = 1.3–85.6). These results could be explained by the difference in environmental and genetic interactions between individuals. These results also corroborate the hygienist theory in the occurrence of AD [10,12]. Indeed, parents with a high standard of living and education are supposed to have more knowledge and, therefore, pay more attention to the hygiene of children, who would be less subject to infections, thus modifying the different microbiota and increasing sensitivity to environmental allergens, which is also true for housewives or retired mothers who, because of their availability, have more time to devote to their children.

Limitations

Working only in Yaoundé and in a hospital-based study represented the limits of our work. Also, the non-probabilistic mode of selection and the absence of patch tests constituted an obstacle to the generalization of our study.

CONCLUSION

In our study, AD was more common in children and females whose parents had a university level of education. Most had a history of taking early antibiotics and vaccinations and had gardens/fields yet no pets. The factors associated with AD were the mother's profession (housewife, retired, private sector agent), a family history of asthma in the siblings, and a personal history of allergic conjunctivitis as well as lesions on the flexion folds and cheeks in childhood.

Author Contributions

EAK conceived the study. IBB and GAN collected and entered the data. ANM and IBB analyzed the data. EAK, DNT, GAN, and IBB drafted the manuscript. EAK, DNT, IBB, and GAN proofread and corrected the manuscript. All authors agreed with the final manuscript to be submitted for publication.

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Statement of Human and Animal Rights

All the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the 2008 revision of the Declaration of Helsinki of 1975.

Statement of Informed Consent

Informed consent for participation in this study was obtained from all patients.

REFERENCES

1. Launay F, Stalder J-F, Derbre S. La dermatite atopique : quelques généralités. Actual Pharm. 2014;53:1-3.
2. Dammak A, Guillet G. Dermatite atopique de l'enfant. J Pédiatrie Puériculture. 2011;24:84-102.
3. Just J. Histoire naturelle de la dermatite atopique : expérience des cohortes néonatales. Rev Fr Allergol. 2012;52:168-74.
4. Thorsteinsdottir S, Stokholm J, Thyssen JP, Nørgaard S, Thorsen J, Chawes BL, et al. Genetic, clinical, and environmental factors associated with persistent atopic dermatitis in childhood. JAMA Dermatol. 2019;155:50.
5. Sendrasoa FA, Ranaivo IM, Razanakoto NH, Andrianarison M, Raharolahy O, Ratovonjanahary VT, et al. Epidemiology and associated factors of atopic dermatitis in Malagasy children. Allergy Asthma Clin Immunol. 2020;16:4.
6. Nutten S. Atopic dermatitis: Global epidemiology and risk factors. Ann Nutr Metab. Karger Publishers; 2015;66:8-16.
7. Pefura-Yone EW, Jeddi Z, Kouotou EA, Delimi B, El Gueddari Y, Karkar R, et al. État des lieux de la dermatite atopique de l'enfant et de l'adulte en Afrique sub-saharienne et au Maghreb. Rev Fr Allergol. Elsevier Masson SAS; 2020;60:297-9.
8. Schmid-Grendelmeier P, Takaoka R, Ahogo KC, Belachew WA, Brown SJ, Correia JC, et al. Position statement on atopic dermatitis

in sub-Saharan Africa: Current status and roadmap. J Eur Acad Dermatol Venereol. 2019;33:2019-28.
9. Bieber T, Leung D, Ivancevich J-C, El Gamal Y. The burden of allergic diseases: Atopic eczema and contact dermatitis. In: Pawankar R, Holgate ST, Canonica GW, Lockey RF, éditeurs. World Allergy Organization (WAO) white book on allergy. United Kingdom: WAO; 2011. p. 212-39.
10. Appay M. Dermatite atopique de l'enfant, un traitement strictement symptomatique. Actual Pharm. 2020;59:18-23.
11. Chiesa Fuxench ZC. Atopic dermatitis: Disease background and risk factors. Adv Exp Med Biol. 2017;1027:11-9.
12. Barbarot S, Aubert H. [Pathophysiology of atopic dermatitis]. Ann Dermatol Vénéréologie. 2017;144 Suppl 1:S14-20.
13. Kelbore AG, Alemu W, Shumye A, Getachew S. Magnitude and associated factors of Atopic dermatitis among children in Ayder referral hospital, Mekelle, Ethiopia. BMC Dermatol. 2015;15:15.
14. Waton J. Physiopathologie de la dermatite atopique. Ann Dermatol Vénéréologie. 2017;144:VS8-14.
15. Kouotou EA. Atopic dermatitis in adults from sub-Saharan Africa: Epidemiological and clinical patterns, severity, and quality of life. Our Dermatol Online. 2021;12:1-6.
16. Kouotou EA, Nansseu JRN, Ngangue Engome AD, Tatah SA, Zoung-Kanyi Bissek AC. Knowledge, attitudes and practices of the medical personnel regarding atopic dermatitis in Yaoundé, Cameroon. BMC Dermatol. 2017;17:1.
17. Kouotou EA, Fadankab Zabi B, Zoung-Kanyi Bissek A, Mendouga Menye C, Ndjitoyap Ndam E. Profil Epidémiologique des Dermatoses Immuno-Allergiques à Yaoundé: Etude Rétrospective sur 5ans. Health Sci Dis. 2020;21:21-8.
18. Herrant M, Loucoubar C, Boufkhed S, Bassène H, Sarr FD, Baril L, et al. Risk factors associated with asthma, atopic dermatitis and rhinoconjunctivitis in a rural Senegalese cohort. Allergy Asthma Clin Immunol. 2015;11:24.
19. Bagdaban AL. Dermatite atopique chez l'enfant à l'Hopital Gynéco-Obstétrique et Pédiatrique de Yaoundé: aspects épidémiologiques, cliniques et facteurs associés [Internet]. Health sciences and disease; 2018 [cité 25 avr 2021]. Disponible sur: https://www.hsd-fmsb.org/index.php/hsd/thesis/view/730
20. Catteau B. Dermatite atopique : épidémiologie et données cliniques actuelles. Rev Fr Allergol Immunol Clin. 2002;42:373-7.
21. Ezzedine K, Kechichian E. [Epidemiology of atopic dermatitis]. Ann Dermatol Venereol. 2017 Dec;144 Suppl 5:VS4-VS7.
22. Lopez Carrera YI, Al Hammadi A, Huang Y-H, Llamado LJ, Mahgoub E, Tallman AM. Epidemiology, diagnosis, and treatment of atopic dermatitis in the developing countries of Asia, Africa, Latin America, and the Middle East: A review. Dermatol Ther. 2019;9:685-705.
23. Reguiaï Z. [Atopic dermatitis of the adult: clinical presentation, complications and comorbidities]. Ann Dermatol Venereol. 2017 Dec;144 Suppl 5:VS15-VS22.
24. Misery L. [Burden of atopic dermatitis in adults]. Ann Dermatol Venereol. 2017 Dec;144 Suppl 5:VS23-VS28.
25. Pefura-Yone EW, Diffo Sonkoue L, Balkissou AD, Djenabou A. Prévalence et déterminants de la dermatite atopique chez les adultes en population générale dans un pays d'Afrique sub-saharienne. Rev Fr Allergol. 2017;57:240-1.
26. Faye O, Meledie N'Djong AP, Diadie S, Coniquet S, Niamba PA, Atadokpede F, et al. Validation of the Patient-Oriented SCORing for Atopic Dermatitis tool for black skin. J Eur Acad Dermatol Venereol. 2020;34:795-9.
27. Haileamlak A, Dagoye D, Williams H, Venn AJ, Hubbard R, Britton J, et al. Early life risk factors for atopic dermatitis in Ethiopian children. J Allergy Clin Immunol. 2005;115:370-6.
28. Comparez l'économie des pays: Cameroun vs Éthiopie 2021 | countryeconomy.com [Internet]. [cité 25 juin 2021]. Disponible sur: https://fr.countryeconomy.com/pays/comparer/cameroun/ethiopie
29. Kouotou EA, Tchanou Wamy C, Nansseu JRN, Sieleunou I. Dermatite atopique : facteurs associés et apport des prick tests en milieu hospitalier camerounais. Rev Fr Allergol. 2017;5:239.
30. Herrant M, Loucoubar C, Bassène H, Gonçalves B, Boufkhed S, Diene Sarr F, et al. Asthma and atopic dermatitis are associated with increased risk of clinical *Plasmodium falciparum* malaria. BMJ Open. 2013;3:e002835.
31. Yemaneberhan H, Flohr C, Lewis SA, Bekele Z, Parry E, Williams HC, et al. Prevalence and associated factors of atopic dermatitis symptoms in rural and urban Ethiopia. Clin Htmlent Glyphamp Asciiamp Exp Allergy. 2004;34:779-85.
32. Kouassi YI, Ahogo KC, Bih OF, Kouassi KA, Kourouma HS, Allou AS, et al. Évaluation de la qualité de vie des enfants atteints de dermatite atopique par le score CDLQI en milieu tropical africain. Ann Dermatol Vénéréologie. 2019;146:A187.
33. Nakamura T, Haider S, Colicino S, Murray CS, Holloway J, Simpson A, et al. Different definitions of atopic dermatitis: Impact on prevalence estimates and associated risk factors. Br J Dermatol. 2019;181:1272-9.
34. Yew YW, Thyssen JP, Silverberg JI. A systematic review and meta-analysis of the regional and age-related differences in atopic dermatitis clinical characteristics. J Am Acad Dermatol. 2019;80:390-401.
35. Kaufman BP, Guttman-Yassky E, Alexis AF. Atopic dermatitis in diverse racial and ethnic groups-Variations in epidemiology, genetics, clinical presentation and treatment. Exp Dermatol. 2018;27:340-57.

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Our Dermatology Online

Original Article

Eruptive pseudoangiomatosis: An epidemiological and clinical study

Abdullah Mancy, Khalid M. Awad, Zainab Hafedh

Department of Dermatology and Venereology, Al-Ramadi Teaching Hospital, Al-Anbar Health Directorate, Ministry of Health, Iraq.

Corresponding author: Abdullah Mancy, MD, E-mail: abdmancy@yahoo.com

ABSTRACT

Background: Eruptive pseudoangiomatosis is an acute-onset illness presenting with a characteristic rash mainly on the exposed parts of the body. It is mostly symptomless and resolves spontaneously without sequels. Numerous agents are suspected to trigger the disease. **Materials and Methods:** Forty-five patients affected with eruptive pseudoangiomatosis were examined at the Dermatology and Venereology Department of Al-Ramadi Teaching Hospital during the period from January 1, 2018, to January 1, 2020. History taking and physical examination in addition to laboratory investigations were done for all patients. **Results:** Forty-five patients, 27 females and 18 males, were examined. Their mean age was fifteen years and the female-to-male ratio was 1.5:1. The younger age group was the most involved and a family history was detected in 5%. Prodromal symptoms were found in 63.8% and pruritus was a complaint in 35.5% of the patients. The extremities and face were the most affected and the disease was more common during the spring season. **Conclusion:** Eruptive pseudoangiomatosis is a spontaneously-resolving illness without complications, yet one must be aware of it and keep it in mind when facing a viral rash to avoid unnecessary investigations and treatments and to provide reassurance to the patient and their family.

Key words: angioma; pseudoangioma; viral infection; pruritus; URTI

INTRODUCTION

Eruptive pseudoangiomatosis (EPA) is a sudden-onset disease that affects children mainly [1]. Previously, a disease with an acute onset of reddish and blanchable papules associated with elevated body temperature was described in a number of children to resolve spontaneously; later on, the same disease was observed in adults [2]. Clinically, the disorder is manifested as small papules surrounded by a pale halo mostly on the exposed surfaces of the body, yet the covered areas may also be affected [3]. On microscopical examination of the affected skin, there is no inflammation or increased number of blood vessels, thus it is known as pseudoangioma [1,4]. The illness resembles a common disease that occurs in Japan caused by an insect bite [5]. It appears that mosquito bites, flea bites and bites by other arthropods, viral infections, an enhanced insect bite reaction, immunocompromised diseases, and drugs are the possible pathogenic causes of the disease [6]. Herein, we report forty-five patients with this condition and attempt to explore their epidemiological and clinical manifestations.

MATERIALS AND METHODS

Forty-five patients presented with clinical manifestations of suspected EPA to the Dermatology and Venereology Department of Al-Ramadi Teaching Hospital during the period from January 1, 2018, to January 1, 2020. A history was taken from those affected and from their parents regarding their age, sex, duration of the illness, and any preceding symptoms of infections. Also, they were inquired about other affected family members and any associated pruritus. A history of medical diseases and drug ingestion was inquired about. Clinical examination was performed regarding

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the skin and other body systems. The types, numbers, and sites of lesions were noted and the examination of the hair, nails, and mucus membrane of the mouth was performed. Complete blood, liver, renal function and other tests were done when indicated. Informed consent was obtained from all patients or their parents. The study was approved by the institutional ethics committee.

RESULTS

Forty-five patients, twenty-seven females and eighteen males, were seen, with their age ranging from four months to seventy years, with a mean age of fifteen years. The female-to-male ratio was 1.5:1. The most commonly affected patients were those younger than ten years of age (48.9%), followed by those 11-20-year-old (31%) (Fig. 1). The patients presented with preceding symptoms of the upper respiratory tract or gastrointestinal infections or with a history of insect bites or associated diseases in 66.7% (Table 1). Other affected members of the family were found in 5%. The disease was associated with mild pruritus in 35.5%. The most commonly affected sites were the extremities and face (Fig. 2). The disease was manifested by the abrupt appearance of small, red macules and papules surrounded by a pale halo distributed mainly on the exposed part of the body, especially the face and extremities (Fig. 3). There was a seasonal variation of the disease with a peak incidence in the spring (Fig. 4). Histopathological examination of the affected skin revealed a normal epidermis with slight perivascular lymphocytic infiltrates in the papillary dermis and dilated capillaries with prominent endothelial cells (Fig. 5).

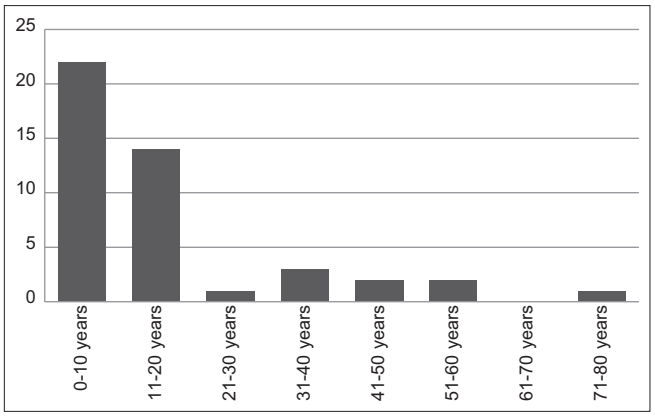

Figure 1: Age distribution among the forty-five patients with eruptive pseudoangiomatosis.

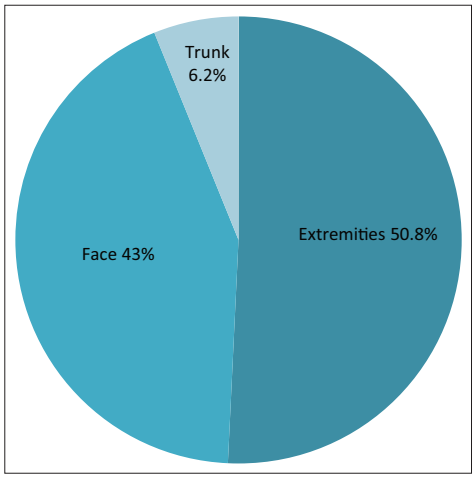

Figure 2: Body sites affected by eruptive pseudoangiomatosis.

Table 1: Associated illnesses among the patients with eruptive pseudoangiomatosis

	No. of patients	%
No associations	15	33.3
With associations	30	66.7
Associated illness		
Multiple boils	1	3.33
Upper respiratory tract infection	20	66.67
Common warts	1	3.33
Insect bite	3	10
Cholinergic urticaria	1	3.33
Gastrointestinal tract infection	2	6.67
Scabies	1	3.33
Diabetes mellitus	1	3.33

DISCUSSION

Eruptive pseudoangiomatosis is a spontaneously-resolving illness without sequels, with its first reported cases in children and, later on, in adults as well [2]. In the present study, the most affected patients were in the first decade of life, followed by those in the second decade. Thus, the disease usually affects those in the lower spectrum of life, as described by González et al. [6] and others [7,8]. This may potentiate the viral etiology in the pathogenesis of the disease because children and young age groups are more susceptible to viral infections because their immunity remains not built well enough against these particles. Females were affected more than males, at a ratio of 1.5:1. There is variation in the literature regarding sex involvement. Some noticed no difference in sex involvement [9], others described the female-to-male ratio as 3:1 [10], while in other studies, when considering adult patients, females constituted a ratio of 2:1 [3]. Most cases of EPA were associated with prodromal symptoms before the appearance of the rash. In the studied cases, 42.6% had symptoms of an upper respiratory infection, such as

cough, fever, runny nose, sore throat, malaise, tiredness, and gastro-intestinal tract symptoms such as diarrhea in 4.3%. These were described in a study by Chaniotakis et al. [8] and by most reports [1-3,5]. These features of prodromal symptoms may explain the suspected viral cause of the illness. Another association with EPA was insect bites (6.4%); the rash could have been a result of the bites because a similar rash was induced by a *Culex pipiens pallens* bite in Japan [11,12]. In Middle Eastern countries, a similar illness that attacks children, known as *purpura pulicosa*, has been linked to flea bites, thus arthropod bites may be the etiological agent of EPA [13]. This may explain the associated scabies in 2.1% of the cases. EPA usually arises in healthy patients yet has been reported in immunocompromised patients and those on chemotherapy [5,8,14,15]. Hence, the association of skin infections manifested as boils, common wats, or diabetes mellitus, each in 2.1%, may explain the suppressed immune status or may be merely incidentally present. The most involved body regions in EPA are the exposed sites, as mentioned by Rivas-Calderón et al. [16] and Oka et al. [17]. In the present study, the extremities were the most commonly affected (50.8%), followed by the face (43%), and trunk (6.2%). Affections with EPA may follow variable seasonal variations with different reports from different parts of the world. In a study by Cheng et al, it mostly occurred during the summer season [3,7,8,18], and in a study by Chuh et al., it was in the spring and summer seasons [2,9,10]. In the present study, 51.2% of the cases occurred during spring and 25.6% during autumn. These seasonal variations in various regions of the world may explain the regional availability of the causative agents such as viral infections, insects, and so forth. The etiology of EPA is unknown yet could be a reactive process to different initiating agents [7]. These inciting agents may include viruses such as enteric cytopathic human orphan (ECHO) viruses, cytomegalovirus (CMV), Epstein–Barr virus, adenovirus, coxsackie B [1,2,9,15], and parvovirus B19 [7,10]. The hypothesis of the viral cause depends, in most cases, on the presence of prodromal symptoms, spontaneous resolution, the appearance of more than one case within the family, and the recurrence of the disease [7,12,19]. The outbreak occurrence of EPA in European countries [20,21] potentiates this opinion. Other causes that may initiate the illness are arthropod insults such as insects and fleas bite, particularly when the exposed sites are affected [11]. When the rash affects the covered parts of the body, other causes should be suspected, such as drugs, herbal medicines, and foods [7,19].

Figure 3: Rash of eruptive pseudoangiomatosis on the (a) hands and forearms and (b) face.

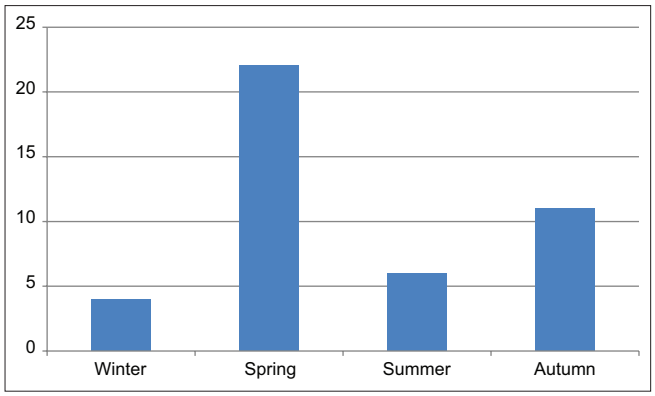

Figure 4: Distribution of the cases of eruptive pseudoangiomatosis according to the season of the year.

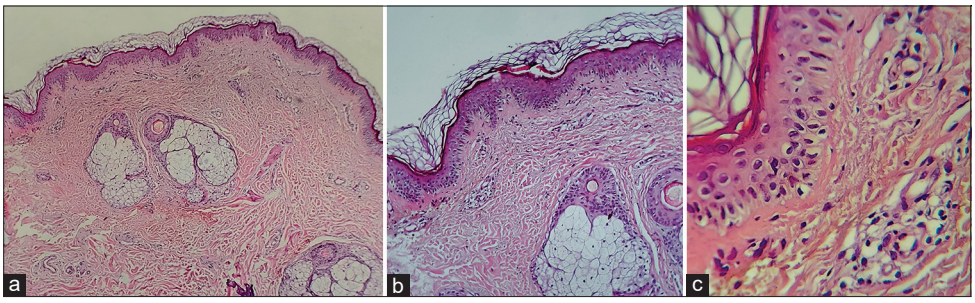

Figure 5: Histopathological examination of a lesion of eruptive pseudoangiomatosis revealing a normal epidermis with mild perivascular lymphocytic infiltrates in the papillary dermis and dilated capillaries with prominent endothelial cells (H&E; a) 10×, b-c) 40×).

Immunosuppression, whether by disease or drugs, may trigger the illness [7,8]. The diagnosis of EPA mainly depends on its characteristic clinical features. Histopathological examination is not pathognomonic yet may exclude other diseases resembling it [6]. The histopathological features consist of dermal blood vessel dilatation with plump endothelial lining with perivascular infiltration of lymphocytes [22]. Numerous hypotheses have attempted to explain the character of the rash. The central erythema may result from the dilatation of the capillaries induced by different agents, while the associated perivascular edema gives rise to the papule and the vasoconstriction around the vasodilatation of the papules results in a pale ring around the lesion [12]. The differential diagnosis of EPA is bacillary angiomatosis, spider telangiectasia, pyogenic granuloma, papular urticaria, and other viral exanthems [7,22].

CONCLUSIONS

Eruptive pseudoangiomatosis is an illness of unknown etiology, yet numerous factors may be suspected. In most cases preceded by the prodromal symptoms of upper respiratory or gastrointestinal tract infections, a viral etiology is considered a triggering agent. In other cases not associated with prodromal symptoms, other triggering factors may be suspected such, as an arthropod's bite, drugs, foods, and underlying diseases.

Statement of Human and Animal Rights

All the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the 2008 revision of the Declaration of Helsinki of 1975.

Statement of Informed Consent

Informed consent for participation in this study was obtained from all patients.

REFERENCES

1. Kushwaha RK, Mohta A, Jain SK. A case of eruptive pseudoangiomatosis: Clinical, histopathological, and dermoscopic findings. Indian Dermatol Online J. 2020;11:672-3.
2. Chopra D, Sharma A, Kaur S, Singh R. Eruptive pseudoangiomatosis: Cherry angiomas with perilesional halo. Indian J Dermatol Venereol Leprol. 2018;84:424-30.
3. James WD, Elastone DM. Treat J, Rosenbach MA, Neuhaus SA. Viral Diseases In: Andrews Diseases of the Skin: Clinical Dermatology.13th ed. Philadelphia. Elsevier Inc, 2020:411-77.
4. Vikash SO, Mathes E. Exanthematous viral diseases In: Sewon K, Masayuki A, Anna LB, Alexander HE, David JM, Amy JM, editors. Fitzpatrick's Dermatology. 9th ed. McGraw-Hill; 2019:2989-3021.
5. Neri I, Patrizi A, Guerrini V, Ricci G, Cevenini R. Eruptive pseudoangiomatosis. Br J Dermatol. 2000;143:435-8.
6. González SS, Mendez RG, López AF, Lupita N, Ana KH, Marisol RP, et al. Eruptive pseudoangiomatosis in adults with immune system disorders: A report of two cases. Dermatol Reports. 2020;12:8836.
7. Pérez-Barrio S, Gardeazábal J, Acebo E, Martínez de Lagrán Z, Díaz-Pérez JL. Eruptive pseudoangiomatosis: Study of 7 cases. Actas Dermosifiliogr. 2007;98:178-82.
8. Chaniotakis I, Nomikos K, Gamvroulia C,Zioga A, Stergiopoulou C, Basssukas ID. Eruptive pseudoangiomatosis: Report of an adult case and unifying hypothesis of the pathogenesis of pediatric and adult cases. Dermatology. 2007;215:59-62.
9. Chuh A, Zawar V, Sciallis GF, Kempf W, Lee A. Pityriasis rosea, Gianotti–Crosti syndrome, asymmetric periflexural exanthem, papular-purpuric gloves and socks syndrome, eruptive pseudoangiomatosis, and eruptive hypomelanosis: Do their epidemiological data substantiate infectious etiologies? Infect Dis Rep. 2016;8:6418.
10. Fatima M, Camilla V, Federica D, Giorgio AC, Christian C, Valeria B. Eruptive pseudoangiomatosis: Clinicopathological report of 20 adult cases and a possible novel association with parvovirus B19. Acta Derm Venereol. 2021;101:adv00398.
11. Sanjay S, Baldeeep KM. Eruptive pseudoangiomatosis. Indian J Dermatol Venereol Leprol 2013;79:151-64.
12. Neri I, Assirelli V, Chessa M, Gurioli C, Filippi F, Virdi A. Eruptive pseudoangiomatosis induced by mosquito bites in an infant. Dermatol Pract Concept. 2019;10:e2020024.
13. Lucia R, Riccardo C, Cristiano C, Stefano C. Eruptive pseudoangiomatosis caused by an insect bite. J Am Acad Dermatol. 2005;52:174-5.
14. Mazereeuw-Hautier J, Cambon L, Bonafé JL. Eruptive pseudoangiomatosis in an adult renal transplant recipient. Ann Dermatol Venereol. 2001;128:55-6.
15. Pitarch G, Torrijos A, García-Escrivá D, Martínez-Menchón T. Eruptive pseudoangiomatosis associated to cytomegalovirus infection. Eur J Dermatol. 2007;17:455-6.
16. Rivas-Calderón MK, Morán-Villaseñor E, Maza-Ramos G, Orozco-Covarrubias L, Corcuera-Delgado CT, Sáez-de-Ocariz M. Eruptive pseudoangiomatosis in two children with acute lymphoblastic leukemia. Int J Dermatol. 2018;57:e38-e40.
17. Oka K, Ohtaki N, Kasai S. Two cases of eruptive pseudoangiomatosis induced by mosquito bites. J Dermatol. 2012;39:301-5.
18. Cheng Tan, Zhu WY, Min ZS. A case of recurrent eruptive pseudoangiomatosis that responded well to pimecrolimus 1% cream. Dermatology. 2009;218:181-3.
19. Kim JE, Kim BJ, Park HJ. Clinicopathologic review of eruptive pseudoangiomatosis in Korean adults: Report of 32 cases. Int J Dermatol. 2013;52:41-5.
20. Hoeger PH, Colmenero I. Vascular tumours in infants. Part I: Benign vascular tumours other than infantile haemangioma. Br J Dermatol. 2014;171:466-73.
21. Brouillard C, Guyot Caquelin P, Truchetet F. An outbreak of eruptive pseudoangiomatosis. Ann Dermatol Venereol. 2012;139:684-5.
22. Henry M, Savasan S. Eruptive pseudoangiomatosis in a child undergoing chemotherapy for Hodgkin lymphoma. Pediatr Blood Cancer. 2012;59:342-3.

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Our Dermatology Online

Original Article

Spectrum of cutaneous manifestations in neonates at a tertiary care center

Bangaru Bhavani Pujitha, Rida Joweriya, Birudala Ramadevi, Thambisetti Naresh Babu, Kuna Ramadas

Department of Dermatology Venereology and Leprosy, Kamineni Academy of Medical Sciences and Research Centre, Hyderabad-500068, India

Corresponding author: Rida Joweriya, MD, E-mail: ridajoweriya@gmail.com

ABSTRACT

Background: The neonatal period encompasses the initial four weeks of extra-uterine life. Skin lesions in neonates range from transient physiological, self-limiting conditions to pathological dermatoses. An awareness of the physiological skin changes in neonates is needed to differentiate them from pathological dermatoses, thereby avoiding unnecessary treatment and mental stress to the parents. **Aim**: The aim was to study the clinical pattern of neonatal dermatoses and their prevalence at a tertiary care center. **Materials and Methods**: An institutional, prospective, observational study was conducted at the outpatient department of dermatology, venereology, and leprosy. A total of 195 neonates from the postnatal ward, pediatric ward, and dermatology department of the same institution with at least one cutaneous manifestation over the period of six months were included in the study. **Results**: Among the 195 neonates, cutaneous manifestations were noted in 176 neonates (90.8%), among which 82 (46%) were males and 94 (54%) were females; 163(92%) were full-term and 14 (8%) were preterm; 89 (51%) were born through vaginal delivery and 87 (49%) by caesarean section. Skin manifestations may be broadly divided into physiological skin lesions accounting for 80% of cases, transient non-infective conditions (10%), eczematous eruptions (2%), birthmarks (3%), and others (5%). The most common among all was the Mongolian spot accounting for 98 (56%) cases. **Conclusion**: A majority of the neonatal dermatoses were transient physiological, requiring only reassurance and no medical treatment; however proper understanding and identifying the pathological conditions are critical for early diagnosis and intervention.

Key words: Neonatal dermatoses; Mongolian spot; Physiological; Sebaceous gland hyperplasia

INTRODUCTION

The neonatal period encompasses the initial four weeks of extra-uterine life. Neonatal skin differs from adult skin by being thinner (40–60%), less hairy, with a weaker dermoepidermal attachment, and being less effective in detoxifying and eradicating compounds applied to it [1]. As compared to adult skin, which comprises 3% of the total body weight, neonatal skin comprises 13% of the body weight. In addition, a neonate has a body surface area-to-weight ratio three to five times of an average adult. The stratum corneum is markedly thinner in a premature neonate and lipid production is also minimal due to immature epidermal and sebaceous gland function.

Neonatal skin diseases are fascinating, with a unique spectrum of dermatological conditions. A host of cutaneous manifestations varying from physiological (such as the Mongolian spot) to grossly pathological (incontinentia pigmenti) are seen in neonates. Sometimes, innocent rashes in a neonate may be confused with pathological conditions. Hence, the understanding of benign cutaneous conditions

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in the newborn and the ability to identify more worrisome presentations are essential to the care of the neonate, aiding the physicians in arriving at a correct diagnosis and avoiding unnecessary investigations and medications, ultimately relieving the anxiety and mental trauma of the parents.

The present literature in our country is meager and further understanding of neonatal cutaneous manifestations would be helpful.

MATERIALS AND METHODS

A hospital-based, prospective, observational study was conducted at the department of dermatology from September 2020 to March 2021. Cases were enrolled from the labor room, postnatal ward, and dermatology outpatient department. A total of 195 newborns up to one month of age over a period of six months, irrespective of the mode of delivery, gestational age, and sex, were included in the study.

A complete medical history regarding the onset, duration, and progression of the lesion and any treatment given together with gestational age and family history were taken. A detailed examination of the neonate was performed from the head to toe including the head and chest circumference, length, clubbing, icterus, and vitals of the neonate along with cutaneous examination, which included the morphology and distribution of the lesions. Mucosal examination of the neonate was performed, including the oral, genital, buccal, and nasal mucosa. The hair was examined for any alopecia patches, color, texture, and density. The nails were examined for brittleness or discoloration.

Ethics Statement

Institutional ethical committee certificate was taken.

RESULTS

Among the 195 neonates, 176 (90.2%) neonates had one or more cutaneous manifestations. Among the 176 neonates, 94 (54%) were females, 82 (46%) were males (Fig. 1); 162 (92%) were born at term and 14 (8%) were preterm. The average birth weight between 2.5–3 kg was seen in 133 (76%) cases, low birth weight was observed in 24 (42%), and very low birth weight was observed in one (0.5%). With regard to comorbidities, ten (5.6%) mothers had hypothyroidism; six (3.4%) had gestational diabetes mellitus, and two (1.1%) had hypertension. Regarding maternal insults, placenta previa was encountered in three (1.7%) mothers, meconium stained liquor in two (1.1%), and dengue, COVID, and abruptio placenta in one mother each (0.5.%). Only one case of dichorionic diamniotic twins was seen in our study.

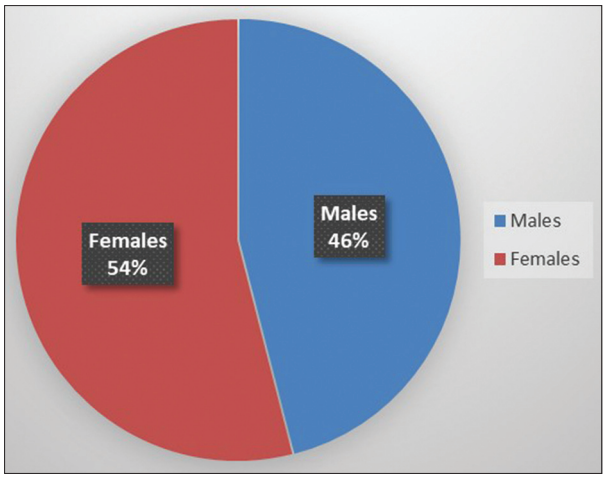

Figure 1: Sex distribution of the neonates.

The percentage of consanguineous marriages and non-consanguineous marriages among the parents of the neonates were seen in 20% and 80% of the cases, respectively. The mode of delivery was 89 (51%) cases of caesarian and 87 (49%) cases of normal vaginal delivery.

In our study, physiological skin lesions were more common, accounting for 215 (80%) cases, followed by transient non-infective conditions in 26 (10%), others in 15 (5%), birthmarks in 8 (3%), and eczematous eruptions in 7 (2%), in decreasing order of frequency (Figs. 2 and 3) (Table 1).

Most of the neonates had more than one physiological skin lesion, among which the Mongolian spot was most commonly seen in 98 neonates (56%), out of which 54 (55%) were females and 44 (45%) were males. The most common site of location was the lumbosacral area, buttocks, and extremities, in decreasing order of frequency. Sebaceous gland hyperplasia (Fig. 4) was seen in 63 neonates (36%), among which 34 (54%) were males and 29 (46%) were females. Milia (Fig. 5) was seen in 32 neonates (18%), among which 15 (46%) were females and 17 (54%) were males; most commonly on the forehead and nose, followed by the chin.

With respect to maturity, skin lesions were more common in preterm neonates when compared to

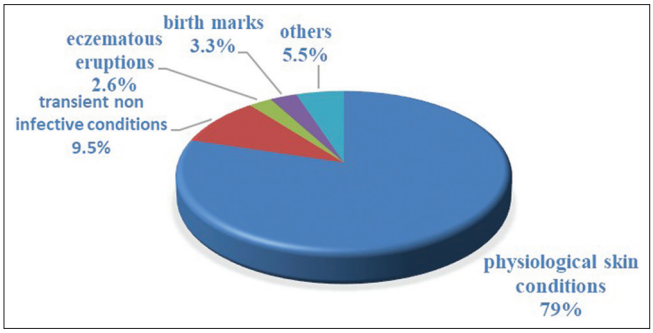

Figure 2: Types of neonatal dermatoses seen.

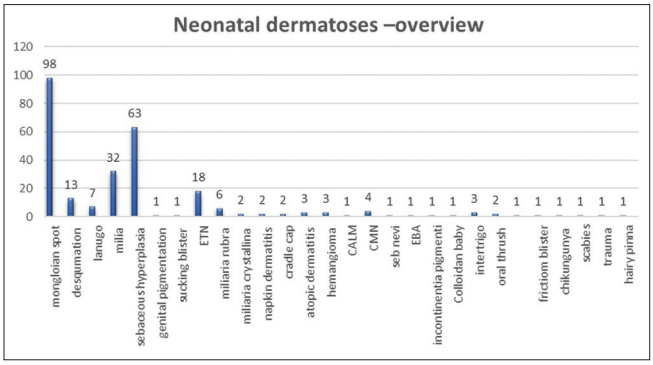

Figure 3: Overview of all dermatoses.

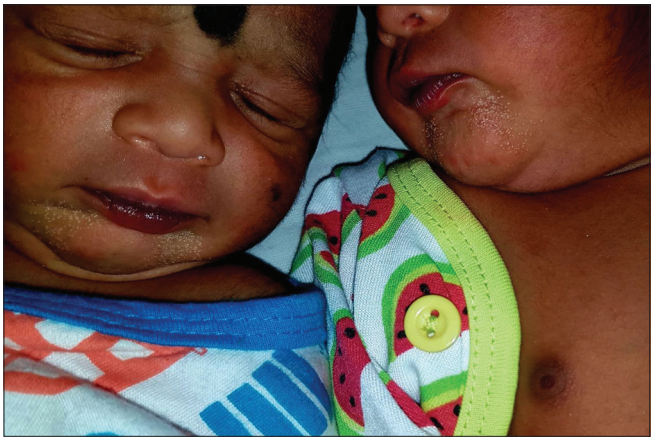

Figure 4: Sebaceous gland hyperplasia.

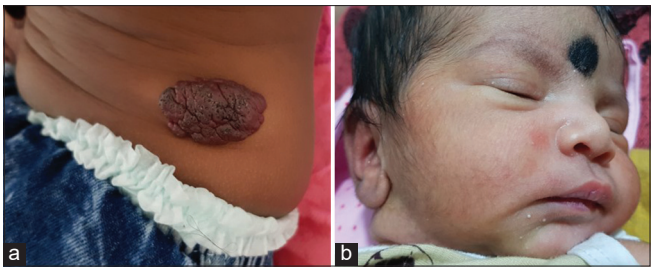

Figure 5: (a) Hemangioma and (b) milia.

Table 1: Frequency of cutaneous manifestations in the neonates.

Skin Manifestation	N	Percentage (%)
Physiological		
i Desquamation	13	7%
ii Mongolian spot	98	56%
iii Hypertrichosis lanuginosa	7	4%
iv Milia	32	18%
v Sebaceous gland hyperplasia	63	36%
vi Genital pigmentation	1	0.5%
vii Sucking blister	1	0.5%
Transient non-infective dermatoses		
i ETN	18	10.2%
ii Miliaria rubra	6	3.4%
iii Miliaria crystallina	2	1.1%
Eczematous eruptions		
i Napkin dermatitis	2	1.1%
ii Cradle cap	2	1.1%
iii Atopic dermatitis	3	1.7%
Birthmarks		
i Vascular	3	1.7%
• Hemangioma	1	0.5%
ii Pigmentary	4	2.2%
• CALM	1	0.5%
• CMN		
• Sebaceous nevi		
Others		
i EBA	1	0.5%
ii Incontinentia pigmenti	1	0.5%
iii Collodion baby	1	0.5%
iv Neonatal acne	1	0.5%
v Intertrigo	3	1.7%
vi Oral thrush	2	1.1%
vii Friction blister	1	0.5%
viii Chikungunya	1	0.5%
ix Scabies	1	0.5%
x Trauma	1	0.5%
xi Hairy pinna	1	0.5%
xii Insect bite reaction		

term neonates. The Mongolian spot was seen in 90 (55%) term neonates and 8 (57%) preterm neonates. Sebaceous gland hyperplasia was seen in 55 (33%) term neonates and 8 (57%) preterm neonates. Milia was seen in 31 (19%) term neonates and 1 (7%) preterm neonate. Hypertrichosis lanuginosa was seen in 6 (3%) term neonates and 1 (7%) preterm neonate. Miliaria rubra was seen in 5 (3%) term neonates and 1 (7%) preterm neonate.

Erythema toxicum neonatorum (Fig. 6) was most commonly seen among the transient non-infective dermatoses, accounting for 18 (10%) neonates, among which 12 (67%) were males and 6 (33%) were females. Miliaria rubra was seen in 6 (3.4%) neonates, with no sex predilection. Miliaria crystallina (Fig. 7) was seen in 2 (1%) term male neonates.

Eczematous eruptions were seen in 7 (2.5%) neonates, among which 4 (57%) were males and 3 (43%) were females. Atopic dermatitis was seen in 3 (1.7%) neonates, among which 2 (67%) were males and 1 (33%) was a female. Cradle cap was seen in 2 (1%) male term neonates and napkin dermatitis was seen in 2 (1%) female term neonates.

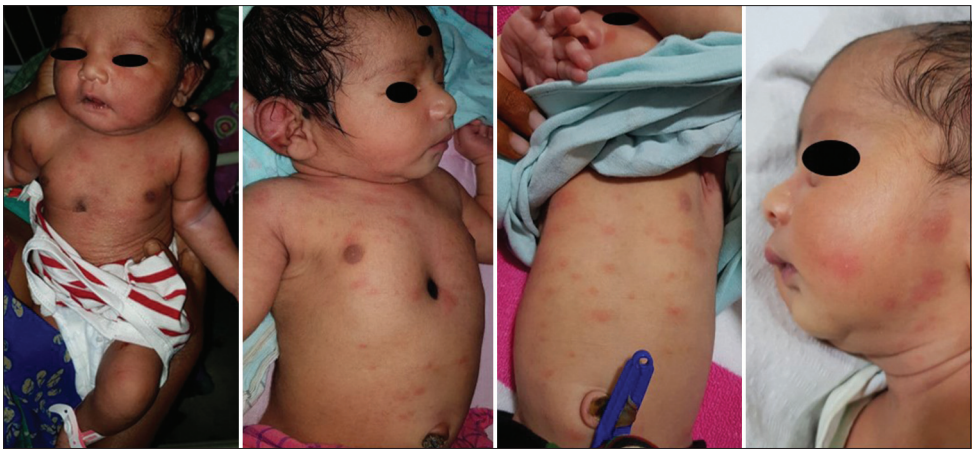

Figure 6: Erythema toxicum neonatorum- different presentations.

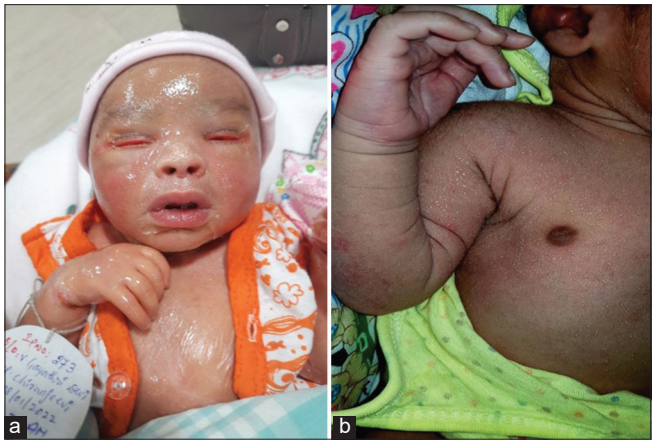

Figure 7: (a) Collodion baby and (b) miliaria crystallina.

Birthmarks were seen in 9 (3%) neonates, among which vascular birthmarks (hemangioma) (Fig. 5) were seen in 3 (1.7%) neonates, among which 2 (67%) were female and 1 (33%) was male. Pigmentary birthmarks were seen in 6 (3.4%) neonates, among which congenital melanocytic nevi were seen in 4 (2.2%) neonates, sebaceous nevi were seen in 1 (0.5%) female term neonate and café-au-lait macules were seen in 1 (0.5%) neonate.

Other neonatal dermatoses seen were intertrigo in 3 (1.7%) cases, oral thrush in 2 (1.1%), epidermolysis bullosa in 1 (0.5%), incontinentia pigmenti in 1 (0.5%), collodion baby in 1 (0.5%), neonatal acne in 1 (0.5%), friction blister in 1 (0.5%), scabies in 1 (0.5%), hairy pinna in 1 (0.5%), chikungunya in 1 (0.5%), trauma/bruise in 1 (0.5%), and insect bite reaction in 1 (0.5%). Due to the intravenous insertion of the cannula and the withdrawal of blood samples, the most common area involved in bruises was the hands according to previous studies (Figs. 7 and 8).

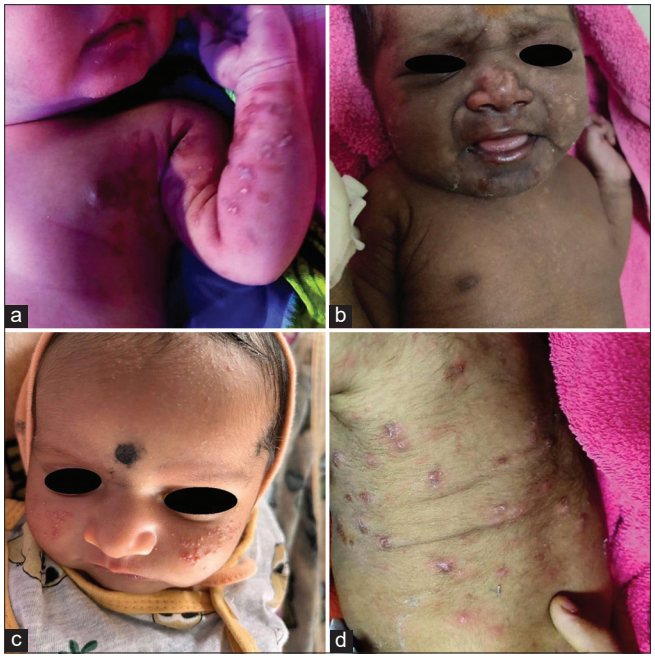

Figure 8: (a) Incontinentia pigmenti, (b) chikungunya pigmentation, (c) neonatal acne, and (d) scabies.

One case of collodion baby was seen having a glue-like, transparent membrane covering the entire body of neonate at birth with eclabium and ectropion.

DISCUSSION

In the present study, among the 176 neonates, 94 were females and 82 were males, which correlates well with a study by Zagne et al., wherein a female preponderance was observed [2]. However, this is incongruous with a study done by Deshpande et al. and Saranya et al. wherein a male preponderance was seen [3,4].

The most common dermatosis observed was the Mongolian spot in 56% of the neonates. A similar

incidence was seen in studies done by Zagne et al., Saranya et al., Uzma et al., Khoshnevisasl et al., and Vijay et al. [2,4-7]. These are slate-gray to blue macules varying from 3 to 10 cm in size. The most common site of location was the lumbosacral area, followed by the buttocks and extremities, yet the Mongolian spot was extensive, covering much of the trunk and buttocks in two neonates. The color is produced by melanocytes deep in the dermis probably as a result of failure to cross the dermo-epidermal junction while migrating from the neural crest during fetal life. Some studies found the prevalence of the Mongolian spot in Asians to be as high as 80% to 90% and 7% to 40% in Caucasians [8,9], suggesting an interracial difference. In Indians, the prevalence ranges from 77% to 84% [3,10,11].

The next common dermatosis witnessed was sebaceous gland hyperplasia in 36% of the neonates, which was in agreement with studies by Vijay et al., Balachandran et al., and Behera et al. [7,12,13]. However, it was incongruous with studies by Gudurpenu et al. and Swathi et al. [14,15], in which a 6.8% and 2.8% incidence was found, respectively. The occurrence of sebaceous gland hyperplasia in other studies varied from 30% to 89.4% [3,5,6,14]. Sebaceous gland hyperplasia was noted in twins in our study. Sebaceous gland hyperplasia in the newborn is a physiologic event secondary to the influence of maternal androgens. This presents as multiple, pinpoint, uniform, yellowish papules on the cheeks, nose, forehead, and upper lips [14].

Milia refers to follicular epidermal cysts appearing as numerous facial 1–3mm globular papules [14]. It was witnessed in 18% of the neonates, which was in concordance with the study by Sneha et al., Farhana et al., and Javed [10,11,16]. The occurrence of milia in other studies ranged from 7% to 42% [5,7,10,11,16,17]. Physiological desquamation was seen in 7% of our cases, more commonly on days 3–6. Hypertrichosis lanuginosa was seen in 4% of the neonates, which was in concordance with a study by Swathi et al. [15].

Erythema toxicum neonatorum (ETN) was most commonly seen among the transient non-infective conditions accounting for 10.2% of the neonates, which was in concordance with studies by Saranya et al. and Javed [4,16]. It is characterized by blotchy, macular erythema with a 1–4 mm central vesicle or pustule usually involving the trunk and extremities and presenting within 48 to 72 hours. The majority of the babies developed ETN on day two of their life. A male predominance was noted in our study.

Miliaria rubra was the second most commonly encountered among the transient non-infective dermatoses, accounting for 3.4% of the neonates, which was in concordance with a study by Divya et al. [18]. The incidence in other studies varied between 2.6% to 9.6%, which may be attributed to the tropical climate of India, the traditional practices of overwrapping babies in swaddles, and massaging oils. Miliaria crystallina was noted in two neonates; one of the mothers' history revealed dengue infection antenatally.

Atopic dermatitis was most commonly noted among the eczematous eruptions; accounting for 1.7% of the neonates, with a male predominance. The peak age noted for the presentation of eczematous disorders was the third-to-fourth week of life.

Benign cephalic pustulosis (neonatal acne) was noted in one baby. Accessory tragus was present in one baby in the left ear; whereas, in previous studies, it was reported in the right ear. A case of congenital hyperpigmentation secondary to chikungunya infection was noted. Among genodermatoses, the features of epidermolysis bullosa simplex and collodion baby and incontinentia pigmenti were seen in 0.5% of the neonates each. Suction blister was noted on the arm in 0.5% of the neonates.

CONCLUSION

It is imperative for pediatricians, dermatologists, and newborn primary care physicians to differentiate the physiological skin changes in neonates from the pathological ones, so as to reassure and convey confidence to the parents regarding physiological changes and guide when intervention is needed. A majority of the newborns had one or more dermatoses, among which physiological dermatoses were seen commonly. This study highlights the different clinical spectra of the presentations of dermatosis in neonates at a tertiary care center. The limitation of our study was the short follow-up period.

Statement of Human and Animal Rights

All the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the 2008 revision of the Declaration of Helsinki of 1975.

Statement of Informed Consent

Informed consent for participation in this study was obtained from all patients.

REFERENCES

1. Oranges T, Dini V, Romanelli M. Skin physiology of the neonate and infant: Clinical implications. Adv Wound Care (New Rochelle). 2015;4:587-95.
2. Zagne V, Fernandes NC. Dermatoses in the first 72 h of life: A clinical and statistical survey. Ind J Dermatol Venereol Leprol. 2011;77:470-6.
3. Deshpande AB, Tolat SN. A clinical study of physiological skin manifestations in neonates. Int J Health Sci Res. 2019;9:43-6.
4. Hogade AS, Saranya D. A clinical study of cutaneous manifestations in neonates. Int J Res Dermatol. 2017;3:130-3.
5. Uzma A, Zaman T, Rashid T, Jahangir M. Cutaneous manifestations in 1000 Pakistani newborns. J Pak Assoc Dermatol. 2010;20:199-205.
6. Khoshnevisasl P, Sadeghzadeh M, Mazloomzadeh S, Zanjani AA. The incidence of birthmarks in neonates born in Zanjan, Iran. J Clin Neonatol. 2015;4:8-12.
7. Agarwal G, Kumar V, Ahmad S, Goel K, Goel P, Prakash A, et al. A Study on neonatal dermatoses in a Tertiary Care Hospital of Western Uttar Pradesh India. J Community Med Health Educ. 2012:2:169.
8. Giuffrida R, Borgia F, De Pasquale L, Guarneri F, Cacace C, Cannavò SP. Skin lesions in preterm and term newborns from Southern Italy and their relationship to neonatal, parental and pregnancy-related variables. G Ital Dermatol Venereol. 2019;154:400-4.
9. Moosavi Z, Hosseini T. One-year survey of cutaneous lesions in 1000 consecutive Iranian newborns. Pediatr Dermatol. 2006;23:61-3.
10. Sneha M, Sadagopan K, Vaishnavi D. A clinical study of cutaneous manifestations in neonates at a tertiary health care center. Int J Res Dermatol. 2021;7:658-62.
11. Haveri FTTS, Inamdar AC. A cross-sectional prospective study of cutaneous lesions in newborns. Int Schol Res Notices. 2014:1-8
12. Kunjukunju BP, Jayamohanan R. A clinical study of physiological skin changes in neonatal period. J Evid Based Med Healthc. 2017;4:2553-7.
13. Behera B, Kavadya Y, Mohanty P, Routray D, Ghosh S, Das L. Study of physiological and pathological skin changes in neonates: An east Indian perspective. Indian J Paediatr Dermatol. 2018;19:40-7.
14. Gudurpenu S, Bubna AK, Rangarajan S, Veeraraghavan M, Krishnamoorthy M, Rajesh G. A clinical study of cutaneous lesions in neonates at a tertiary health care center in Chennai. Indian J Paediatr Dermatol. 2017;18:18-23.
15. Shivakumar S, Manjunathswamy B S, Metgud T, Doshi B. Cutaneous manifestations in neonates: A 1-year cross-sectional study in a tertiary care hospital. Indian J Health Sci Biomed Res. 2018;11:125-9
16. Javed M. Clinical spectrum of neonatal skin disorders at Hamdard University Hospital Karachi, Pakistan. Our Dermatol Online. 2012;3:178-80.
17. Nahar S, Dey D, Elahi A, Haider N, Biswas RSR. Pattern of dermatosis among the admitted neonates in a tertiary care hospital. Chatt Maa Shi Hosp Med Coll J [Internet]. 2020 Aug 28.
18. Gorur DK, Murthy SC, Tamraparni S. Early neonatal dermatoses: A study among 1260 babies delivered at a tertiary care center in South India. Indian J Paediatr Dermatol. 2016;17:190-5.

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Our Dermatology Online

Original Article

The burden of xeroderma pigmentosum in two families followed at the Department of Dermatology and Venereology of the National Hospital in Niamey, Niger

Laouali Salissou[1]*, Muriel Sidnoma Ouédraogo[2], Aissa Ango[1], Adam Nouhou Diori[3], Issaka Hamani[4], Idrissa Boubacar[5], Maimouna Oueodraogo Mamadou[1], Mamane Sani Laouali Idi[1], Moussa Doulla[1], Hassan Nouhou[6], Nina Korsaga/Somé[2], Fatou Barro/Traore[2], Niamba Pascal[2], Adama Traore[2]

[1]Department of Dermatology-Venereology, National Hospital of Niamey, Niger, [2]Department of Dermatology-Venereology, Yalgado Oueodraogo CHU, Kadiogo10 BP 269, Ouagadougou, Burkina Faso, [3]Department of Ophthalmology, National Hospital of Amirou Boubacar Diallo of Niamey, Niger, [4]Laboratory of Cytology and Genetics, Faculty of Health Sciences, ABDOU Moumouni University of Niamey, Niger, [5]Laboratory of Pathological Anatomy, National Hospital of Niamey, Niger, [6]Laboratory of Pathological Anatomy, Faculty of Health Sciences, ABDOU Moumouni University of Niamey, Niger

Corresponding author: Laouali Salissou, MD, E-mail: danmata@yahoo.com

ABSTRACT

Background: Xeroderma pigmentosum (XP) is a highly complex autosomal recessive disease linked to an enzymatic DNA repair disorder. Herein, we report the clinical and evolutionary aspects of XP in Niger. **Materials and Methods:** Our study included patients diagnosed with XP from two families. **Results:** We collected eight patients with an average age of 5.5 years, with extremes of two and thirteen years. The sex ratio was 1. Consanguinity was found in both families. The first tumor appeared between three and five years of age in six cases and around eight years of age in two cases. The tumors were cutaneous in seven cases, and extra-cutaneous in five cases. Histology made it possible to identify basal cell and squamous cell carcinomas without any case of melanoma. Five out of eight died between the age of eight and twelve years. **Conclusion:** Prevention through the reduction of new cases by genetic counseling and antenatal diagnosis in families at risk is necessary.

Key words: XP; Basal cell carcinoma; Squamous cell carcinomas; Early death; Niamey, Niger

INTRODUCTION

Xeroderma pigmentosum (XP) is a rare autosomal recessive disease characterized by pathological sensitivity to UV rays [1,2]. The damage to the DNA caused by UV exposure creates distortions in the DNA helix and disrupts transcription mechanisms. Without total and effective protection against the sun, patients experience accelerated skin aging, burns, pigmentation disorders and the inevitable development of cutaneous and extra-cutaneous lesions that may lead to multiple cancers. The clinical presentation of XP is in its classic form with nine complementation groups (from A to I) and in the so-called variant form [1,3,4]. The incidence of the disease is around 1/250,000 births in the U.S. and 1/20,000 in Japan [3,5]. The aim of this study was to determine the sociodemographic, clinical, histopathological, and evolutionary aspects of XP in two different families in Niger.

MATERIALS AND METHODS

This was a cross-sectional, descriptive study conducted from January 1, 2007, to December 31, 2019 (thirteen

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years), at the Department of Dermatology and Venereology of HNN. The affected patients came from two families whose diagnosis of XP was reached on the basis of clinical arguments. We employed a pre-established survey sheet that included the following variables: sociodemographic (age, sex, origin, mode of admission), clinical (history of the disease, functional signs, general signs, physical signs), paraclinical, in particular, histopathology and progression (age of the onset of the first tumors, complications, age of death).

RESULTS

Eight patients were collected, including four per family. The average age of the patients was 5.5 years, with extremes of two and thirteen years. The sex ratio (male-to-female) was 1. The socioeconomic conditions of both families were low level. The tracing of the family tree allowed us to note the consanguinity in the two families (Figs. 1a and 1b).

The onset of classic signs, such as fixed erythema, xeroderma, and photophobia, was reported by the parents in the first twenty-four months in all patients (Fig. 2a, V4). Compared to the non-consanguineous sister whose skin was normal (Fig. 2b, V5), the two patients descended from family II. It should be noted that, in both families, the V10 of family I and the V4 of family II were born after the remarriage of the parents, who were divorced for several years. The age of onset of the tumors was between three and five years in five children, at seven years in two children, and at twelve years in one case. The consultation period was greater than or equal to 48 months in five cases and less than 48 months in three. During the physical examination, we noted, in the eight patients, photophobia, dyschromic macules, xeroderma, freckles, and tumor lesions. These tumors were located particularly on the scalp, face, oral mucosa (Figs. 2c and 2d), and the tongue (Figs. 3a and 3b). Four patients had less than three tumors and three more than three tumors. All eight patients had ophthalmological involvement characterized by an eyelid tumor, hemorrhagic conjunctivitis, and corneal sheath. One patient also presented with corneal ulceration. No patient had neurological impairment, such as hyporeflexia, during our study. Skin biopsy and histological examination were performed in six patients. This histological examination revealed two cases of associated basal cell carcinoma (BCC) (Fig. 4a) + squamous cell carcinoma (SCC) and four cases of SCC (Fig. 4b). None case of melanoma was noted. Most of the treatments performed were symptomatic based on photoprotection. Chemotherapy could not be done for lack of means. None of the patients received

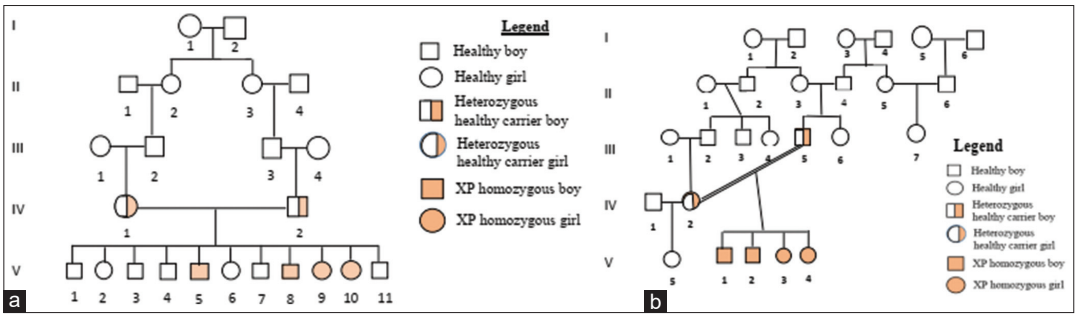

Figure 1: (a) Family tree I. (b) Family tree II.

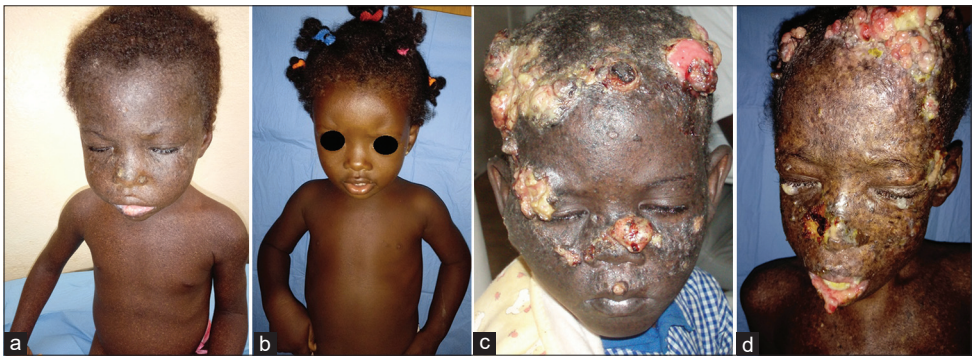

Figure 2: (a) Child V4, poikiloderma and cheilitis (family II). (b) Healthy V5 child from a non-consanguineous marriage (family II). (c) Budding cauliflower tumors of the scalp and face of child V8 (family I). d) Budding ulcerative lesions of the scalp face and lower lip in the third child (family II).

surgical treatment. The evolution was made toward the appearance of mutilating cancerous lesions, which led to the death of the eight patients practically between the ages of eight and thirteen years.

The causes of death were most often infectious complications of tumor lesions in three patients, hemorrhagic complications (Fig. 5a, V8 of family I) in three patients, and the deterioration of the general condition in two (Fig. 5b, V2 of family II) (Table 1).

DISCUSSION

The transmission of XP most often occurring in the autosomal recessive mode explains its relative frequency in countries in which inbreeding is high and families are large [4,6,7]. In our study, consanguinity was found in both families, for which divorce counseling was a failure; this resulted in the birth of the fourth case in family II (fourth of the V4 sibling) and the tenth child (V10) of the sibling in family I. The average age of our patients (5.5 years) was lesser when compared to data in the literature (10 years) [8], and without a female predominance, unlike series from Zimbabwe [9] and Tunisia [10], In other series, the predominance was male [8]. Similarly to another study [11], the socio-economic level of the families of our patients was especially low. The ulcero-budding tumor was the most common reason for consultation, in seven out of the eight cases in our series, whereas it was observed later elsewhere [1]. The first signs observed were between the age of six months and twenty-four months, as in some sources in which the age of onset was between three months and twenty-six months [12,13]. Several studies [2,14] reported the appearance of tumors between the age of two years and eight years, which was proportional in our series, in which the tumors appeared between three and five years of age. The time to consultation was more than forty-eight months in five cases and was earlier than in the literature, in which patients consulted later [1]. In our study, all patients presented, as reported by several authors, with poikilodermic-like [15], lingual [6], and oculo-palpebral [1,6,16,17] aspects. Some authors [8,13,16,18] reported neurological damage, unlike our cases, in which not all patients of the two families presented the damage. Based on the absence of neurological signs [3], all our patients were classified as cases of the classic form of the XPC group. Histopathologically, we noted four patients

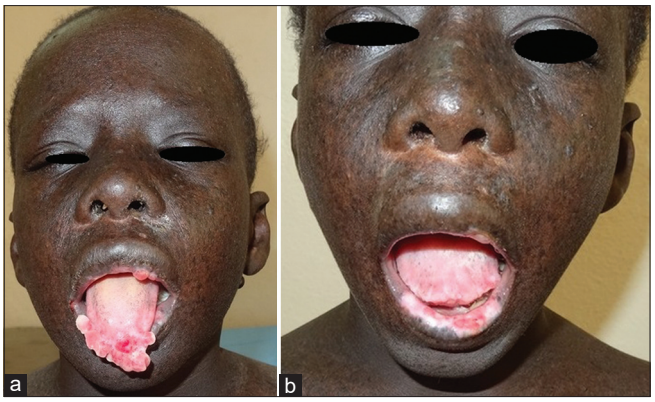

Figure 3: (a-b) Tumor involvement of the tip of the tongue. (a) Spontaneous partial amputation of the tongue, (b) of the first sibling V1 (family II).

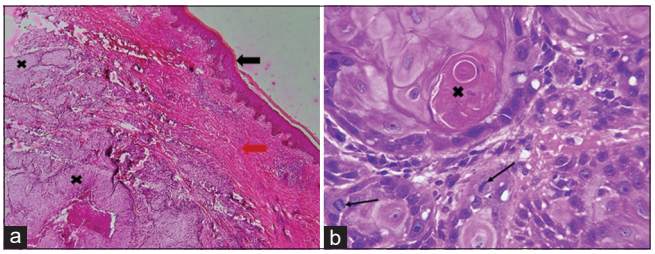

Figure 4: (a) Basal cell carcinoma. Proliferation of lobular architecture with a palisade-like peripheral arrangement and made of basaloid cells (cross) in a fibrous stroma (red arrow) (HE/GX 40). (b) Squamous cell carcinoma. The centered keratin lobules (cross) and the nuclei are highly atypical with numerous mitoses (arrows) (HE/GX 400).

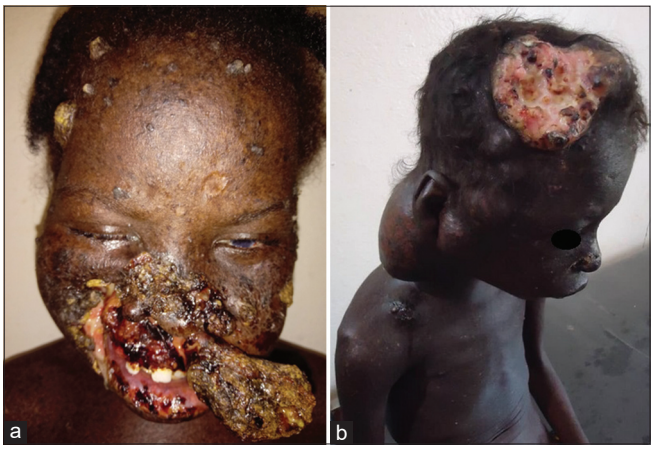

Figure 5: (a) Ulcerative vegetative tumor, hemorrhagic and infected, mutilating the nose and the right cheek, children V10 (family I). (Department of Dermatology and Venereology). (b) Multiple tumors (scalp and neck) in a poor general condition.

with squamous cell carcinoma, two cases of the association of squamous cell carcinoma and basal cell carcinoma, and no cases of melanoma. Some studies [19,20] reported six cases of XP, among which five presented squamous cell carcinoma, two presented the association of squamous cell carcinoma and basal

Table 1: The age of onset of the tumors and the vital prognosis of the patients.

Family	Case	Age at first consultation	Age at onset of tumor lesions	Vital prognostic (yrs.)			
				A5	A8	A12	A13
Family I	1st case V5	5 years	5 years	living	death		
	2nd case V8	5 years	5 years	living	death	death	death
	3rd case V9	3 years	3 years	living	living	living	
	4th case V10	13 years	12 years	living	living		
Family II	1st case V1	5 years	7 years	living	living	death	
	2nd case V2	2 years	7 years	living	living	death	
	3rd case V3	3 years	3 years	living	death		
	4th case V4	2 years	3 years	living	death		

cell carcinoma, and no case presented with melanoma. Squamous cell carcinoma has seemed to be the most encountered [3,19,20]. In our series, six out of the eight patients died of infectious and hemorrhagic complications and two of malnutrition. However, in one study [7], the causes of death were infections in five cases out of twenty-five. Death occurred between 8 and 13 years. Some literature [7] reported cases of death with an average age of fourteen years and extremes of eight and sixteen years, and even a death at the age of eighteen years [5]. This study made it possible to highlight the risks of inbreeding, which is frequent especially in West Africa, the consequences of which are at the origin of serious diseases, in particular, xeroderma pigmentosum. The evolution of the latter has always been precocious and fatal as it constantly leads to death at a young age [3].

CONCLUSION

XP is a complex pathology, yet its management is even more so. The sure way to avoid the disease is to suspend consanguineous marriages through the sensitization and education of the populations. Failing this, one must employ a method of contraception most suitable for couples and adopt children as soon as a case occurs in the offspring and the desire to have children remains (NB families most often poor). Prevention through the reduction of new cases by genetic counseling and antenatal diagnosis in families at risk is necessary.

Statement of Human and Animal Rights

All the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the 2008 revision of the Declaration of Helsinki of 1975.

Statement of Informed Consent

Informed consent for participation in this study was obtained from all patients.

REFERENCES

1. Kraemer KH, Lee MM, Scotto J. Xeroderma pigmentosum: Cutaneous, ocular, and neurologic abnormalities in 830 published cases. Arch Dermatol. 1987;123:241-50.
2. DiGiovanna, JJ, Kraemer KH. Shining a light on xeroderma pigmentosum. J Investig Dermatol. 2012;132:785-96.
3. Salissou L, Doulla M, Harouna MZ, Salha I, Timmi N, Dan Sono AA, et al. Xeroderma pigmentosum: Squamous cell carcinoma infiltrating and disfiguring facial, in a girl of 3 years and a half. Our Dermatol Online. 2017;8(Suppl. 1):28-31.
4. Bay Bay H, Rasso A, Aqil N, Bouguenouch L, Ouldim K, Elloudi S, et al. An XPC and XPA genetic study on xeroderma pigmentosum patients in a Moroccan population. Our Dermatol Online. 2020;11:335-9.
5. Lehmann AR, McGibbon D, Stefanini M. Xeroderma pigmentosum. Orphanet J Rare Dis. 2011;6:70.
6. Moussaid l, Benchikhi H, Boukind E-H, Sqalli S, Mouaki N, Kadiri F, et al. Cutaneous tumors during xeroderma pigmentosum in Morocco: Study of 120 cases. Ann Dermatol Venereol. 2004;131:29-33.
7. Zghal M, Chadli A, Kgayat O, Bhoury A, Souissi R, Ben Ayed M, et al. Xeroderma pigmentosum: Anatomoclinical particularities of skin tumors in 60 patients followed between 2002 and 2004. Ann Dermatol Venereol. 2005;132:9S71-9S279.
8. Bouadjar B, Belkacem FA, Daya-Grosjean L, Larbaoui LS, Ferhat R, Cherid MC, et al. [Xeroderma pigmentosum. A study in 40 Algerian patients]. Ann Dermatol Venereol. 1996;123:303-6.
9. Chidzonga MM, Mahomva L, Makunike-Mutasa R, Masanganise R, Xeroderma pigmentosum: A retrospective case series in Zimbabwe. J Oral Maxilo Fac Surg. 2009;67:22-31.
10. Fazaa B, Zghal M, Zeglaoui F, Goucha S, Mokhtar I, Kharfi M, et al. Melanoma and xeroderma pigmentosum: 12 cases. Ann Dermatol Venereol. 2001;128:503-6.
11. Witold K J. Xeroderma pigmentosum in South Africa, Inter J Dermatol. 1999;38:511-4.
12. Yadalla HKK, Juwariya S. Xeroderma pigmentosum: A bane in developing country: Brief report. Our Dermatol Online. 2014;5:395-7.
13. Bouadjar B, Belkacem FA, Daya-Grosjean L, Larbaoui LS, Ferhat R, Cherid MC, et al. Xeroderma pigmentosum: Study of 40 Algerian patients. Ann Dermatol Venereol. 1996;123:305-6.
14. Al Khatri M, Bemghazil M, Shafi M, Machina A. Xeroderma pigmentosum in Libya. Intern J of Dermatol. 1999;38:520-4.
15. Zghal M, Fazaa B, Abdelhak S, Mokni M. Xeroderma pigmentosum. Ann Dermatol Venereol. 2018;145:706-22.
16. Gul U, Kihc A, Gonul M, 9akmak SK, Soylu S, Xeroderma pigmentosum: A Turkish case series. Inter J Dermatol. 2007;46:1125-8.
17. Mussala M, Behar-Cohen F, D'Hermies F, Bisseck A-C, Renard G. Ophthalmological manifestations of xeroderma pigmentosum: 1st Cameroonian case. J Fr Ophthalmol. 2000;23:369-74.
18. Dollfus H, Porto F, Caussade P, Speeg-Schatz C, Sahel J, Grasshans E, et al. Ocular manifestations in the inherited DNA

repair disorders. Surv Ophthalmol. 2003;48:107-22.
19. Mame TD, Suzanne ON, Jean-Marie D, Bassirou N. Xeroderma pigmentosum: About 6 cases observed in Dakar, Senegal. Cancer Bulletin. 2001;88:199-202.
20. Sonnappa UK, Samayam A. Case report on xeroderma pigmentosum with squamous cell carcinoma in a ten year old child. Our Dermatol Online. 2018; 9:160-3.

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Original Article

Clinical and dermatoscopic correlation in facial melanosis: A cross-sectional study at a tertiary hospital

Vijeta Prasad, Alpana Mohta, Rajesh Dutt Mehta, Bhikamchand Ghiya, Prasoon Soni, Sumiti Pareek

Department of Dermatology, Venereology and Leprology, Sardar Patel Medical College, Bikaner, Rajasthan

Corresponding author: Alpana Mohta, MD, E-mail: dralpanamohta10@gmail.com

ABSTRACT

Background: Facial pigmentary disorders are a group of heterogeneous entities, sharing a common clinical feature of altered pigmentation of the face. The overlapping features among the different clinical entities of facial hyperpigmentation may be differentiated by dermatoscopy. **Objective:** The objective was to evaluate the different types of facial melanosis and their dermatoscopic findings. **Methods:** This non-interventional, cross-sectional study was conducted at our dermatology department over a period of one year. All clinically diagnosed cases of facial melanosis were included in our study and their dermatoscopic evaluation was performed. **Results:** We included 500 patients with facial melanosis. While 370 patients were female, 130 were males. Three hundred patients had melasma, 59 (lichen planus pigmentosus) had LPP, 40 had Riehl's melanosis, while 35 had frictional melanosis. Other dermatoses included acanthosis nigricans, ashy dermatosis, and poikiloderma of Civatte, to name a few. The most common dermatoscopic finding in our study evident in almost all cases of facial melanosis was exaggerated pseudo-reticular hyperpigmentation. The unique observation in our study, the reticulo-globular pattern seen in melasma, was thin and in the shade of brown pigmentation, whereas in LPP and ashy dermatosis, it was comparatively thicker and grayish-brown in color. The other specific finding observed was telangiectasia due to topical steroids, more prominent and enlarged than telangiectasia due to sun exposure in melasma and poikiloderma of Civatte. **Conclusion:** This study highlights the clinical and dermatoscopic features of facial melanosis. Further research is required in this field of dermatoscopic evaluation of facial melanosis to define more accurate diagnostic features as a facial biopsy is mostly refused by the patients, yet meanwhile, clinical evaluation should not be neglected. **Study Limitations:** The limitations of our study were the lack of direct histopathological correlation and the inclusion of both therapy-naive patients and patients on therapy.

Key words: Facial melanosis; Dermatoscope; Melasma

INTRODUCTION

Facial melanosis is an umbrella term encompassing various disorders causing hyperpigmentation of the face. All these pigmentary disorders pose a diagnostic challenge to dermatologists as their clinical appearance shows tremendous similarities. Hyperpigmentary disorders either result from an increase in the number of melanocytes or in the activity of melanocytes, and thus excess melanin production. The excess pigment may be epidermal or dermal in location, and in both cases, it may be localized or diffuse. The epidermal pigment appears brownish and results from increased melanin production or increased melanosomal transfer in keratinocytes. The dermal pigment results from the dropping of melanin from the basal cell layer into the dermis (dermal pigment incontinence) and appears bluish or bluish-gray due to the Tyndall effect. Dermoscopy is a handy tool employed for the past several years to inspect various dermatological diseases, among which pigmentary disorders have been at the top of the list.

The dermatoscopic approach to facial pigmentary disorder helps in understanding different patterns of facial pigmentation and their depth of pigmentation.

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Thus, correlating dermatoscopic features with clinical findings helps in the better understanding of facial pigmentary disorders. This valuable knowledge may be further applied to predict prognosis and treatment outcomes. Our study explored the various dermatoscopic features of facial melanoses.

PATIENTS AND METHODS

This was a non-interventional, cross-sectional study conducted between January 2020 to December 2021 at the dermatology and venereology department in Bikaner, Rajasthan, India, after obtaining approval from the institutional ethical committee. All newly diagnosed cases of facial melanosis were included in our study. Written consent was taken from the individual patients to include them in the study. Post-inflammatory hyperpigmentation was excluded due to vastly different etiologies of little significance. All new patients with facial melanosis irrespective of their age, sex, and previous treatment reported at the OPD were diagnosed after relevant history taking and clinical examination. Dermatoscopic findings of facial melanosis were noted with a handheld dermatoscope (DermLite, 3rd generation, 10× magnification). The digital images were captured with a mobile camera. The images were studied on the computer screen and after analyzing all the images, the interpretation of the dermatoscopic findings was made and recorded. The interpretation of the dermatoscopy was based on patterns described in the literature.

RESULTS

In our study, we examined 500 patients with facial melanosis. The most common facial melanosis was melasma. Out of the 500 patients, 370 (74%) were female and 130 (26%) were male. Out of the 500 patients, there were 300 cases of melasma (60%), 59 of LPP (11.8%), 40 of Riehl's melanosis (8%), 35 of frictional melanosis (7%), 28 of acanthosis nigricans (5.6%), 12 of ashy dermatosis (2.4%), 12 of poikiloderma of Civatte (2.4%), 8 of EFFC (erythromelanosis follicularis et coli) (1.6%), 2 of macular amyloidosis (0.4%), 3 of nevus of Ota (0.6%), and 1 of café-au-lait macules (0.2%). The most common age group of patients with facial melanosis was 20–30 years of age (51.6%), followed by 30–40 years (35.20%), 40–50 years (6.40%), 12–20 (6%), and 50–60 years (0.8%).

In our study, out of the 300 (60%) melasma patients, 180 (60%) were females and 120 (40%) were males; among the 59 LPP patients, 13 (22.7%) were males and 46 (77.3%) were females; among the 40 patients with Riehl's melanosis, 14 (35%) were males and 26 (65%) were females; among the 35 cases of frictional melanosis, 32 (91.7%) were males and 3 (8.3%) were females; among the 28 cases of acanthosis nigricans, 16 (57.1%) were males and 12 (42.9%) were females; among the 12 cases of ashy dermatosis, 8 (67%) were females and 4 (33%) were males; among the 8 cases of EFFC, 4 (50%) were males and 4 (50%) were females; among the 12 cases of poikiloderma of Civatte, 10 (83%) were females and 2 (17%) were males; the rest were 1 male and 1 female with macular amyloidosis on the face, 1 male and 2 females with nevi of Ota, and 1 female with café-au-lait macules. The major causes of facial melanosis such as melasma, LPP, and Riehl's melanosis had a predominance of female patients, whereas frictional melanosis was found more commonly in males.

In our study, the most common facial melanosis reported was melasma. The pattern of distribution of melasma observed was malar (n = 240; 80%), followed by centrofacial (n = 54; 18%), and mandibular (n = 6; 2%). Clinically, epidermal melasma patients have light brown pigmentation and deep dermal melasma patients have more dark brown to grayish pigmentation. The most common dermatoscopic finding in melasma (n = 300; 60%), which was evident in almost all cases, was exaggerated pseudo-reticular hyperpigmentation, sparing acrosyringial openings (n = 300; 100%), converging at places to form diffuse pigmentation (Fig. 1). This basic exaggerated pseudo-reticular hyperpigmentation was superimposed by dots and globules (n = 195; 65%) (Fig. 1), a semicircle- and circle-forming, honeycomb-like pattern (n = 135; 45%) (Fig. 1), arcuate and annular structures surrounding follicular openings (n = 90; 30%) (Fig. 1), and a reticuloglobular pattern (n = 240; 80%) (Fig. 1). The other findings were telangiectasia (n = 150; 50%) (Figs. 1 and 2) and atrophy (n = 98; 32.6%) (Fig. 2). Out of the 300 melasma patients, 30 (10%) had dermatoscopic features of exogenous ochronosis, which were brown, amorphous, curvilinear worm-like structures obliterating follicular openings (n = 27;90%) and archiform structures (n = 3; 10%) (Fig. 2).

The characteristic dermatoscopic pattern of LPP (n = 59; 11.8%) observed was dark brown to bluish-gray dots and globules arranged in different patterns. The most common pattern was the hem-like pattern (50%) (Fig. 3), followed by the reticulogranular and

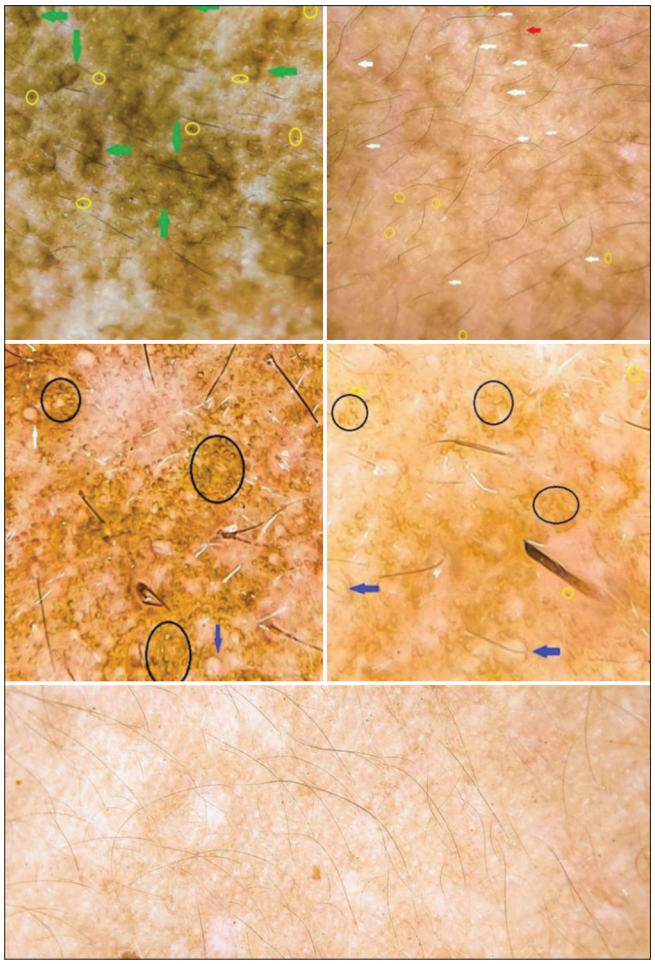

Figure 1: (melasma): Exaggerated pseudo-reticular hyperpigmentation sparing the acrosyringial openings. Yellow circle: dots and globules; green arrow: reticuloglobular pigmentation; white arrow: annular pigmentation surrounding follicular openings; red arrow: telangiectasia; black circle: circle- and semicircle-forming, honeycomb pattern; blue arrow: arcuate pigmentation surrounding follicles.

reticuloglobular pattern (32%) (Fig. 3), and a random arrangement of dots and globules (18%) (Fig. 3). The other findings were the exaggerated pseudo-reticular pattern (Fig. 3) and the accentuation of pigmentation around follicular openings (20%) (Fig. 3).

In Riehl's melanosis (n = 42; 8.4%), we observed dermatoscopic findings of exaggerated pseudo-reticular hyperpigmentation, patchy, diffuse pigmentation, dots and globules, white, fine scales, perifollicular halos, and follicular, keratotic plugs (Fig. 4a).

In all cases of frictional melanosis (n = 35; 7%), the common dermatoscopic findings observed were dilated follicular openings, keratotic plugs, dots and globules, perifollicular hyperpigmentation, and exaggerated pseudo-reticular hyperpigmentation (Figs. 4b and 4c).

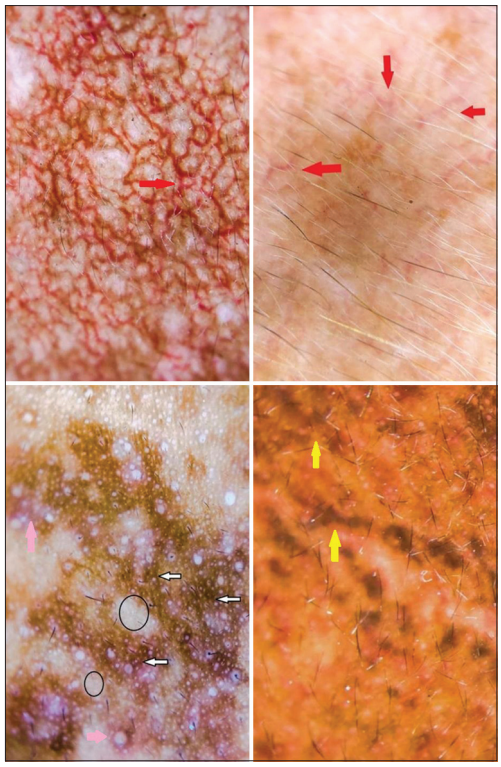

Figure 2: (melasma): Steroid-induced telangiectasia; prominent telangiectasia on exaggerated pseudo-reticular hyperpigmentation. Red arrow: telangiectasia; white arrow: exaggerated pseudo-reticular hyperpigmentation sparing the acrosyringial openings; black circle: atrophy; light pink arrow: erythema; yellow arrow: exogenous ochronosis in melasma, worm-like homogenous pigmentation not sparing acrosyringial openings unlike melasma.

The dermatoscopic findings of acanthosis nigricans (n = 28; 5.6%) were sulcus cutis, crista cutis, and brown dots present in crista cutis on a grayish-brown background (Fig. 4d). These similar findings were more accentuated on the neck than on the face.

In ashy dermatosis (n = 12; 2.4%), the dermatoscopic findings were exaggerated pseudo-reticular hyperpigmentation, erythema, and grayish-brown dots and globules arranged in an irregular fashion (n = 3; 25%) (Fig. 5) to form linear and circular lines (n = 3; 25%) (Fig. 5), also seen arranged in a reticular pattern to form a reticulogranular or reticuloglobular pattern (n = 6; 50%) (Fig. 5).

The dermatoscopic findings in poikiloderma of Civatte (n = 12; 2.4%) were telangiectasia, erythema, exaggerated pseudo-reticular hyperpigmentation, dots and globules, and atrophy (Fig. 6a).

The dermatoscopic findings in EFFC (n = 8; 1.6%) were follicular keratotic plugging with dots and globules arranged around follicles and in interfollicular areas

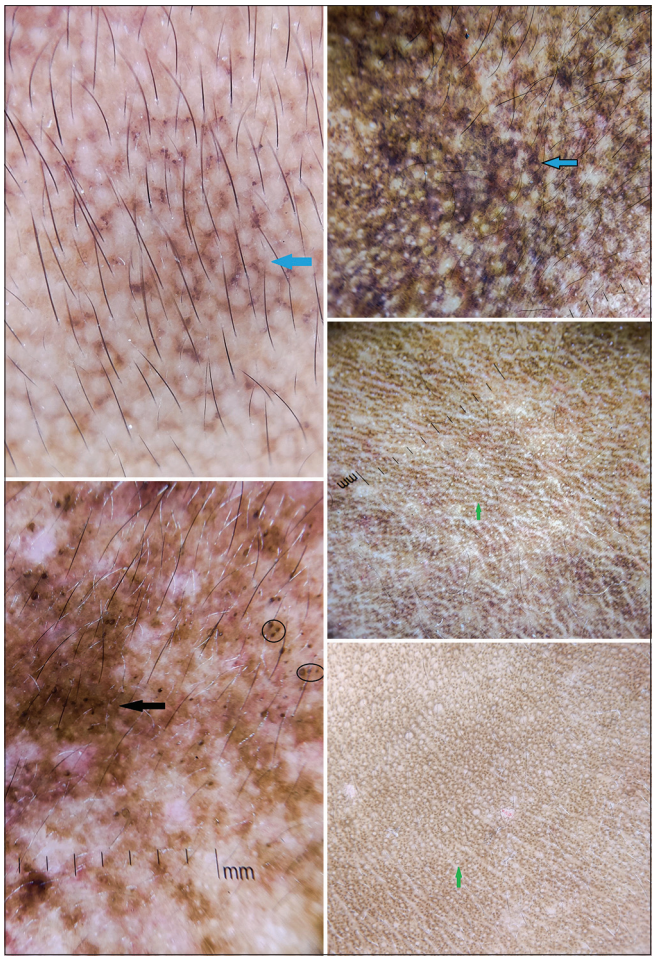

Figure 3: (lichen planus pigmentosus): Green arrow: hem-like pattern with perifollicular hyperpigmentation; blue arrow: dots and globules on a reticular pigment network forming reticulogranular and reticuloglobular pigmentation; black circle: dots and globules arranged randomly; black arrow: dots and globules over exaggerated pseudo-reticular hyperpigmentation converging to form diffuse, homogenous, brown pigmentation.

with background erythema and exaggerated pseudo-reticular hyperpigmentation (Fig. 6b).

Two cases of macular amyloidosis (n = 2; 0.4%) of 1 male and 1 female were included in our study, with the dermatoscopic examination revealing a dark brown, stellate-shaped structure on a background of exaggerated pseudo-reticular hyperpigmentation (Fig. 7).

The dermatoscopic findings of nevus of Ota (n = 3; 0.6%) were structureless areas of brownish-gray pigmentation (Fig. 8a).

One case of café-au-lait macules (n = 1; 0.2%) on the face was included in our study. The dermatoscopic features observed were the background of brownish

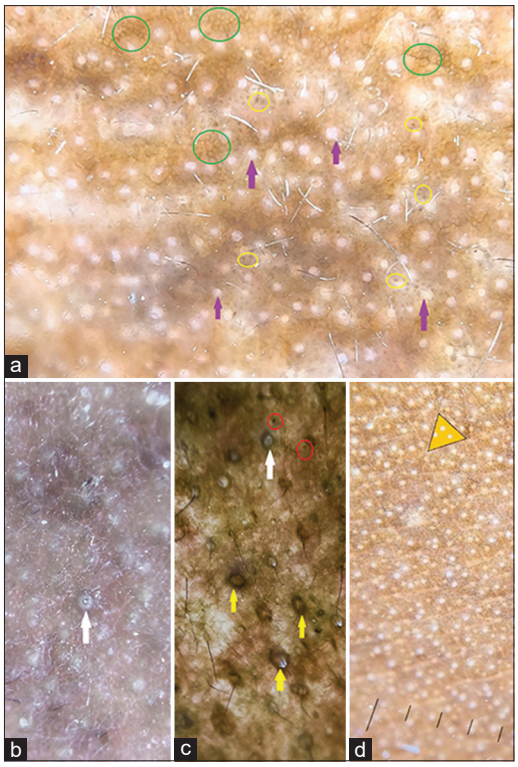

Figure 4: (a) (Riehl's melanosis (upper image)): Exaggerated pseudo-reticular hyperpigmentation converging to form diffuse, brown pigmentation. Green circle: reticular pigmentation; yellow circle: dots and globules; purple arrow: follicular keratotic plugs with a whitish halo. (b and c) (frictional melanosis (lower first and lower second image)): Red circle: dots and globules; yellow arrow: hyperpigmentation surrounding the acrosyringial opening; white arrow: dilated follicular openings with keratotic plugging. (d) (acanthosis nigricans (lower third image)): Acanthosis nigricans on the face. Black marking: sulcus cutis; yellow color: crista cutis; white dot: acrosyringial opening.

hyperpigmentation superimposed by grayish-brown dots and globules and white dots representing acrosyringial openings (Fig. 8b).

DISCUSSION

Facial pigmentary disorders are a group of heterogeneous entities, sharing the common clinical feature of altered pigmentation of the face, causing easily visible cosmetic disfigurement, therefore resulting in significant psychosocial consequences. There is a considerable overlap in features among the different clinical entities of facial hyperpigmentation creating confusion in clinical diagnosis. It is a wonderful fact that more than 80% of the global population has the heterogeneity of facial skin color irrespective of sex and age [1]. Individuals with darker skin are particularly more susceptible to pigmentary disorders as suggested by some studies [2-5]. The reason behind this is that darker individuals have a greater tendency

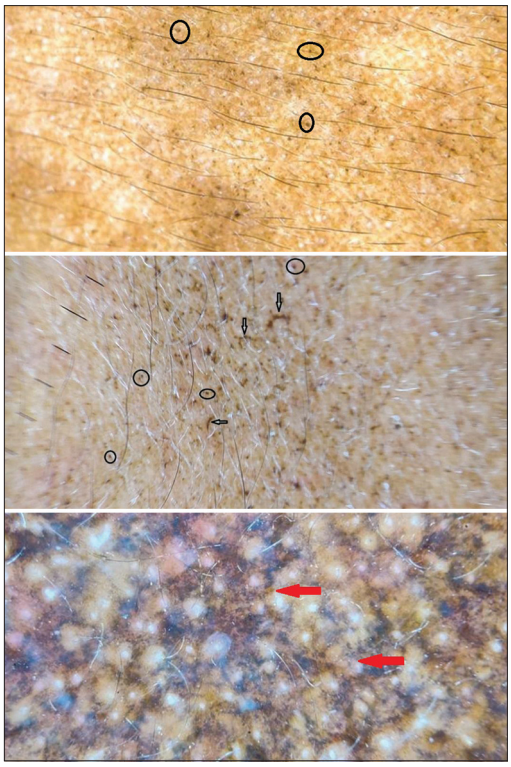

Figure 5: (ashy dermatosis): Black circle: dots and globules arranged randomly on a grayish-brown background; white arrow: dots and globules arranged in a semicircle; red arrow: thick, gray to dark brown reticuloglobular and reticulogranular pigmentation on an erythematous background.

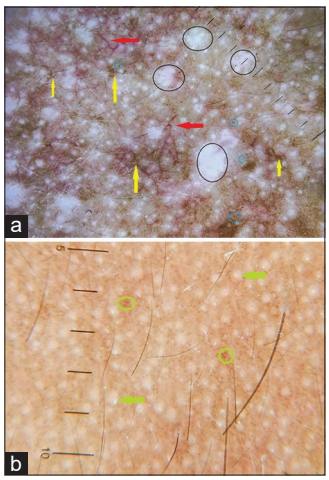

Figure 6: (a) (poikiloderma of Civatte (upper image)): Red arrow: telangiectasia; blue circle: dots and globules; yellow arrow: reticular pigmentation; black circle: atrophy. (b) (EFFC (lower image)): Erythematous background with exaggerated pseudo-reticular hyperpigmentation. Green arrow: follicular opening with keratotic plugging; green circle: dots and globules on a perifollicular and interfollicular area.

to develop post-inflammatory hyperpigmentation [6]. The other factors influencing our skin pigmentation are endocrine factors, genetic factors, and external

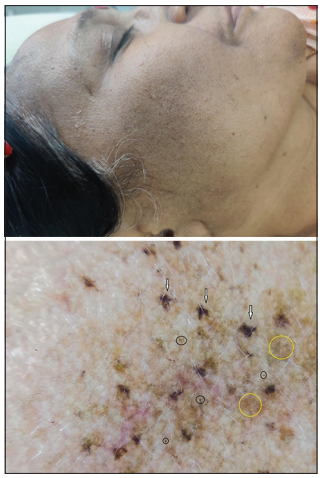

Figure 7: (macular amyloidosis): White arrow: brown, stellate structure; yellow circle: exaggerated pseudo-reticular hyperpigmentation; black circle: dots and globules.

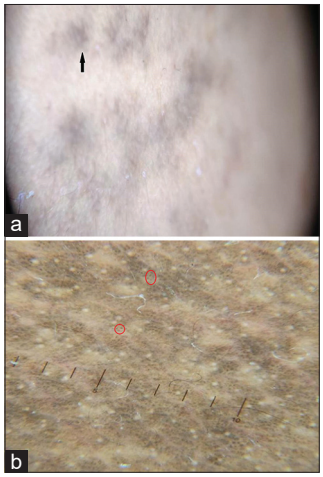

Figure 8: (a) (nevus of Ota (upper image)): Black arrow: patchy, brownish-gray, structureless areas of pigmentation. (b) (café-au-lait macules (lower image)): Red circle: brown dots and globules on a background of homogenous, brownish pigmentation with white dots (acrosyringial openings).

agents such as light and photodynamic chemicals. The location of melanin in different layers of skin determines the color; melanin in the upper epidermis (stratum corneum and spinosum) as black, in the dermal–epidermal junction as light to dark brown; in the papillary dermis as slate blue, and in the reticular dermis as steel blue.

Dermoscopy is an important diagnostic tool for observing subtle features to make a diagnosis with precision. Dermoscopic findings also help in correlating underlying histopathological features [7]. Dermatoscopy has been in use for the past several years for the examination of dermatological diseases, for instance, pigmentary disorders. The pigment network

lines seen on dermatoscopy are due to pigmentation along the rete ridges, which are thick with a greater quantity of melanin, while the holes in this network are due to relatively less pigmented tips of the dermal papillae with a thin suprapapillary plate [8]. This conventional pigment network is rare when it comes to fairer skin as the rete ridges are not long enough to create a pigment network. The rete ridges on the face rather than in non-facial skin are usually flattened, resulting in the absence of a pigment network, and are accordingly replaced by a pseudo-network pattern in which holes correspond to the adnexal openings of a hair follicle, sebaceous gland, and sweat gland. The dermatoscopic diagnosis of pigmented skin lesions accounts for both local and global features. Global features define patterns while local features cause minor changes.

We conducted our study at the dermatology department of our institution after taking approval from the institutional ethics committee. The study population was all newly diagnosed cases of facial melanosis attending our patient department of dermatology. The examination of the cases was performed after informed consent and the relevant history were taken. The most common facial melanosis seen in our study was melasma (n = 300; 60%). It was found more common in females (n = 180; 60%) than in males (n = 120; 30%). Clinically, the pattern of distribution observed was malar (n = 240; 80%), centrofacial (n = 54; 18%), and mandibular (n = 6; 2%). The basic global dermatoscopic finding observed in melasma was exaggerated pseudo-reticular hyperpigmentation sparing the acrosyringial openings on the face and converging to form diffuse pigmentation (Figs. 1 and 2). This basic exaggerated pseudo-reticular network in melasma was seen superimposed by dots and globules (n = 195; 65%) (Fig. 1), a semicircle- and circle-forming, honeycomb-like pattern (n = 135; 45%) (Fig. 1), arcuate and annular structures surrounding follicular openings (n = 90; 30%) (Fig. 1), and a reticuloglobular pattern (n = 240; 80%) (Fig. 1). This reticular pattern in melasma has already been extensively described in the literature. Sonthalia et al. reviewed the dermatoscopic findings of melasma and concluded that dots, globules, and arcuate and annular structures were the dermatoscopic features of melasma [9]. Nanjundaswamy et al. reported a reticuloglobular pattern in melasma [10]. Yalamanchili et al., on the other hand, described the dermoscopic features of melasma in comparison to other facial melanoses [11]. The different shades of the color of melanin in melasma were suggestive of the depth of pigmentation. The other occasional finding was telangiectasis (n = 150; 50%) (Figs. 1 and 2) due to sun exposure (Fig. 1) and steroid use (Fig. 2). The telangiectasia due to steroids was more prominent and enlarged than due to sun exposure. Dermatoscopy also helped in appreciating other complications such as atrophy (n = 98; 32.6%) (Fig. 2), depigmentation and exogenous ochronosis (n = 30; 10%), dark brown, worm-like pigmentation (n = 27), and arciform structures (n = 3) (Fig. 2). Hence, dermatoscopy also proved to have a prognostic value.

The second most common facial melanosis in our study was LPP (n = 59; 11.8%), the dermatoscopic features were characterized by dots and globules arranged in different patterns. The most common patterns were the hem-like pattern (50%) (Fig. 3), followed by the reticuloglobular and reticulogranular pattern (32%) (Fig. 3), and a random arrangement of dots and globules (18%) (Fig. 3). The other findings were an exaggerated pseudo-reticular pattern and the accentuation of pigmentation around follicular openings (Fig. 3). Neema et al. reported similar findings of the hem-like pattern of pigmentation, perifollicular accentuation, and gray dot and globules [12].

Riehl's melanosis (n = 42; 8.4%) was the third most common facial melanosis in our study. The dermatoscopic findings (Fig. 4a) were characterized by exaggerated pseud-reticular hyperpigmentation, dots and globules, areas of diffuse, grayish-brown pigmentation sparing the acrosyringial openings, reticular pigmentation, erythema, whitish, perifollicular halo, follicular keratotic plugs, telangiectasia, and mild scaling. Dharman et al. reviewed similar dermatoscopic findings in Riehl's melanosis [13]. Wang et al. described the same dermatoscopic findings along with clinical, confocal, and histopathological reviews in Riehl's melanosis [14].

Frictional melanosis (n = 35; 7%) unlike other facial melanoses was more common in males than females in the middle-age group. The dermatoscopic findings (Figs. 4b and 4c) observed were patchy pigmentation formed due to converging exaggerated pseudo-reticular hyperpigmentation, dots and globules, dilated hair follicular openings with keratotic plugs, hyperpigmentation surrounding acrosyringial

Table 1: Facial melanosis dermatoscopic findings.

Facial melanosis	Percentage	Dermatoscopic findings	
Melasma	60%	Exaggerated pseudo-reticular hyperpigmentation sparing the acrosyringial openings on the face and converging to form diffuse pigmentation	
		Dots and globules	65%
		Semicircle- and circle-forming, honeycomb-like pattern	45%
		Arcuate and annular structures surrounding follicular openings	30%
LPP	11.8%	Bluish-gray dots and globules arranged in different patterns	
		hem-like pattern	50%
		reticuloglobular and reticulogranular pattern	32%
		random arrangement of the dots and globules	18%
Riehl's melanosis	8%	Exaggerated pseud-reticular hyperpigmentation	
		Dots and globules	
		Areas of diffuse, grayish-brown pigmentation sparing the acrosyringial openings	
		Reticular pigmentation	
		Erythema	
		Whitish, perifollicular halo	
		Follicular, keratotic plugs	
		Telangiectasia and scaling	
Frictional melanosis	7%	Patchy pigmentation formed due to converging exaggerated pseudo-reticular hyperpigmentation	
		Dots and globules	
		Dilated hair follicular openings with keratotic plugs	
		Hyperpigmentation surrounding acrosyringial openings and scaling	
Acanthosis nigricans	5.6%	Crista cutis	
		Sulcus cutis	
		Brownish-gray dots and globules	
		White dots	
Ashy dermatosis	2.4%	Dots and globules	
		arranged randomly	25%
		in linear and circular lines	25%
		in a reticular and reticulogranular pattern	50%
Poikiloderma of Civatte	2.4%	Telangiectasia	
		Erythema	
		Exaggerated pseudo-reticular hyperpigmentation	
		Dots and globules	
		Atrophy	
Erythromelanosis follicularis faciei et coli	1.6%	Dots and globules arranged perifollicular and interfollicular areas with keratotic plugging	
		Erythematous background	
		Exaggerated pseudo-reticular hyperpigmentation	
		Fine scaling	
Macular amyloidosis	0.4%	Dark brown, stellate-shaped structure	
		Exaggerated pseudo-reticular hyperpigmentation	
Nevus of Ota	0.6%	Patchy, brownish-gray, structureless areas of pigmentation	
Café-au-lait macules	0.2%	Brown dots and globules on a background of homogenous, brownish pigmentation with white dots (acrosyringial openings)	

openings, and scaling. Mutalik et al. described similar dermatoscopic findings in facial frictional melanosis [15].

In acanthosis nigricans (n = 28; 5.6%), the facial dermatoscopic findings (Fig. 4d) were less pronounced than on the neck. The characteristic findings were crista cutis, sulcus cutis, brownish-gray dots and globules, and white dots (Fig. 4d). Crista cutis and sulcus cutis were more readily visible in the non-polarized mode whereas dots and globules were better visible in the polarized mode. Ankad et al. delineated similar findings in the dermatoscopy of acanthosis nigricans [16].

Ashy dermatosis (n = 12; 2.4%) was clinically seen as blue to gray, macular lesions. The main dermatoscopic findings observed were dots and globules on a background of erythematous, diffuse, and brownish pigmentation. Dots and globules were arranged randomly (n = 3; 25%) (Fig. 5), in linear and circular lines (n = 3; 25%) (Fig. 5), in a reticular and reticulogranular pattern (n = 6; 50%) (Fig. 5). Elmas et al. reported similar findings [17].

The unique observation in our study was that the reticuloglobular pattern seen in melasma was thin and in the shade of brown pigmentation, whereas in LPP and ashy dermatosis, it was comparatively thicker

and grayish-brown. The hem-like pattern was seen characteristically in LPP, whereas the reticulogranular and reticuloglobular pattern was seen in both LPP and ashy dermatosis.

The dermatoscopic findings seen in poikiloderma of Civatte (n = 12; 2.4%) were telangiectasia, erythema, exaggerated pseudo-reticular hyperpigmentation, dots and globules, and atrophy (Fig. 6a). Sinha et al. reported similar features [18].

In erythromelanosis follicularis faciei et colli (n = 8; 1.6%), the dermatoscopic findings (Fig. 6b) were dots and globules arranged in perifollicular and interfollicular areas with keratotic plugging on an erythematous background with exaggerated pseudo-reticular hyperpigmentation along and fine scaling. Maouni et al. reported the same findings [19].

In the two cases of macular amyloidosis (n = 2; 0.4%) of 1 male and 1 female, dermatoscopic examination revealed a dark brown, stellate-shaped structure on the background of exaggerated pseudo-reticular hyperpigmentation (Fig. 7). Sonthalia et al. described a dermoscopic pattern of macular amyloidosis as a hub and spoke pattern [20].

In nevus of Ota (n = 3; 0.6%), we observed patchy, brownish-gray, structureless areas of pigmentation (Fig. 8a). Vinay et al. revealed the same dermatoscopic features [21].

One case of café-au-lait macules on the face was examined by the dermatoscope. The features seen were brown dots and globules on a homogenous, brownish, pigmented background with white dots (acrosyringial openings) (Fig. 8b).

CONCLUSION

Facial pigmentary disorders are one of the most challenging cases that the dermatologist encounters in their practice and it has profound psychosocial implications in the patient's life. Although a clinical examination has paramountcy in diagnosing facial melanosis, dermatoscopy has also valuable input in diagnosing facial pigmentary disorder as a biopsy from the face is often refused by the patient. By evaluating the depth of pigmentation by the dermatoscope, further inference over prognosis and treatment outcome may be predicted more efficiently. Hence, studies exploring this particular dermatoscopic examination domain are of great significance.

Statement of Human and Animal Rights

All the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the 2008 revision of the Declaration of Helsinki of 1975.

Statement of Informed Consent

Informed consent for participation in this study was obtained from all patients.

REFERENCES

1. Hourblin V, Nouveau S, Roy N, De Lacharriere O. Skin complexion and pigmentary disorders in facial skin of 1204 women in 4 Indian cities. Indian J Dermatol Venereol Leprol 2014;80:395-401.
2. Halder RM, Grimes PE, McLaurin CI, Kress MA, Kenney JA Jr. Incidence of common dermatoses in a predominantly black dermatologic practice. Cutis. 1983;32:388-90.
3. Sanchez MR. Cutaneous diseases in Latinos. Dermatol Clin. 2003;21:689-97.
4. Alexis AF, Sergay AB, Taylor SC. Common dermatologic disorders of skin of color: A comparative practice survey. Cutis. 2007;80:387-94.
5. Grimes PE. Management of hyperpigmentation in darker racial ethnic groups. Semin Cutan Med Surg. 2009;28:77-85.
6. Sandhu S, Neema S, Radhakrishnan S. Dermoscopy of disorders of hyperpigmentation. Pigment Int. 2021;8:14-24.
7. Argenziano G, Soyer HP. Dermoscopy of pigmented skin lesions: A valuable tool for early diagnosis of melanoma. Lancet Oncol. 2001;2:443-9.
8. Adya KA, Inamadar AC, Palit A. Dermoscopic pigment network: Characteristics in non-melanocytic disorders. Indian Dermatol Online J. 2020;11:146-5.
9. Sonthalia S, Jha AK, Langar S. Dermoscopy of melasma. Indian Dermatol Online J. 2017;8:525-6.
10. Nanjundaswamy BL, Joseph JM, Raghavendra KR. A clinico-dermoscopic study of melasma in a tertiary care center. Pigment Int. 2017;4:98-103.
11. Yalamanchili R, Shastry V, Betkerur J. Clinico-epidemiological study and quality of life assessment in melasma. Indian J Dermatol. 2015;60:519.
12. Neema S, Jha A. Lichen planus pigmentosus. Pigment Int. 2017;4:48-9.
13. Dharman BK, Sridhar S. Diffuse facial melanosis: An overview of etiology and dermoscopic findings. J Skin Sex Transm Dis. 2020;2:86-93.
14. Wang L, Xu AE. Four views of Riehl's melanosis: Clinical appearance, dermoscopy, confocal microscopy and histopathology. J Eur Acad Dermatol Venereol. 2014;28:1199-206.
15. Mutalik SD, Pethe SV, Nikam BP, Rasal YD. Facial frictional melanosis in Indian patients: Defining the entity. Clin Dermatol Rev. 2019;3:78-83.
16. Ankad BS, Drago NR, Koti VR, Nikam BP. Dermoscopic approach to hyperpigmented lesions in skin of color. Clin Dermatol Rev. 2020;4:84-91.
17. Elmas &F, Acar EM, Kilitçi A. Dermoscopic diagnosis of ashy dermatosis: A retrospective study. Indian Dermatol Online J.

2019;10:639-43.
18. Sinha P, Tripathy DM, Shelly D, Neema SA rare case of poikilodermatous mycosis fungoides. Indian J Dermatol. 2020;65:417-9.
19. Maouni S, El Anzi O, Sqalli A, Znati K, Meziane M, Hassam B. Erythromelanosis follicularis faciei et colli: Dermoscopy and dermatopathology correlates. JAAD Case Rep. 2019;5:535-6.
20. Sonthalia S, Agrawal M, Sehgal VN. Dermoscopy of macular amyloidosis. Indian Dermatol Online J. 2021;12:203-5.
21. Vinay K, Ankad BS. Dermatoscopic features of pigmentary diseases in ethnic skin. Indian Dermatol Online J. 2021;12:24-33.

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Our Dermatology Online

Original Article

Skin cancer: Epidemiological, clinical, and histological aspects in albinos and non-albinos in Yaoundé, Cameroon

Coralie Reine Bertine Mendouga Menye, Grâce Anita Nkoro Ombede, Kevin Hervé Lebogo, Emmanuel Armand Kouotou

Faculty of Medicine and Biomedical Sciences, University of Yaoundé I, Cameroon

Corresponding author: Coralie Reine Bertine Mendouga Menye, MD, E-mail: coraliereine86@gmail.com

ABSTRACT

Background: Individuals with phototype VI compared to albinos have a natural protection against the cancerogenic effect of UV rays. The aim of this study was to describe the epidemiological, clinical, and histopathological aspects of skin cancer in albinos and non-albinos. **Methodology:** We conducted a descriptive, cross-sectional study over a period of ten years. Data collection was retrospective and exhaustive in five dermatology units and one oncology unit in Yaoundé. Patients having skin cancer and a complete medical file were included in the study. Sociodemographic, epidemiological, clinical, and histopathological variables were studied. Data analysis was performed with SPSS, version 20.0, and Excel 2016. **Results:** We included 134 patients. The average age was 43.7 ± 12.2 years, with extremes of 15 and 80 years. The sex ratio among the albinos was 1/1.2, and 1/1 among the non-albinos. The western region was the most represented (44%). The time to diagnosis varied from 3 to 64 months. The face, low neckline, and upper limbs were most frequently involved. The most frequent cancers diagnosed after histopathological confirmation in decreasing order were: epidermoid carcinoma, melanoma, basal cell carcinoma, and Bowen's disease. Furthermore, the proportion of skin cancer has doubled in ten years. **Conclusion:** At the end of our study, we are able to say that skin cancers in Yaoundé are more frequent among albinos.

Key words: Skin cancer; Albino people; Non-albino people; Carcinoma; Yaoundé, Cameroon

BACKGROUND

In Cameroon, little data exists on the clinical, epidemiological, and paraclinical aspects of skin cancer among albinos while albinism is frequent in the western region of Cameroon. This study is a source of data on the subject coming from central Africa.

INTRODUCTION

Albinism is a rare genetic, hereditary, non-contagious affection expressed by a lack of melanin in the skin, hair, and eyes [1]. There are various types of albinism, yet the most common and visible is oculocutaneous albinism, which affects the skin, hair, and eyes [2]. Albinism concerns all races in the world, independently of ethnical group or sex. Albinos are highly vulnerable to skin cancer [3].

Because of the lack of melanin, people affected by albinism are more sensitive to the harmful effects of UV rays, leading to problems such as photophobia, decreased visual acuity, extreme sun sensitiveness, and skin cancer. These noxious effects of UV cause DNA modifications that may lead to anarchic cell multiplication, thus creating cancer [4]. Skin cancer mostly affects the head, and epidermoid carcinoma is more frequent than basal cell carcinoma in the African population, with a ratio of 2:1 among albinos [5,6]. High levels of exposure to UV rays increase the risk of the three main forms of skin cancer [7].

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Albinism affects 1 person per 20000 worldwide [8]. Although the incidence of albinism is relatively low in the West, Africa seems to be more affected, with the prevalence fluctuating between 1:15000 and 1:1000 depending on the country and subregion [9,10].

In Cameroon, little data exists on the clinical, epidemiological, and paraclinical aspects of skin cancer among albinos. We, therefore, purposed to conduct a study in Yaoundé, Cameroon, in order to describe the epidemiological, clinical, and histopathological characteristics of skin cancers among albinos and compare these cancers to those among black, non-albino individuals.

METHODS

We conducted a retrospective, descriptive, cross-sectional study from February to March 2021. Patients followed up between January 2011 and December 2020 were concerned (a period of ten years). The study took place in six health facilities in the town of Yaoundé: University Teaching Hospital Yaoundé, Yaoundé Central Hospital, Yaoundé Military Hospital, Elig-Essono Medicalized Healthcare Centre, Yaoundé General Hospital, and Yaoundé Gynaeco-Obstetric and Paediatric Hospital. Each of these health facilities had a dermatology unit and/or an oncology unit.

Study population

All patients having a skin cancer and having consulted during the study period were concerned. We, thus, included: 1) any patient with oculocutaneous albinism and living with a skin cancer; 2) any albino patient received and followed up at one of our study sites irrespective of age, sex, and origin; 3) any albino patient with an existing and exploitable medical file containing at least 80% of the information searched; and 4) any black, non-albino patient with skin cancer.

Patients having cancers with extracutaneous localizations were excluded.

The sampling was consecutive and exhaustive according to the availability of medical files in the record units of the various hospitals requested.

Procedure

In order to conduct this study, we requested and obtained the approval of the Institutional Committee for Ethics and Research (ICER) of the Faculty of Medicine and Biomedical Sciences (FMBS) of the University of Yaoundé I. Since our study was retrospective, we obtained an exemption of informed consent. Then, we obtained administrative authorizations from the head of each health facility involved in our study to recruit patients.

Data collection was performed with a technical data sheet composed of two sections. The first included sociodemographic data (age, sex, domain of activity, region of residence, and native region). The second included clinical characteristics (medical history, duration of symptoms before diagnosis, signs and symptoms at the moment of diagnosis, number of lesions, site of the lesions, type of cancer, the result of the pathological examination). Data was digitized with a preconceived input mask. On the field, we went to the different hospitals concerned by our study and acceded to the records. The patients filling the inclusion criteria had their medical files collected and data was taken according to the structure of the technical data sheet. Anonymity was respected.

Data analysis

The data obtained was digitized and saved with Excel and Word 2016 and analyzed with IBM SPSS, version 20. Quantitative data was represented as means and medians according to the distribution, and qualitative data was represented as numbers and frequencies.

Proportions were compared with the chi-squared test or the Fisher exact test for small samples.

Ethical considerations

We obtained ethical approval from the Institutional Committee for Ethics and Research (ICER) of the faculty. During the study, we respected the fundamental principles of the Helsinki Declaration on human research.

RESULTS

We preselected 196 files for our study, among which 62 (31.6%) were excluded for being incomplete. Among the 134 selected files, 79 were albinos and 55 were non-albinos (Fig. 1). The albino-non-albino ratio was 1.4.

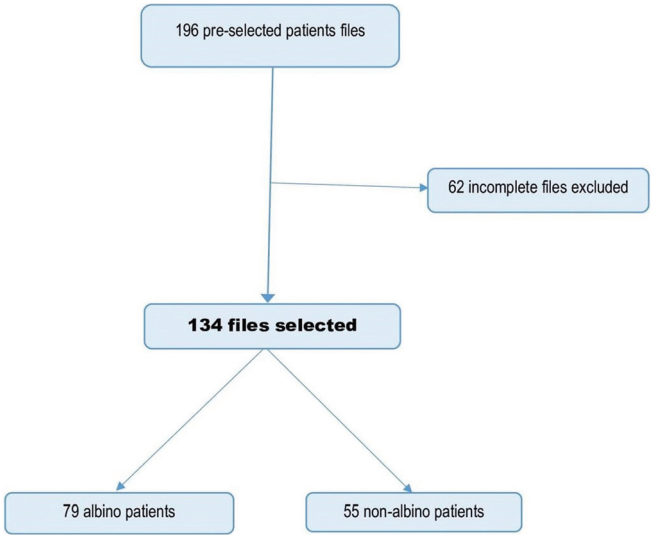

Figure 1: Flowchart of our sample.

Sociodemographic characteristics

Our sample was mainly made of females (71/134; 53%), with a male-to-female ratio of 0.9. The mean age was 43.7 ± 12.2 years, ranging from 15 to 80 years. The most represented age group was 30 to 40 years (Table 1).

Concerning the sector of activity of our patients, 60.4% were in the private sector (Table 1).

The most frequently found education level was primary and secondary education (Table 1).

The western region was the most represented (59/134; 44%), followed by the southern (24/134; 17.9%) (Table 1).

Epidemiological characteristics

The number of skin cancers has doubled from 12 to 21 cases between 2011 and 2022. The evolution in our study found the first peak in 2014 and the second in 2020 (Fig. 2).

The diagnostic lapse time varied between 3 and 64 months, with an average of 11.7 ± 8.4 months.

Clinical characteristics

Medical and surgical history

In our sample, 15.7% of the patients had undergone at least one surgical excision for skin cancer.

The absence of photoprotection was mainly reported (43.4%). A history of immunosuppression (11.5%), tobacco use (6.6%), and cancer (4.8%) was also reported. Neither arsenic nor hydrocarbon exposure was reported.

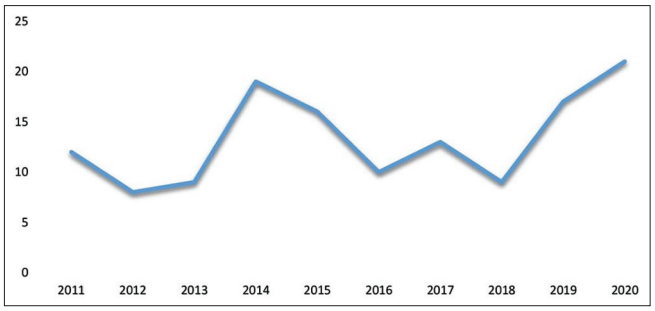

Figure 2: Representation of the number of cases of skin cancer per year.

Table 1: Sociodemographic characteristics of participants

Distribution depending on age		
Age group (yrs.)	**n**	**Proportion (%)**
[10-20]	1	0.8
[20-30]	20	14.9
[30-40]	47	35.1
[40-50]	35	26.1
[50-60]	15	11.2
[60-70]	10	7.5
[70-80]	5	3.7
[80-83]	1	0.8
Total	134	100
Distribution depending on the sector of activity		
Sector of activity	**n**	**Proportion (%)**
Private sector	81	60.4
Public sector	11	8.2
Student	9	6.7
Jobless	33	24.6
Total	134	100.0
Distribution depending on education level		
Education level	**n**	**Proportion (%)**
None	11	8.2
Primary	53	39.6
Secondary	58	43.2
Higher education	12	9
Total	134	100.0
Distribution depending on native region		
Native region	**n**	**Proportion (%)**
West	59	44.0
South	24	17.9
Centre	21	15.7
East	7	5.2
Littoral	7	5.2
North	6	4.5
Far North	3	2.2
Northwest	3	2.2
Adamaoua	2	1.5
Southwest	2	1.5
Total	134	100.0

Clinical signs

The major clinical presentations observed during the physical examinations were cankers and irregular borders, with respective proportions of 14.6% and 14.8% (Table 2).

Lesion sites

The face and neckline were the most common locations of skin cancers, in 39% and 22% of the cases, respectively (Fig. 3).

The median number of lesions in the sample was 1.7.

Diagnosis of skin cancer

The most frequent diagnosis evoked clinically was epidermoid carcinoma, melanoma, basal cell carcinoma, and Bowen's disease, with the respective proportions of 61.5%, 23.1%, 13.3%, and 2.1%.

The results of the pathological examination were available in 90 files (67.2%). On histopathology, we found epidermoid carcinoma in 53.3%, melanoma in 36.7%, basal cell carcinoma in 6.7%, and Bowen's disease in 3.3%.

Comparing results among albinos and non-albinos

Sociodemographic characteristics

In the study, skin cancers were mostly diagnosed in the albinos in the age group of 20–50 years (84.8%), ranging from 15 to 74 years; meanwhile, in the non-albinos, the diagnosis was made ten years later, in the age group of 30–60 years (73.1%), ranging from 26 to 81 years (Table 3).

The western (39/79; 49.4%) and southern regions (16/79; 20.3%) had the most albino patients with cancer as well as non-albinos, among which 36.4% (20/55) originated from the western region and 21.8% (12/55) from the central region.

Comparison of epidemiological characteristics

We noticed two peaks of skin cancers among the albinos: the first in 2015 and the second in 2019. In the non-albinos, three peaks were observed: 2014, 2017, and 2020 (Fig. 4).

The time to diagnosis was between 3 and 64 months among the albinos, with an average of 12.4 ± 9.6 months, while among the non-albinos, the time

Table 2: Representation of clinical signs on the skin

Sign	n	Proportion (%)
Irregular margins	60	14.8
Cankers	59	14.6
Induration	42	10.3
Telangiectasis	38	9.4
Spontaneous bleeding	37	9.1
Diameter of lesions >6 mm	34	8.4
Fibrous scar	32	7.9
Heterogenous color	29	7.1
Modification of an actinic keratosis	24	5.9
Scabby budding ulcer nodule	22	5.4
Asymmetry	17	4.2
Beaded appearance	7	1.7
Hyperpigmented papule	5	1.2

Table 3: Comparison of sociodemographic characteristics between the two groups

Age (yrs.)	Albino patients		Non-Albino patients	
	n	Proportion (%)	n	Proportion (%)
[10-20]	1	1.3	0	0
[20-30]	16	20.3	4	7.3
[30-40]	33	41.8	14	25.5
[40-50]	18	22.8	17	30.9
[50-60]	6	7.6	9	16.4
[60-70]	3	3.8	7	12.7
[70-80]	2	2.5	3	5.6
[80-90]	0	0	1	1.8
Total	79	100	55	100

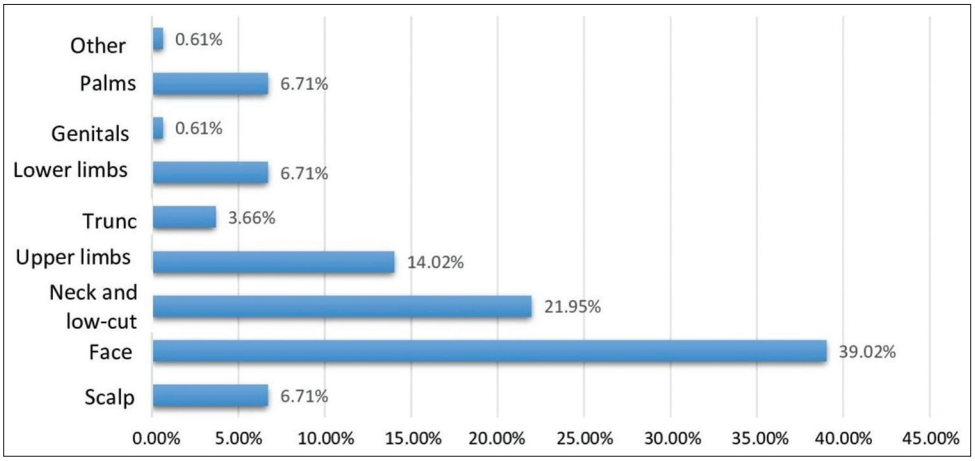

Figure 3: Sites of lesions found.

to diagnosis was between 3 and 36 months, with an average of 10.8 ± 6.3 months.

Comparison of clinical characteristics

A history of skin cancer excision in the albino group was six times more frequent than in the non-albino. The albinos were the only ones to undergo more than two skin cancer excisions. (Table 4).

The albinos had more lesions globally than the non-albinos, ranging from 1 to 22 and from 1 to 3, respectively.

The most frequent sites affected by skin cancer in both albinos and non-albinos were sun-exposed areas (face, neckline, and upper limbs) (Table 4).

Skin cancer diagnosis

The main clinical diagnosis evoked in both groups were epidermoid carcinoma, melanoma, basal cell carcinoma, and Bowen's disease (Table 5).

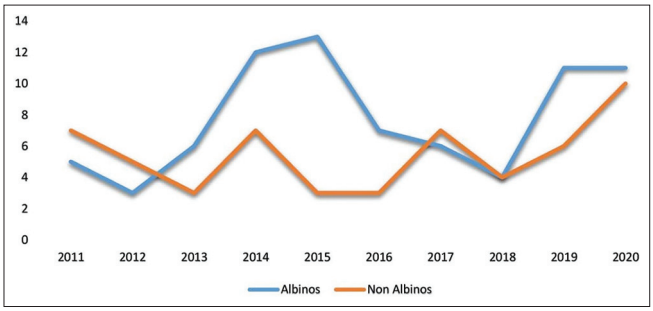

Figure 4: Annual evolution of skin cancer cases in the albinos and non-albinos.

Table 4: Comparison of clinical characteristics in both groups

Past history of skin cancer excision in both groups			
Number of excisions	**Albino**	**Non-Albino**	**Total**
1	5	2	7
2	7	1	8
< 5	2	0	2
≥ 5	4	0	4
Total	18	3	21
Sites of skin cancer lesions in both groups			
Sites of lesions	**Albino**	**Non-Albino**	**Total**
Face	39	25	64
Neck and neckline	26	10	36
Upper limbs	15	8	23
Lower limbs	10	1	11
Scalp	9	2	11
Palms	5	6	11
Trunk	3	3	6
Genitalia	0	1	1
Total	107	56	163

The results of histopathology were available in 90 (67.2%) medical files from our sample. More than half (54.2%) of the albino patients had a histopathological diagnosis in their medical file compared to the non-albinos, among whom only 11.8% did not have any.

DISCUSSION

This was a descriptive, retrospective study conducted at different dermatology and oncology units in the town of Yaoundé. The aim of the study was to present the epidemiology, clinical, and histopathological characteristics of skin cancers in Yaoundé among albinos and non-albinos.

The mean age at the occurrence of skin cancer was similar to that in a Malagasy study [11]. These results were similar to those found in the literature, where cancers occurred later in life because of the cumulative effect of UV exposure [12]. A geriatric study conducted by Diabate et al. on the profile of skin pathologies found a mean age of around 72 years; the tumors diagnosed were Kaposi sarcoma, melanoma, and epidermoid carcinoma [13]. Akakpo et al. found a mean age of 52 years in a population on cancer treatment [14].

The male-to-female ratio in our study was 0.9, which was comparable to the sex ratio found by Okafor et al. [15]. Otherwise, the Malagasy study found a slight male predominance [11]. Akakpo et al. found a sex ratio of 0.35 [14].

In our study, the albino-non-albino ratio of cancer occurrence was 1.5/1. This result was opposite to a study conducted in Nigeria by Okafor et al., who found more cases of skin cancers in non-albinos than in albinos [15].

Concerning the native region, the predominance of our cases originating from the western region could be explained by the fact that albinism which, is a risk factor of skin cancer, is more frequent in this region of Cameroon [16].

Table 5: Type of cancer suspected clinically in the albinos vs. non-albinos

Type of cancer	Albino	Non-Albino	Total
Epidermoid carcinoma	55	33	88
Melanoma	15	18	33
Basal cell carcinoma	15	4	19
Bowen's disease	3	0	3
Total	79	55	134

The incidence of skin cancers doubled from 2011 to 2020. This evolution is comparable to the observations made in Madagascar, where the number of cases increased fourfold between 2008 and 2015 [11]. This increase in incidence could be explained by the improvement in access to healthcare services permitting the confirmation and management of such cases.

The time to diagnosis was highly variable in our study, similarly to the results by Kiprono et al. found in Tanzania, with the time to diagnosis falling between 2 and 56 months; the average time was 26.2 ± 10.2 months [17]. The time before consultation, according to Akakpo et al., varied between 6 and 12 months [14]. The main reasons that could explain this delay were financial challenges and being managed in hospitals far away from adequate healthcare facilities [17]. Since our study was retrospective, we were unable to find the reasons of such a long lapse. However, the reasons found in Tanzania could be applicable in Cameroon, given the access to health facilities, the qualified healthcare provider for diagnosis, and financial challenges.

The descending order of skin lesions seen in skin cancer was similar to that found by Okafor and Malalaniaina [11,15]. This could be explained by the fact that the face is the most sun-exposed part of the body and is the least protected when compared to the neckline and the scalp.

Almost one-third of the patients in our study did not have a histopathological examination available in their medical file. This could be due to financial difficulties found in our environment. Otherwise, the clinical diagnosis easily made by some dermatologists permitted the initiation of treatment without histopathological examination. This assertion is supported by the fact that, in our study, the clinical diagnosis was confirmed by pathology in 98% of the cases. At the same time, we also found fewer histopathology reports in the albinos' medical files. This could suggest that cancer diagnosis is easier to reach at the clinical stage for these patients.

By order of frequency, the most frequently diagnosed cancers were epidermoid carcinoma, melanoma, and basal cell carcinoma. This result was similar to the results by the Malagasy and Nigerian studies [11,15]. In Western countries, especially in France, the most frequent skin cancers were basal cell carcinoma (70%), epidermoid carcinoma (20%), and melanoma (10%) [18].

The mean age at which skin cancer was diagnosed in the albinos was 33.7 ± 9.2 years in our study, which corroborates the findings made in Tanzania by Kiprono et al. [17]. Among the non-albino patients, the mean age was 48.6 ± 11.7 years, which was four years less than the age found in the non-albino population in a study conducted by Okafor et al. [15].

As in a study by Saka et al. in Togo [19], our study revealed that some patients had more than one lesion.

Study limitations

Our study had some limitations: 1) the lack of digitalized records made access to medical files difficult; 2) the non-inclusion of a number of incomplete files, thus reducing our sample; and 3) missing information in the medical files, leading to difficulties in describing the pathologies.

CONCLUSION

At the end of our study, we could say that skin cancers are frequent in clinics of Yaoundé. Albino patients seem more prone to develop these cancers. Skin cancer affects young people and is found in the majority of people originating from the western region. The incidence of skin cancer has almost doubled in a decade. In our study, skin cancers by order of frequency were epidermoid carcinoma, melanoma, basal cell cancer, and Bowen's disease. Although the diagnosis was reached at the clinical step in most cases, a histopathological confirmation was necessary to optimize the management of the patients. Photoprotection in albinos and non-albinos remains the most effective and most accessible preventive measure against skin cancer.

Statement of human and animal rights

All the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the 2008 revision of the Declaration of Helsinki of 1975.

Statement of informed consent

Informed consent for participation in this study was obtained from all patients.

REFERENCES

1. United Nations. Potection des droits humains des personnes atteintes d'albinisme. Genève; 2020 juill p. 4. Report No.: A/75/170.
2. Mcbride GR. Oculocutaneous albinism: An African perspective.

Br Ir Orthopt J. 2014;11:3-8.
3. Ikponwosa ero. HCDH | Experte indépendante sur l'exercice des droits de l'homme par les personnes atteintes d'albinisme. https://www.ohchr.org/FR/Issues/Albinism/Pages/IEAlbinism.aspx
4. Hong ES, Zeeb H, Repacholi MH. Albinism in Africa as a public health issue. BMC Public Health. 2006;6:212.
5. Yakubu A, Mabogunje OA. Skin cancer in Zaria, Nigeria. Trop Doct. 1995;25 Suppl 1:63-7.
6. Kromberg JG, Castle D, Zwane EM, Jenkins T. Albinism and skin cancer in Southern Africa. Clin Genet. 1989;36:43-52.
7. Glanz K, Saraiya M. Using evidence-based community and behavioral interventions to prevent skin cancer: Opportunities and challenges for public health practice. Prev Chronic Dis. 2005;2:A03.
8. David CV. Oculocutaneous albinism. Cutis. 2013;91:E1-4.
9. Nations U. Journée internationale de sensibilisation à l'albinisme | Nations Unies [Internet]. United Nations. United Nations; 2019. https://www.un.org/fr/observances/albinism-day.
10. Okoro AN. Albinism in Nigeria: A clinical and social study. Br J Dermatol. 1975;92:485-92.
11. Malalaniaina A, Lovasoa T, Mamisoa RI, Malala R, Soavina RL, Florine R, et al. [Skin cancers in Madagascar: Where do we stand?]. Pan Afr Med J. 2019;34:167.
12. Roy S. Impact of UV radiation on genome stability and human health. Adv Exp Med Biol. 2017;996:207-19.
13. Diabaté A, Kourouma HS, Vagamon B, Gué I, Kaloga M, Aka BR. Skin pathology of the elderly patients: Case of black African. Our Dermatol Online. 2018;9:19-21.
14. Akakpo AS, Ablavi Adani-Ifi AO, Téclessou JN, Kassang P, Mouhari-Toure A, Kombaté K, et al. [Skin and mucosal manifestations of cancer treatments in Lomé (Togo): A series of 35 cases]. Our Dermatol Online. 2022;13(Supp. 1):7-14.
15. Okafor OC, Onyishi NT. Primary cutaneous malignancies in nonalbino and albino Africans. Int J Dermatol. 2021;60:222-8.
16. Aquaron R. Oculocutaneous albinism in Cameroon: A 15-year follow-up study. Ophthalmic Paediatr Genet. 1990;11:255-63.
17. Kiprono SK, Chaula BM, Beltraminelli H. Histological review of skin cancers in African Albinos: A 10-year retrospective review. BMC Cancer. 2014;14:157.
18. Gordon R. Skin cancer: An overview of epidemiology and risk factors. Semin Oncol Nurs. 2013;29:160-9.
19. Saka B, Akakpo SA, Teclessou JN, Gnossike P, Adam S, Mahamadou G, et al. Skin cancers in people with albinism in Togo in 2019: Results of two rounds of national mobile skin care clinics. BMC Cancer. 2021;21:26.

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Our Dermatology Online

Brief Report

Comorbidities as prognostic factors in the healing of venous ulcers

Mirela Vasileva, Vesna Brishkoska Boshkovski, Elena Drakalska Sersemova

Dermatovenerology Department, University "Goce Delcev" Shtip, Faculty of Medical Science, Shtip, North Macedonia

Corresponding author: Mirela Vasileva, MD, PhD, E-mail: mirelanaceva@yahoo.com

ABSTRACT

Background: The problem of venous ulcers and chronic venous insufficiency is quite common in dermatological clinics. Every day, we face challenges regarding treatment and prognosis. As the patients are more often over fifty years of age, with more comorbidities, and at the very beginning of treatment, we already have an idea of how the entire process of epithelization of the ulcers may take place. **Materials and Methods:** A total of 105 patients with chronic venous insufficiency and venous ulcers were included in the study. Each was followed for more than twelve weeks. Patients with hypertension, diabetes mellitus, and thrombophlebitis were analyzed separately. **Results:** Patients with an ulcer closure time of twelve weeks and longer had a high blood pressure more often. Diabetics with venous ulcers on the lower extremities more often had delayed ulcer healing. A statistically significant difference was confirmed in the distribution of the patients with and without thrombophlebitis. **Conclusion:** The existence of comorbidities, such as hypertension, diabetes mellitus, and thrombosis, may affect the healing process of venous ulcers, yet thrombosis proved to be the most important factor.

Key words: Venous Ulcers; Diabetes Mellitus; Thrombosis; Hypertension

INTRODUCTION

The problem of venous ulcers and chronic venous insufficiency is quite common in dermatological clinics. Every day, we face challenges regarding treatment and prognosis. To improve the therapeutic possibilities, we must always begin from the base, that is, the etiology and pathophysiology of the disease.

As the patients are more often over fifty years of age, with more comorbidities, and at the very beginning of treatment, we already have an idea of how the entire process of epithelization of the ulcers may take place. Most systemic diseases impact the process of vascularization, granulation, and finally epithelization of the ulcer tissue.

Peripheral arterial disease has already been proven to be an important factor in the delayed healing of ulcers, thus, in this research, we address diabetes mellitus, hypertension, and recurrent thrombosis as factors that may affect the healing of venous ulcers.

Patients with diabetes mellitus develop severe atherosclerosis of the small blood vessels in the legs and feet, leading to compromised vascular function. Because blood is unable to reach the wound, healing is delayed, eventually leading to necrosis and gangrene [1].

The pathophysiology of hypertension as a factor in the occurrence of delayed ulcer healing may be described as a narrowing of small blood vessels in the skin, which increases resistance to blood flow. The pathogenesis is associated with local factors triggering dermal arteriosclerosis and subsequent hyperplasia of the media layer and elastic lamina, a process known as hyalinosis [2,3]. Thrombosis is most often present in the past diseases of patients with venous ulcers. More than half of patients suffer from recurrent thrombosis of the great saphenous vein or its varicosities, while

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those with deep vein thrombosis occur somewhat less frequently.

The thrombotic process causes inflammation, scarring, and adhesion of the valves and luminal narrowing [4,5]. This leads to valvular incompetence and reflux, which further increase venous pressure and worsen chronic venous insufficiency [5,6].

MATERIALS AND METHODS

A total of 105 patients with chronic venous insufficiency and venous ulcers were included in the study. Each was followed for more than twelve weeks. The treatment was the same with the use of compression therapy, Diosmin, and debridement of the ulcer. The patients were divided into two groups: with normal ulcer closure up to twelve weeks and delayed ulcer closure longer than twelve weeks in terms of the comorbidities that they had. Patients with hypertension, diabetes mellitus, and thrombophlebitis were analyzed separately.

Performance methodology was with a clinical examination of the patient, taking a detailed history, and Doppler of the lower extremities.

The statistical significance of intergroup differences was tested with the chi-squared test.

RESULTS

Patients with an ulcer closure time of twelve weeks and longer had a high blood pressure (HTA) more often when compared to patients with a ulcer closure time below twelve weeks, yet without a statistical significance: 44 (73.3%) vs. 27 (60%), $p = 0.15$ (Table 1).

Diabetics with venous ulcers on the lower extremities more often had delayed ulcer healing, yet a statistical significance in the distribution of patients with and without diabetes, between groups with a ulcer closure time up to twelve weeks and twelve weeks or longer was not confirmed ($p = 0.17$); 16 (26.7%) patients with delayed ulcer healing and 7 (15.6%) with normal healing had diabetes mellitus (DM) (Table 2).

A statistically significant difference was confirmed in the distribution of patients with and without thrombophlebitis (TF), depending on the time of ulcer closure, analyzed as a time shorter than twelve weeks and twelve weeks or longer ($p = 0.0079$). Thrombophlebitis was diagnosed in 30 (50%) patients with delayed healing vs. 11 (24.4%) patients with normal healing of venous ulcers (Table 3).

DISCUSSION

Hypertension did not prove to be an important factor in the prognosis of venous ulcer treatment, although it was the most common comorbidity among our subjects, with a representation of 67.6% of the subjects.

Thrombophlebitis was also shown to be an important marker during the process of epithelization of lower limb wounds. In our study, 50% of the patients with delayed ulcer closure were diagnosed with thrombophlebitis. Only 11 patients diagnosed with thrombophlebitis were observed in the group of quick ulcer closure up to twelve weeks. The patients with a history of deep vein thrombosis had a lower chance of rapid ulcer healing and develop larger ulcers, all due to the damage that thrombosis leaves to the vessel walls.

However, the relationship between thrombophlebitis and the duration of the venous ulcer has quite poorly been described and insufficiently confirmed in the literature. In our study, the association of the presence

Table 1: Normal and delayed ulcer healing (distribution with HTA)

HTA	Time of Ulcer Healing			*p* value
	n	< 12 weeks n (%)	≥ 12 weeks n (%)	
yes	71	27 (60)	44 (73.33)	$X^2 = 2.09$
no	34	18 (40)	16 (26.67)	$p = 0.15$ non-sig.

X^2 (Pearson Chi-squared)

Table 2: Normal and delayed ulcer healing (distribution with DM)

DM	Time of Ulcer Healing			*p* value
	n	< 12 weeks n (%)	≥ 12 weeks n (%)	
yes	23	7 (15.56)	16 (26.67)	$X^2 = 1.86$
no	82	38 (84.44)	44 (73.33)	$p = 0.17$ non-sig.

X^2 (Pearson Chi-squared)

Table 3: Normal and delayed ulcer healing (distribution with thrombosis)

Thrombosis	Time of Ulcer Healing			*p* value
	n	< 12 weeks n (%)	≥ 12 weeks n (%)	
yes	41	11 (24.44)	30 (50)	$X^2 = 7.06$
no	64	34 (75.56)	30 (50)	$p = 0.0079$ sig.**

X^2 (Pearson Chi-squared), ** ($p < 0.01$)

of thrombophlebitis with the delayed healing of the venous ulcer was demonstrated.

The presence of diabetes mellitus did not prove to be an important prognostic factor in the delayed healing of venous ulcers. Among the patients with delayed healing of the venous ulcer, 15.6% were diagnosed with diabetes mellitus. Delayed wound healing in diabetics is thought to occur as a result of extracellular matrix deposits and the abundant cellular infiltrate present.

Diabetes is associated with endothelial dysfunction, thereby the more frequent occurrence of peripheral arterial occlusive disease and abnormal local cellular and cytokine activity, leading to defective and delayed wound closure.

In our study, out of the 23 patients diagnosed with DM, delayed healing was observed in 16; in 7 patients, there was a normal closure of the ulcer in a period of four to twelve weeks.

Statement of Human and Animal Rights

All the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the 2008 revision of the Declaration of Helsinki of 1975.

Statement of Informed Consent

Informed consent for participation in this study was obtained from all patients.

REFERENCES

1. Vasilev B, Vasileva M, Vasileva S. The role of peripheral arterial occlusive disease in the healing of venous ulcers. Our Dermatol Online. 2022;13:280-2.
2. Malhi HK, Didan A, Ponosh S, Kumarasinghe SP. Painful leg ulceration in a poorly controlled hypertensive patient: A case report of Martorell ulcer. Case Rep Dermatol. 2017;9:95-102.
3. Shanshal M. Dermatologic Emergencies CME Part II: Infections and infection-related complications. Our Dermatol Online. 2022;13:483-94.
4. Pereira de Godoy JM, Pereira de Godoy LM, Pacheco EF, Guerreiro Godoy Mde F. The initial impact of low-level laser therapy on a traumatic leg ulcer. Our Dermatol Online. 2021;12:171-3.
5. Vasileva M, Brishkoska Boshkovski V, Petrov A, Zisovska E. Treatment of venous ulcers in drug addicts: A case report. Our Dermatol Online. 2021;12:439-41.
6. Raffetto JD, Ligi D, Maniscalco R, Khalil RA, Mannello F. Why venous leg ulcers have difficulty healing: Overview on pathophysiology, clinical consequences, and treatment. J Clin Med. 2020;10:29.

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Our Dermatology Online

Brief Report

Screening for ocular toxicity of hydroxychloroquine

Florin Maghiar[1], Madalina Urma[2], Anca Chiriac[3,4], Tudor Pinteala[5]

[1]Cardiology Department, Faculty of Medicine and Pharmacy, University of Oradea, Romania, [2]"Grigore T Popa", University of Medicine Iasi, Romania, [3]Department of Dermato-Physiology, Apollonia University Iasi, Strada Muzicii nr 2, Iasi-700399, Romania, [4]Nicolina Medical Center Iasi, Romania, [5]Department of Orthopedics and Traumatology, Faculty of Medicine, Grigore T Popa University of Medicine and Pharmacy, 16 University Street, 7001 Iaşi, Romania

Corresponding author: Prof. Anca Chiriac, MD PhD, E-mail: ancachiriac@yahoo.com

ABSTRACT

Background: Hydroxychloroquine (HCQ) is an antimalarial drug often employed in the treatment of various diseases, as a basic treatment for a prolonged period of time. **Materials and Methods**: Screening tests were analyzed in descending order of early detection of changes in HCQ toxicity. **Results**: The first ocular changes as a result of the toxicity of HCQ are those found during the visual field test, and the typical image of the fundus that highlights the bull's-eye lesion signifies advanced, irreversible HCQ toxicity. **Conclusion**: Ophthalmologic screening is of great importance in daily practice. Physicians from different medical specialties should be aware of the side effects of HCQ and refer the patients to ophthalmology for screening and close follow-up.

Key words: Hydroxychloroquine; Retinal toxicity; Screening

INTRODUCTION

Antimalarial medications (chloroquine and hydroxychloroquine) are derivates of quinine, which were first used in 1630 for the treatment of malaria. Hydroxychloroquine sulfate (HCQ) was synthesized in 1946 and has been widely used as a therapeutic option in various diseases in different medical fields. In the last decades, numerous reports of HCQ administered for skin diseases, psoriatic arthritis and especially rheumatoid arthritis, have been published. Although new drugs are used, HCQ remains a preferred medication and adverse reactions are reported. HCQ is distributed in tissues, yet the lowest concentration was found in the bones, skin, fat tissue, and brain, while higher concentrations were in the muscles, eye, heart, liver, lung, spleen, and adrenal glands, explaining the side effects. The concentration measured in the iris and choroid was 48000 times higher than the plasmatic level of HCQ [1,2].

Systematic ophthalmological screening is recommended when the dose of HCQ is above 200 mg/d [1]. Recently, some risk factors have been studied, such as a high dose, especially in elderly patients or in those with a low BMI or associated comorbidities (retinal disease, renal, or hepatic insufficiency). During the last decade, the risk of retinal toxicity has been evaluated to be 10% at ten years of continuous administration and in a high dose (>5 mg/kg) [2]. Doses >5 mg/kg are not recommended by the American Academy of Ophthalmology [3].

The early stages of toxicity are characterized by abnormalities of retinal pigment epithelium, clearly observed on optical coherence tomography (OCT) by an experienced ophthalmologist. The advanced stages are characterized by bull's-eye maculopathy [4,5].

Retinal toxicity is irreversible and is determined by the daily dose (recommended: 5 mg/kg; related to the actual weight of the patient) as follows: risk <1% for the first 5 years, 2% for 5–10 years, 20% for over 20 years. The risk of macular toxicity induced by HCQ is considered to begin at a cumulative dose of more than 1000 grams (7 years at a daily dose of around 400 mg/day) [1,6].

Total elimination of HCQ from the body takes over six months with individual variations. The effects of

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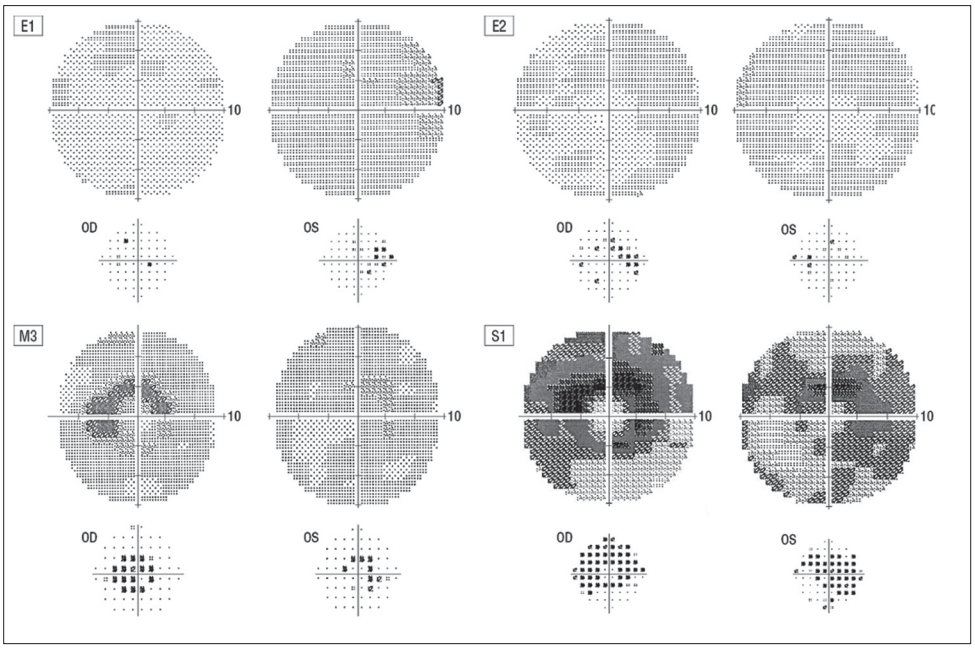

Figure 1: General evolution of the visual field in HCQ toxicity. E1, E2: normal/quasi-normal/minimal toxicity; M3, S1: bull's eye image yet respecting the fovea.

toxicity continue even after the discontinuation of treatment.

MATERIALS

In daily practice, we recommend the following screening tests (in descending order of early detection of HCQ toxicity lesions):

I. computerized perimetry, threshold strategy, and macular centering "10-2" (Humphrey Campimeter)/"Macula" (Optopol® Campimeter) (parafoveolar macular centering 100);
II. spectral OCT evaluation;
III. multifocal electroretinogram;
IV. fundus autofluorescence.

RESULTS

The first ocular changes as a result of the toxicity of HCQ are those found during the visual field test.

The typical image of the fundus that highlights the bull's-eye lesion (ang. *bull's-eye retinopathy*) signifies advanced, irreversible HCQ toxicity, which should have been prevented by rigorous screening and the discontinuation of the treatment.

The recommended examination strategy is that of threshold 10–2 (points are presented in only 100 paracentral with the removal from the examination of the retinal periphery).

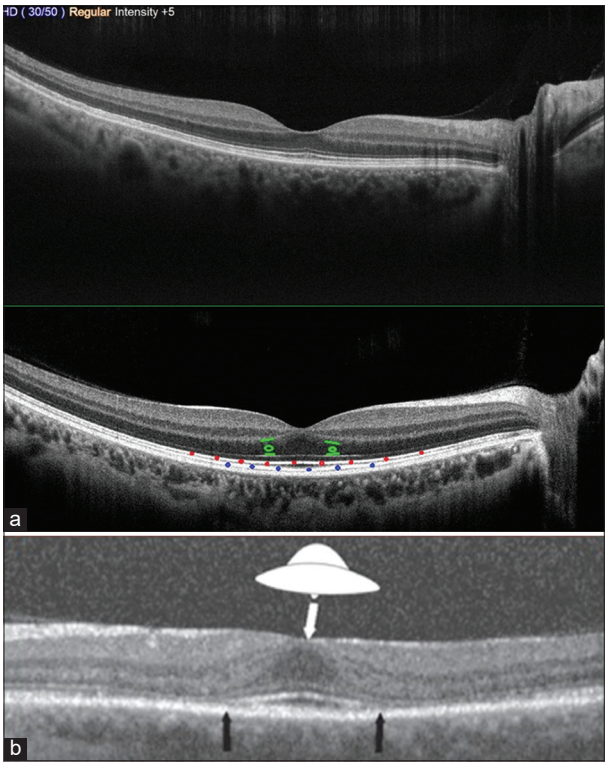

Figure 2: (a) Normal-appearing OCT along with landmarks of the early toxicity of HCQ. (b) The typical "flying saucer" appearance of the early stages of the macular toxicity of HCQ.

Typically, toxicity first appears by decreasing CV sensitivity in points between 20–80 paracentral (relative to fixation).

Points <20 and >80 are considered to lose sensitivity later, at a higher toxicity of HCQ, and are not involved in the early stages.

The learning curve in CV execution is represented by at least five fields (only after performing at least five fields is the patient sufficiently familiar with the execution technique and rigors, and thus CVs subsequently produced will faithfully represent the functionality of the retina) (Fig. 1).

Early OCT signs/landmarks of toxicity (P), before parafoveal ellipsoid zone (ZE) involvement (red landmarks): 1) thinning of the parafoveolar outer nuclear layer (SNE) (green landmarks); 2) reduction of parafoveolar reflectivity (ZE) (red); 3) discontinuities in the appearance of the parafoveolar interdigitated zone (ZI) (blue landmarks).

Fundoscopy is recommended before treatment to identify possible pre-existing retinal pathologies. HCQ toxicity may induce nonspecific changes in the early stages, such as the rarefaction of EPR, loss of the retinal reflex, and discreet pigmentation changes.

Ophthalmologic examination may provide detailed data about HCQ toxicity and the severity of ocular adverse reactions, which may vary from low to moderate and severe (Figs. 2 and 3).

The typical picture of *bovine eye retinopathy* certifies the severe form of drug toxicity (Fig. 4).

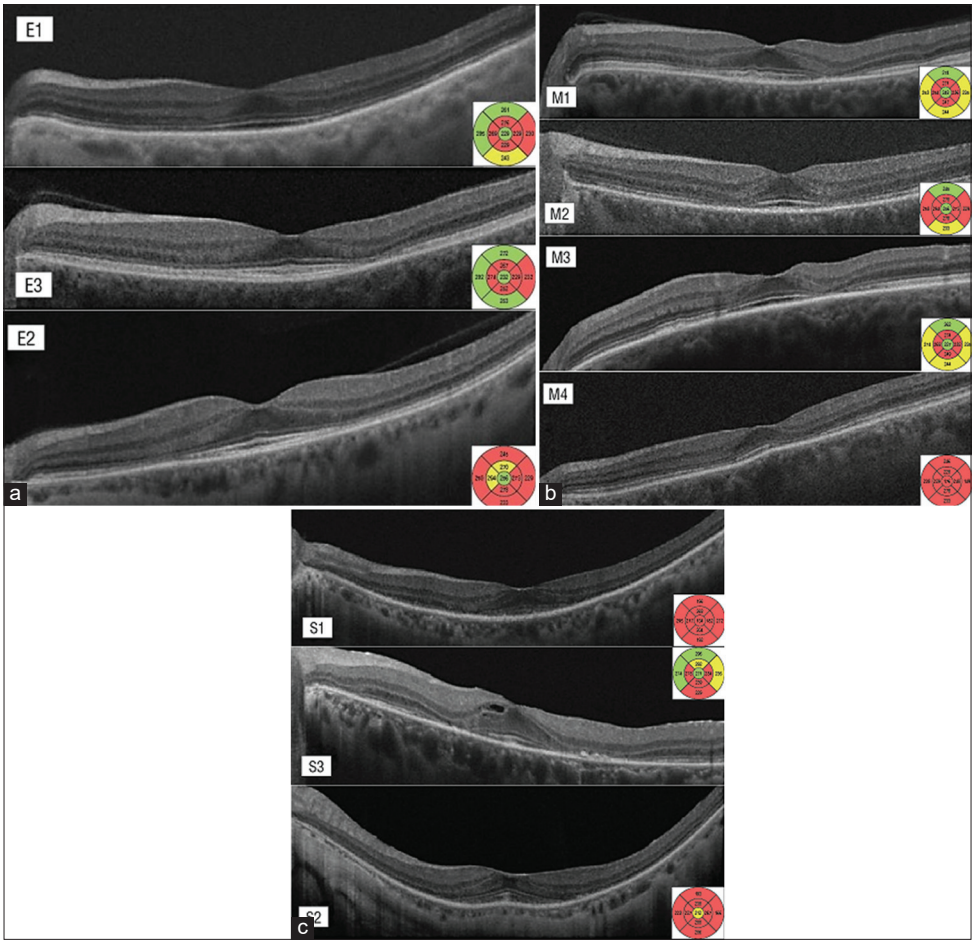

Figure 3: (a) Thinning/atrophy of the outer parafoveolar retinal layers. Early stage (E1–E3): correlation with the macular thickness map (green: normal thickness; yellow: medium thickness; red: severe reduction of macular thickness). (b) Thinning/atrophy of the outer parafoveolar retinal layers. Moderate stage (M1–M4) correlation with the macular thickness map (green: normal thickness; yellow: medium thickness; red: severe reduction of macular thickness). (c) Thinning/atrophy of the parafoveolar outer retinal layers. Severe stage (S1–S2) correlation with the macular thickness map (green: normal thickness; yellow: medium thickness; red: severe reduction of macular thickness).

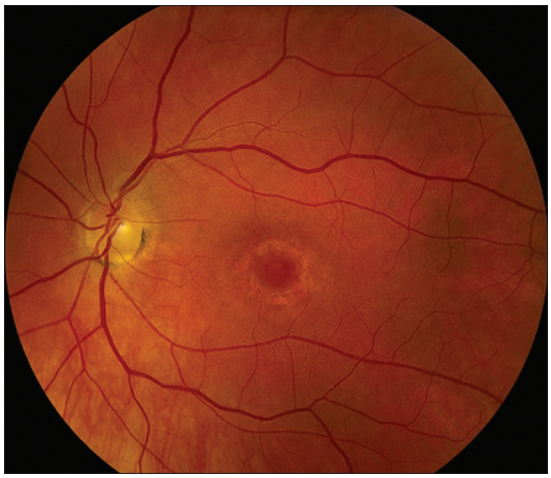

Figure 4: Fundoscopy with *bovine eye retinopathy*.

CONCLUSION

It is of huge importance to detect the early modifications due to HCQ to prevent the risk of possible visual loss due to the use of the medication. The immediate interruption of HCQ treatment is recommended when retinal toxicity is suspected. Visual fields and OCT are the most recommended modalities for screening patients treated with HCQ.

Statement of human and animal rights

All the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the 2008 revision of the Declaration of Helsinki of 1975.

REFERENCES

1. Marmor MF, Kellner U, Lai TY, Lyons JS, Mieler WF; American Academy of Ophthalmology. Revised recommendations on screening for chloroquine and hydroxychloroquine retinopathy. Ophthalmology. 2011;118:415-22.
2. Rosenbaum JT, Costenbader KH, Desmarais J, Ginzler EM, Fett N, Goodman SM, et al. American College of Rheumatology, American Academy of Dermatology, Rheumatologic Dermatology Society, and American Academy of Ophthalmology 2020 Joint Statement on Hydroxychloroquine Use with Respect to Retinal Toxicity. Arthritis Rheumatol. 2021;73:908-11.
3. Overbury RS, Stoddard GJ, Pupaibool J, Hansen CB, Lebiedz-Odrobina D. The effect of an electronic medical record intervention on hydroxychloroquine prescribing habits and surveyed providers' opinions of the 2016 American Academy of Ophthalmology guidelines in the rheumatology and dermatology practices of an academic institution. BMC Health Serv Res. 2021;21:913.
4. Yusuf IH, Sharma S, Luqmani R, Downes SM. Hydroxychloroquine retinopathy. Eye. 2017;31:828-45.
5. Martini L, Brzezinski P. Revisitation of an old antimalarial to combat Psoriatic Arthritis administering an antidote to Santonin to avoid xanthopsia or maculopathy. Our Dermatol Online. 2018;9:269-71.
6. Narváez D, Di Martino Ortiz B, Rodríguez Masi M. Annular skin lesions in childhood: Review of the main differential diagnoses. Our Dermatol Online. 2017;8:75-80.

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Conflict of Interest: The authors have no conflict of interest to declare.

Our Dermatology Online

Case Report

Acute generalized exanthematous pustulosis due to insect bites: Moroccan observation

Siham Boularbah[1], Meryem Soughi[1], Sabrina Oujdi[1], Kaoutar El Fid[1], Zakia Douhi[1], Sara Elloudi[1], Hanane Bay Bay[1], Fatima Zahra Mernissi[1], Imane Gouzi[2], Layla Tahiri Elousrouti[2], Chbani Laila[2]

[1]Department of Dermatology and Venerology, University Hospital Hassan II, Fez, Morocco, [2]Laboratory of Pathological Anatomy and Cytology, CHU Hassan II, Fez, Morocco

Corresponding author: Siham Boularbah, MD, E-mail: sihamboularbah1902@gmail.com

ABSTRACT

Acute generalized exanthematous pustulosis (AGEP) is the most common generalized pustular rash. It is a delayed immunological reaction involving cellular immunity and is characterized by the sudden, simultaneous onset of high fever and scarlatiniform sheet erythema, which, in several hours, is covered with numerous pustules with a lactescent content, non-follicular, sterile, predominant on the face, trunk, and folds. It regresses in less than fifteen days after stopping the causative agent giving way to diffuse desquamation. Several incriminating factors in the triggering of this reaction, in particular, at the top of the list, taking medication, a viral (enterovirus) or bacterial (streptococcal) infection, yet its occurrence following an insect bite has been exceptionally reported in the literature. The diagnosis is established according to clinical and histological criteria. Herein, we report the case of a young Moroccan female with generalized AGEP related to insect bites.

Key words: Acute Generalized Exanthematous Pustulosis; EuroSCAR; Insect Bites

INTRODUCTION

Acute generalized exanthematous pustulosis is a severe drug eruption, often occurring after delayed drug-induced sensitization [1,2]. It is more rarely linked to a viral infection, a toxin, or a food allergen. Its occurrence following an insect bite has exceptionally been reported in the literature. Herein, we report an observation of PEAG appearing in a Moroccan female, a victim of an insect bite.

CASE REPORT

A thirty-year-old female patient with no particular history, from a rural area, was hospitalized at the dermatology department in July for an acute rash with pinhead-sized pustules.

On questioning, the patient reported an insect bite sensation 24 hours before the eruption and reported the presence of insects in her habitat. No oral or topical medication was reported.

A clinical examination revealed pinhead-sized pustules on an erythematous, edematous base with a predominance in the folds (axillary, inguinal, and submammary areas) and the trunk and limbs (axillary, inguinal, and submammary areas) (Figs. 1a and 1b), a skin surface of 60%, and a well-rounded detachment on the left side of the neck in relation to the site of the insect bite (Fig. 1c). The rest of the somatic examination was normal, apart from a fever at 38.5°C. A complete blood count revealed neutrophilic polynucleosis at 14,000/mm^3 and hypereosinophilia at 900/mm^3. Bacteriological samples were negative.

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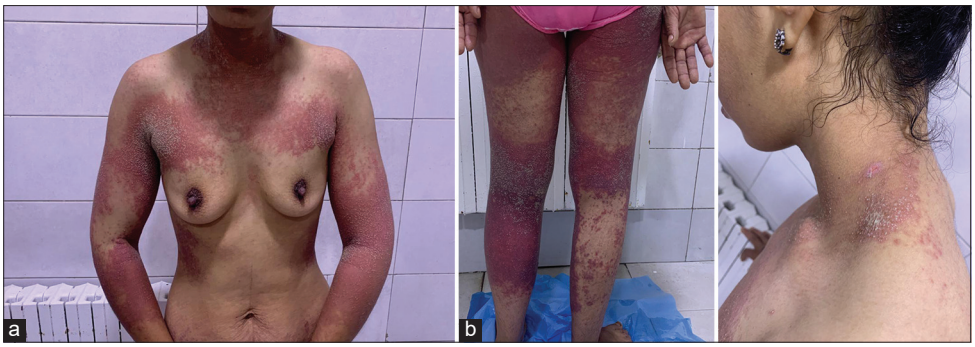

Figure 1: (a-b) An erythematous, edematous rash covered with pinhead pustules involving the trunk and major folds. (c) A well-rounded detachment on the left side of the neck in relation to the site of the insect bite.

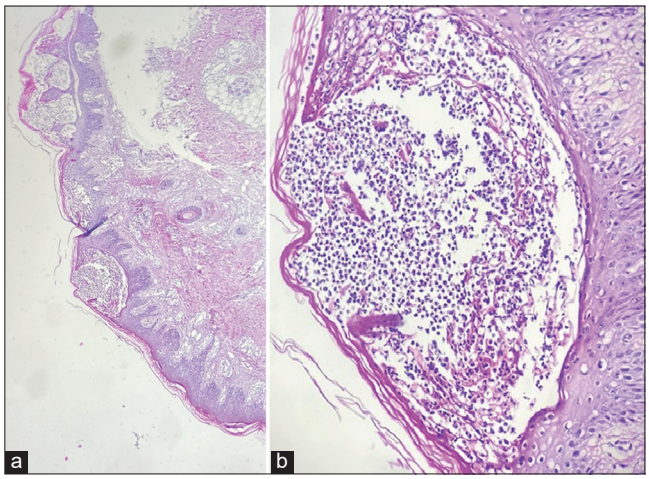

Figure 2: Histological image: H&E staining on the left (a) (G x 40) and on the right (b) (G x 200) of the skin biopsy. Multilocular subcorneal pustules associated with an inflammatory infiltrate made from PNN.

A biopsy from a pustule was taken, returning in favor of intraepidermal or subcorneal pustules accompanied by dermal edema, and neutrophilic and/or perivascular, eosinophilic infiltrate (Figs. 2a and 2b). The patient was bathed daily with surgras soap and an antihistamine. The evolution was marked by desquamation in two days, with a normalization of the complete blood formula. The diagnosis of PEAG was retained.

DISCUSSION

Acute generalized exanthematous pustulosis is an acute pustular rash, the usual causes of which are the ingestion of medications and/or infection [3,4]. Cases of AGEP secondary to insect bites are exceptionally reported, probably because of the difficulty in establishing a causal relationship. These are isolated observations of several cases of localized PEAG, such as localized acute exanthematous pustulosis after a mosquito bite in a patient treated for breast cancer [5] or a small series of two or three patients with generalized PEAG following a spider bite [6], whose diagnosis was retained according to the EuroSCAR criteria and the presence of the insect bite site with the absence of other etiologies.

In our observation, the diagnosis of AGEP was also certain according to the EuroSCAR criteria. Indeed, the onset was brutal and the clinical picture was typical. The fever was constant, accompanied by asthenia. The evolution was marked by post-pustular desquamation with rapid healing. Arguments in favor of AGEP secondary to an insect bite included the presence of a lesion characteristic of an insect bite, the 24-to-48-hour delay between the bite and the eruption, and the absence of other classic causes of AGEP.

The insect bite generally occurs in the evening, during sleep in the hot season, it may sometimes be responsible for fatal envenomation explained by the blood diffusion of venom [7].

Faced with the usual spontaneous regression of AGEP, no treatment was recommended other than local care in order to avoid infection of cutaneous origin, in particular, at the level of the bite. Local or systemic corticosteroid therapy could reduce inflammatory signs yet there is no established consensus on its use [8].

CONCLUSION

In conclusion, these clinical cases and the rare cases reported in the literature suggest adding insect bites to the list of possible etiologies of AGPE. The immunopathological mechanisms involved in this reaction remain to be determined.

Consent

The examination of the patient was conducted according to the principles of the Declaration of Helsinki.

The authors certify that they have obtained all appropriate patient consent forms, in which the patients gave their consent for images and other clinical information to be included in the journal. The patients understand that their names and initials will not be published and due effort will be made to conceal their identity, but that anonymity cannot be guaranteed.

REFERENCES

1. Bhat YJ, Akhtar S, Muzaffar A, Iffat H, Rohi W. Etiopathological and clinical study of acute generalized exanthematous pustulosis: Experience from a tertiary care hospital in north India. Indian Dermatol Online J. 2020;11:391-7.
2. Jinwoo L, Alyson E, Kanade S. Acute generalized exanthematous pustulosis. JAMA Dermatol. 2021;157:589.
3. Kouotou EA, Maff o N, Degboe B, Mendouga Menye CR, Défo D, Kouassi A, et al. Acute generalized exanthematous pustulosis due to Phloroglucinol (Spasfon®): A case at the Teaching Hospital of Yaounde, Cameroon. Our Dermatol Online. 2021;12(Supp. 2):6-10.
4. Maghfour S, Youssef M, Hadhri R, Lahouel I, Soua Y, Korbi M, et al. Acute localized exanthematous pustulosis: A novel side effect of piroxicam. Our Dermatol Online. 2022;13:65-6.
5. El Mabrouk S, Mohamed M, Hadhri R, Zili JE. An acute localized reaction following a mosquito bite in a breast cancer treated patient. Clin Case Rep. 2022;10:e5954.
6. Lahouel M, Mokni S, Denguezli M. Acute localized exanthematous pustulosis induced by a spider bite. Am J Trop Med Hyg. 2020;103:937-8.
7. Stoevesandt J, Sturm GJ, Bonadonna P, Oude Elberink JNG, Trautmann A. Risk factors and indicators of severe systemic insect sting reactions. Allergy. 2020;75:535-45.
8. Safa I, Ines L, Noureddine L, Meriem J, Manel N, Belhajali H, et al. Acute localized exanthematous pustulosis: Clinical features, pathophysiology, and therapy. Dermatol Ther. 2021;34:e15087.

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Our Dermatology Online

Case Report

Dermatoses induced by multikinase inhibitors: A case report

Pottipati Preetham, Selva Sudha, Nagarajan Kabilan

Department of DVL, Karpaga Vinayaga Institute of Medical Sciences and Research Centre, GST Road, Chinnakolambakkam, Madhuranthagam (Tk), Chengalpattu(dt) 603308, India

Corresponding author: Preetham Pottipati, MD, DVL, E-mail: drpreethamdvl@gmail.com

ABSTRACT

Multikinase inhibitors, such as sorafenib and lenvatinib, are used in the treatment of patients with renal and hepatocellular carcinoma. Their mechanism of action includes the inhibition of neoangiogenesis through VEGFR, KIT, PDGF, RET, and fibroblast growth factor receptors. A sixty-year-old patient of Indian origin presented to our dermatology OPD with a history of HCC under treatment with sorafenib and a twelve-month history of progressive, pruritic, erythematous, papulosquamous rash on the lower extremities, lumbosacral region, anterior abdomen, perianal region, and perineum. On examination, the patient had tender, desquamative lesions on the palms and soles. He had developed a bullous eruption on the lateral side of both feet and the dorsum of the ankle joint and foot. He was under treatment with sorafenib for twelve months and switched to lenvatinib for two months. ADRs require early diagnosis and effective management in order to make sure that lifesaving anti-neoplastic therapy may be continued uninterrupted.

Key words: Lenvatinib; Sorafenib; Multikinase inhibitors; HCC; Cutaneous reactions

INTRODUCTION

Multikinase inhibitors (MKIs), such as sorafenib and lenvatinib, are a group of drugs used in the treatment of patients with renal carcinoma and hepatocellular carcinoma. The main mechanism of action includes the inhibition of neoangiogenesis through VEGFR, KIT, platelet-derived growth factor receptors (PDGF), RET, and fibroblast growth factor receptors.

CASE REPORT

A sixty-year-old male of Indian origin presented to our outpatient dermatology department at a tertiary care center with a history of liver cirrhosis and HCC under treatment with sorafenib, with a twelve-month history of progressive, pruritic, erythematous, papulosquamous rash on the lower extremities and lumbosacral region and on the anterior abdomen, perianal region, and perineum. On examination, the patient had a tender, desquamative eruption on the palms and soles. He had developed a bullous eruption on the lateral side of both feet and the dorsum of the ankle joint and foot. He had undergone partial hepatectomy and cholecystectomy under treatment with sorafenib for twelve months and switched to lenvatinib two months previously.

A detailed cutaneous examination revealed a bullous eruption on the dorsum of the foot and the posterior and lateral aspects of the calcaneum, which were consistent with hand–foot–skin reaction (HFSR) (Figs. 1a and 1b). He also had tender, eczematous and erythematous plaques on the flexor aspect of the phalangeal joints on the bilateral palms (Fig. 2a). He developed multiple, lichenified plaques and callosities on the dorsal aspect of both feet and the posterior aspect of the calcaneal region, along with numerous pruritic, psoriasiform plaques on the thighs (Fig. 2b) and on the dorsum of the hand and phalanges (Fig. 2c). The patient had multiple, senile comedones on the zygomatic area and seborrheic keratosis and acneiform eruptions on the face. He also had erythematous papules on the

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forehead (Fig. 3a). A genital examination revealed an erythematous, pruritic eruption on the bilateral crural region, perineum, and perianal region (Fig. 3b). The patient had multiple, eruptive, cherry hemangioma on the anterior and posterior aspects of the chest and abdomen. He also had a bullous eruption on the lateral and posterior aspects of the bilateral foot, dorsum of the ankle joint, and dorsum of the foot.

A skin biopsy was taken from the lower limb and the microscopic picture showed vacuolar degeneration of basal cell keratinocytes with spongiosis, consistent with the features of lichenoid dermatitis. The patient was treated with a mild oral steroid, topical antibiotic, and potent corticosteroid, with moderate relief from the symptoms. The patient was switched to lenvatinib 4 mg BD for three months and had a recurrence of similar symptoms.

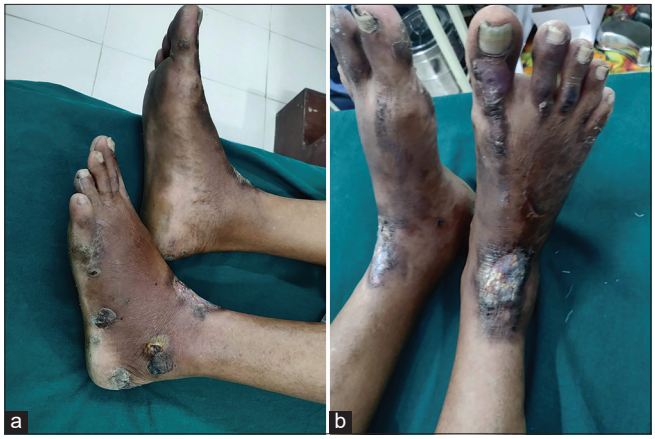

Figure 1: (a) Bullous eruption on the dorsum of the foot and the posterior and lateral aspects of the calcaneum, which were consistent with hand–foot–skin reaction (HFSR). (b) HFSR, healed bullous lesions with an eczematous surface on the dorsal aspect of the ankle and foot.

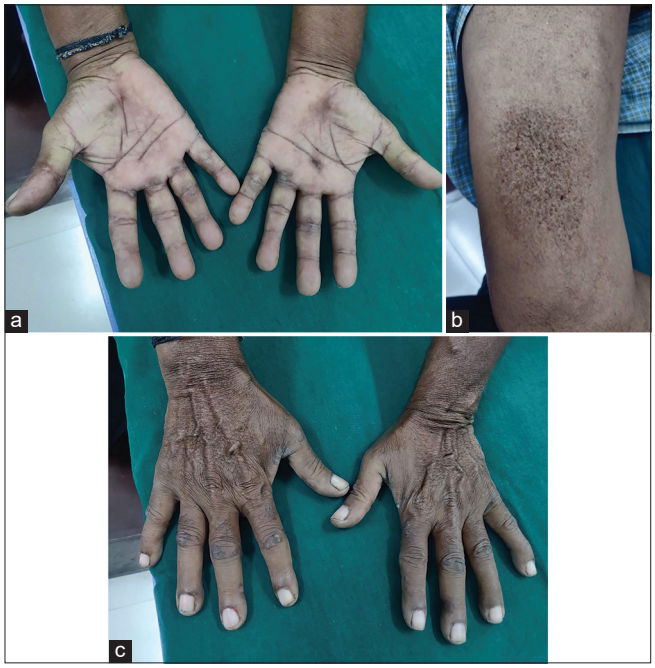

Figure 2: (a) Erythematous plaques on the flexor aspect of the phalangeal joints of the bilateral palms. (b) Pruritic psoriasiform plaques on the thighs. (c) Psoriasiform plaques on the dorsum of the hand and phalanges.

DISCUSSION

Sorafenib and lenvatinib are two related multikinase inhibitors (MKIs), which act by inhibiting VEGFR-1,2,3, PDGFR-β, RET, and KIT. The VEGF signaling pathway is the key pathway of the vasculature of different tumors, which helps in mediating endothelial cell proliferation, vascular permeability, vasodilation, and tumor migration and neovascularization [1].

Lenvatinib is an FDA-approved MKI for the treatment of various tumors, such as advanced HCC, advanced RCC, advanced endometrial carcinoma, and differentiated thyroid carcinoma. There are multiple side effects, both systemic and cutaneous, among which the most common are HFSR, psoriasiform eruption, palmoplantar dysesthesia, generalized xerosis, and papulosquamous rash [2]. The facial rash due to sorafenib is similar to seborrheic dermatitis associated with acneiform eruptions [3].

Clinically, hand–foot–skin reaction presents in the form of bullous rash or eczematous reaction predominantly on the sun-exposed areas of the body such as the acral region. The lesions may adversely affect the life of the patient, which may be measured by the Dermatology Life Quality Index (DQLI).

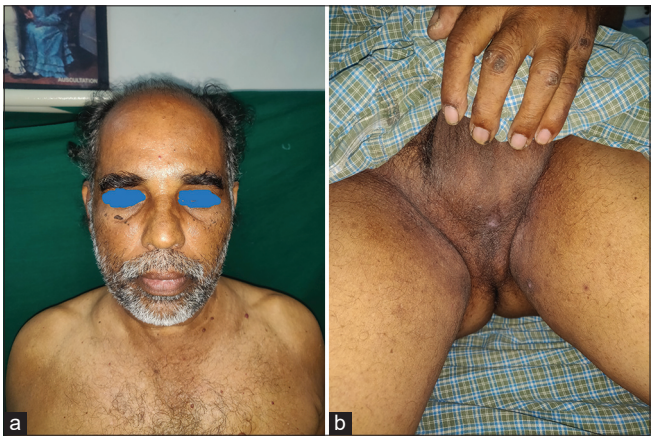

Figure 3: (a) Erythematous papules on the forehead with senile comedones. (b) Erythematous pruritic eruption on the bilateral crural region, perineum, and perianal region.

Hand–foot–skin reaction is also known to be acral site erythema or palmar and plantar erythro-dysesthesia and may present with other antineoplastic agents, including cytarabine, doxorubicin, capecitabine, and 5-fluorouracil. The incidence ranges from 7% to 70% depending on the type of the agent used [4]. Some of the cutaneous manifestations include abnormal paresthesia, pain or tenderness, exfoliation, eczematous reaction, and ill-defined inflammatory infiltrates in histopathology along with the features of lichenoid dermatitis. However, sorafenib-induced HFSR is most commonly associated with palmar or plantar hyperkeratosis [5].

The treatment of HFSR includes moisturizers, topical steroids, topical immunomodulators (TIMS), and keratolytic agents such as urea, lactic acid, and salicylic acid. It is recommended that patients with severe HFSR have their sorafenib dose adjusted, without discontinuation in the treatment protocol. Patients with cutaneous reactions manifesting immediately or within the first 2–4 weeks of initiating multikinase inhibitor therapy are particularly in need of prompt management to alleviate symptoms in order to improve the quality of life and to prevent progression to higher-grade HFSR [6].

VEGF has been implicated in the pathophysiology of psoriasis as it is overexpressed on psoriatic keratinocytes. This contributes to the hyperplasia of the epidermis and induces neoangiogenesis [7]. Therefore, it appears paradoxical that psoriasiform eruptions have been observed following sorafenib and even in lenvatinib therapy, given that both block VEGFR-1,2,3 signaling. On contrary, reports describe that treatment with sorafenib and sunitinib causes the remission of existing chronic plaque psoriasis.

Hypotheses for sorafenib-induced psoriasiform reactions include the hypoxia-inducible factor pathway, which is an upstream of the VEGF pathway. Sorafenib upregulates HIF-2α, which was found to be overexpressed in psoriasiform lesions [8]. Mechanisms by which VEGFR inhibitors such as lenvatinib induce or exacerbate psoriasis or psoriasiform eruptions are yet to be determined and may differ between MKIs due to the diversity in their target action and affinities with different immunomodulatory effects [9].

Other cutaneous effects, such as palmoplantar hyperkeratosis, keratosis pilaris-like eruption, multiple cysts, eruptive keratoacanthomas, and squamous cell carcinoma, have also been described in patients under treatment with sorafenib, which supports the hypothesis that sorafenib alters keratinocyte proliferation, differentiation, and neoangiogenesis [10].

CONCLUSION

Multikinase inhibitors, including sorafenib, may induce a variety of dermatologic adverse reactions. These ADRs require early diagnosis and effective management in order to make sure that lifesaving anti-neoplastic therapy may be continued uninterrupted. Observations as in this case may contribute to a better understanding of the side effects and aid physicians in the early management of the patients.

Consent

The examination of the patient was conducted according to the principles of the Declaration of Helsinki.

The authors certify that they have obtained all appropriate patient consent forms, in which the patients gave their consent for images and other clinical information to be included in the journal. The patients understand that their names and initials will not be published and due effort will be made to conceal their identity, but that anonymity cannot be guaranteed.

REFERENCES

1. Wilhelm SM, Adnane L, Newell P, Villanueva A, Llovet JM, Lynch M. Preclinical overview of sorafenib: A multikinase inhibitor that targets both Raf and VEGF and PDGF receptor tyrosine kinase signaling. Mol Cancer Ther. 2008;7:3129-40.
2. Padda IS, Parmar M. Lenvatinib. [Updated 2022 Jul 12]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK567768/
3. Cohen PR. Sorafenib-associated facial acneiform eruption. Dermatol Ther (Heidelb). 2015;5:77-86.
4. Kwakman JJM, Elshot YS, Punt CJA, Koopman M. Management of cytotoxic chemotherapy-induced hand-foot syndrome. Oncol Rev. 2020;14:442.
5. Kim DH, Son IP, Lee JW, Lee HI, Kim BJ, Kim MN. Sorafenib (Nexavar®, BAY 43-9006)-induced hand-foot skin reaction with facial erythema. Ann Dermatol. 2011;23:119-22.
6. McLellan B, Ciardiello F, Lacouture ME, Segaert S, Van Cutsem E. Regorafenib-associated hand-foot skin reaction: Practical advice on diagnosis, prevention, and management. Ann Oncol. 2015;26:2017-26.
7. Man XY, Yang XH, Cai SQ, Bu ZY, Zheng M. Overexpression of vascular endothelial growth factor (VEGF) receptors on keratinocytes in psoriasis: Regulated by calcium independent of VEGF. J Cell Mol Med. 2008;12:649-60.
8. Sally R, Ugonabo N, Nguyen A, Kim RH, Lo Sicco K. Lenvatinib-induced psoriasiform eruption and palmoplantar erythema in a patient with hepatocellular carcinoma. JAAD Case Rep. 2021;15:1-3.
9. Weidemann AK, Crawshaw AA, Byrne E, Young HS. Vascular

endothelial growth factor inhibitors: Investigational therapies for the treatment of psoriasis. Clin Cosmet Investig Dermatol. 2013;6:233-44.
10. Ensslin CJ, Kao PH, Wu MY, Chang YY, Kuo TT, Hsieh CH, Hsieh SY, Yang CH, Miller LS. Psoriasiform drug eruption secondary to sorafenib: Case series and review of the literature. Cutis. 2019;104:E11-5.

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Our Dermatology Online

Case Report

Extranasal T/NK lymphoma with a fatal outcome: A case report

Najoua Ammar[1], Laila Benzekri[1], Meryem Omari[1], Kawtar Znati[2], Karima Senouci[1]

[1]Department of Dermatology and Venereology, CHU Ibn Sina, Mohammed V University, Rabat, Morocco, [2]Department of Anatomical Pathology, CHU Ibn Sina, Mohammed V University, Rabat, Morocco

Corresponding author: Najoua Ammar, MD, E-mail: najoua1ammar@gmail.com

ABSTRACT

Extranodal T/NK lymphoma (LTNKEN) is a rare and aggressive form of non-Hodgkin lymphoma of high-grade malignancy. A distinction is made between the nasal forms, characterized by primary involvement of the nasal cavity, and the extranasal forms. Primary skin involvement is highly rare. Diagnosis is based on immunohistochemical studies. Treatment includes chemotherapy and radiotherapy. This type of lymphoma has a poor prognosis even with treatment. Herein, we report a Moroccan case of cutaneous T/NK lymphoma in a young patient with a primary cutaneous localization of fatal evolution.

Key words: Lymphoma; Extranodal lymphoma; T/NK lymphoma; Non-hodgkin lymphoma

INTRODUCTION

Extranodal T/NK lymphoma (ENTNHL) is a high-grade, non-Hodgkin, EBV-induced lymphoma [1]. It is a rare lymphoma that affects, in particular, the populations of East Asia and southern South America. There are two types: the nasal forms with primary involvement of the oropharyngeal sphere and the extranasal forms, also known as the nasal type, in which skin involvement is the most common location in terms of frequency, reported in 10% of cases [2]. The prognosis of these lymphomas remains poor because of late diagnosis and an aggressive evolution, complicated by visceral involvement. Herein, we describe a case of cutaneous, nasal-type LTNKEN revealed by a primary cutaneous localization with a fatal outcome in a young patient.

CASE REPORT

A 27-year-old, non-immunocompromised patient presented for four months with a rapidly progressive skin nodule of the leg in a context of fever, night sweats, and a profound alteration in the general condition.

An examination revealed a 20-cm long, violet, erythematous, necrotic skin tumor on the outer surface of the right leg (Fig. 1) associated with a mass of homolateral inguinal adenopathies and hepatosplenomegaly. A workup showed an inflammatory syndrome, functional renal failure, hepatic cytolysis, hypertriglyceridemia, hypercholesterolemia, and pancytopenia. A diagnosis of macrophagic activation syndrome (MAS) was retained.

A skin biopsy revealed a dense and atypical lymphocytic infiltrate (Figs. 2a and 2b). Immunohistochemistry revealed the expression of NK cell markers and cytotoxic molecules (TIA-1, granzyme B, and perforin), as well as the presence of Epstein–Barr virus (EBV) RNA in the tumor cells.

A cervico-thoraco-abdomino-pelvic CT scan revealed a free cavum and the integrity of the laryngo-pharyngeal carrefour. A homogeneous hepatosplenomegaly was also noted. There were no visceral metastases.

The diagnosis was extranasal ENKTL complicated by MAS. Systemic corticosteroid therapy was initiated

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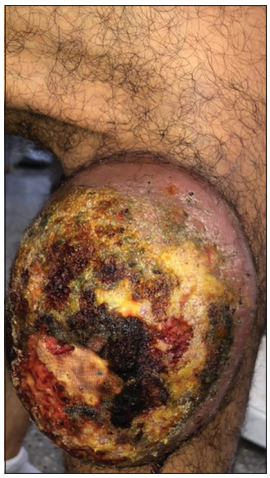

Figure 1: Erythematous and violaceous, nodular tumor, necrotic on the external surface of the left leg.

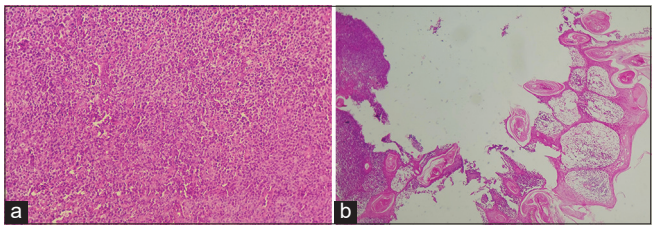

Figure 2: (a and b) Standard histology shows a malignant proliferation of round, spindle-shaped cells of lymphoid appearance with an angiocentric arrangement.

as an emergency, yet the patient died by multivisceral failure.

DISCUSSION

LTNKEN accounts for 5–18% of non-Hodgkin lymphomas [2]. It occurs mainly in Southeast Asia and Central and South American populations, and is rare in Europe and the U.S. A male predominance is observed. It is a high-grade, malignant lymphoma with a poor prognosis [4].

Two entities of extranodal T/NK lymphoma are distinguished according to the initial location of the lesions. The nasal forms (nasal LTNKEN), which represent 80% of cases, begin in the nasal cavity or adjacent structures (orbits, oral cavity, sinuses, upper aerodigestive tract). The extranasal forms, known as the nasal type, represent 20% of cases. Skin involvement may be related to the metastatic extension of nasal LTNKEN to the skin or may be primary in the case of extranasal LTNKEN. Primary skin involvement is reported in 10–26% of cases of LTNKEN, the spleen and liver are the primary sites in 5% of cases, while initial lymph node involvement is exceptional [5].

A longer diagnostic delay and a different visceral involvement explain the poorer prognosis of the extranasal forms. Because of the structures invaded, the nasal forms are more symptomatic at an early stage (nasal obstruction, chronic rhinitis and sinusitis, epistaxis) and are, therefore, generally diagnosed at the localized stage, unlike the extranasal forms.

Skin involvement usually presents as ulcerated tumors, yet also as vasculitis, panniculitis, or cellulitis.

Histology reveals a dense infiltrate of lymphocytes of variable size associated with histiocytes, plasma cells, and eosinophils. This infiltrate is both dermohypodermal and epidermotropic, and frequently presents aspects of necrosis with angiocentricity and angiodestruction [6].

On immunohistochemistry, tumor cells typically express CD2, CD56, and cytotoxic proteins. There is intracytoplasmic CD3E yet no membrane expression of CD3. LMP-1 protein expression is inconsistent, but EBV may be detected by *in situ* hybridization in difficult cases [6].

The prognosis of these lymphomas is poor, particularly in the extranasal forms, due to a longer diagnostic delay and more extensive visceral involvement. In advanced stages, treatment is based on multidrug therapy with L-asparaginase, followed by autologous or even allogeneic hematopoietic stem cell transplantation [7,8].

CONCLUSION

The diagnosis of LTNKEN remains difficult and requires an anatomopathological and clinical confrontation. The cutaneous involvement in this type of lymphoma is often atypical and infrequent, which may lead to a diagnostic delay. The prognosis is generally poor and the diagnosis must be suspected early.

Consent

The examination of the patient was conducted according to the principles of the Declaration of Helsinki.

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published and due effort will be made to conceal their identity, but that anonymity cannot be guaranteed.

REFERENCES

1. World Health Organisation. WHO Classification of Tumors of Haematopoietic and Lymphoid tissues, Lyon, International Agency for Research on Cancer, 2017.
2. Suzuki R, Takeuchi K, Ohshima K, Nakamura S. Extra-nodal NK/T-cell lymphoma: Diagnosis and treatment clues. Hematol Oncol. 2008;26:66-72.
3. William BM, Armitage JO. International analysis of the frequency and outcomes of NK/T-cell lymphomas. Best Pract Res Clin Haematol. 2013;26:23-32.
4. Perry AM, Diebold J, Nathwani BN, MacLennan KA, Muller-Hermelink HK, Bast M, et al. Non-Hodgkin lymphoma in the developing world: Review of 4539 cases from the International Non-Hodgkin Lymphoma Classification Project. Haematologica. 2016;101:1244-50.
5. Au WY, Weisenburger DD, Intragumtornchai T, Nakamura S, Kim WS, Song I, et al. Clinical differences between nasal and extra-nasal natural killer/T-cell lymphoma: A study of 136 cases from the International Peripheral T-Cell Lymphoma Project. Blood. 2009;113:3931-7.
6. Lee WJ, Jung JM, Won CH, Chang SE, Choi JH, Moon KC, et al. Cutaneous extra-nodal natural killer/T-cell lymphoma: A comparative clinicohistopathologic and survival outcome analysis of 45 cases according to the primary tumor site. J Am Acad Dermatol. 2014;70:1002-9.
7. Yamaguchi M, Suzuki R, Oguchi M, Asano N, Amaki J, Akiba T, et al. Treatments and outcomes of patients with extra-nodal natural killer/T-cell diagnosed between 2000 and 2013: A cooperative study in Japan. J Clin Oncol. 2017;35:32-9.
8. Marzouki-Zerouali A, Charbit L, Mitcov M, Violon F, Schmutz JL, Moawad S, et al. [Extra-nodal NK/T-cell lymphoma, nasal-type, revealed by cutaneous and ocular involvement]. Ann Dermatol Venereol. 2019;146:626-33.

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Our Dermatology Online

Case Report

Squamous cell carcinoma on a Buruli ulcer graft scar: Ivory Coast

Almamy Diabaté[1], Ida Aurélie Lenga Loumingou[2], Mienwoley Armel Oussou[1], Mutiyu Akanbi Sule[3], Irené Gué[1], Amon Anderson Stephen Kouabenan[1], Bamba Vagamon[1]

[1]Department of Dermatology, CHU of Bouaké, Ivory Coast, [2]Marein NGouabi University of Brazzaville, Republic of Congo, [3]Alassane Ouattara University of Bouaké, Ivory Coast

Corresponding author: Almamy Diabaté, MD, E-mail: docalmamy@yahoo.fr

ABSTRACT

The Buruli ulcer is an infectious necrotizing panniculitis due to *Mycobacterium ulcerans*, which heals leaving scars. On these scars, squamous cell carcinoma may occur in the long term, even in the case of skin grafting. Herein, we report a case of squamous cell carcinoma occurring on a directed Buruli ulcer scar. A 35-year-old patient with a history of a Buruli ulcer healed with a skin graft in a specialized center for about thirteen years consulted for a cauliflower-like, ulcerating swelling on the left elbow. An examination revealed a large, ulcerating, cauliflower-like swelling. The diagnosis of squamous cell carcinoma was retained, and an amputation was performed without chemotherapy. There was no recurrence after six months of follow-up. After good healing, the Buruli ulcer seemed to present a risk of long-term evolution toward cancer. This observation raises the question of the carcinogenic role of *Mycobacterium ulcerans*.

Key words: Buruli ulcer; Scar; Squamous cell carcinoma

INTRODUCTION

Buruli ulcer is an infectious necrotizing panniculitis caused by *Mycobacterium ulcerans* [1]. Currently, the endemic continues to grow and its incidence is increasing dramatically, especially in West African countries such as Ivory Coast. The Buruli ulcer is characterized by its chronic evolution, characterized by extensive skin eruptions complicated by dystrophic, fibrous, and retractile scars [2-5]. On the other hand, directed healing gives considerable scars resistant to traumatic events. On these fibrous scars, squamous cell carcinoma may occur in the long term. In Abidjan, the first case was observed in 2010 [6], then eight cases were observed in 2015 [1], and finally one case in Bouaké in 2019. However, there has been no report on directed scars. Herein, we report a case of squamous cell carcinoma occurring on directed scarring of a Buruli ulcer in a 35-year-old patient without comorbidities.

CASE REPORT

A 35-year-old, HIV-negative patient with a history of a Buruli ulcer healed with a skin graft in a specialized Buruli ulcer management center in Kongouanou (Yamoussoukro) for around thirteen years consulted for an ulcerating swelling on the left elbow present for the past two months. An examination revealed a large swelling, around 12 cm in diameter, ulcerating and bubbling, with a cauliflower-like appearance, bleeding easily on contact, painful, and located on the inner side of the left elbow (Fig. 1a). The peri-lesional skin was normal in appearance. Biology revealed normocytic hypochromic anemia. Histology revealed a proliferation of atypical squamous cells (large hyperchromatic nuclei, numerous mitoses) in invasive lobules, associated with disorders of keratinization. Finally, the tumor stroma was inflammatory (Fig. 1b). An X-ray of the elbow showed bone lysis. The diagnosis of squamous

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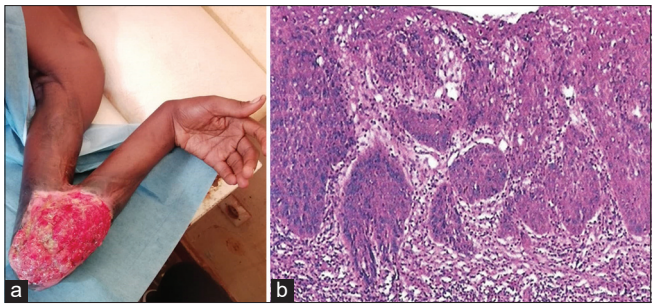

Figure 1: (a) Burgeoning ulcer tumor. (b) Histological appearance of squamous cell carcinoma.

cell carcinoma without metastasis was retained. Amputation was performed without chemotherapy. There was no recurrence after six months of follow-up.

DISCUSSION

The Buruli ulcer is hyperendemic in West and Central Africa: 16,517 cases were recorded from 2006 to 2015, and about five hundred new cases are recorded each year in Côte d'Ivoire, which remains a highly active focus [4]. The epidemiology of the infection responsible for scarring [5,7] explains the young age of our patient and the location of the carcinoma on the limb. No comorbidity, in particular, HIV infection, which is a factor favoring the development of malignant tumors in sub-Saharan Africa, was noted in our observation. The healing of the lesions occurred after several months of treatment. In our report, our patient had highly satisfactory scars after directed healing. The occurrence of cancer in Buruli ulcer scars is known [1,6].

Isolated cases of squamous cell carcinoma have already been described [8,9]. The first Ivorian observation was in 2010 [6]. Since then, eight cases have been recruited by the Abidjan center, which suggests a higher number at the national level since the Abidjan center does not have a monopoly on Buruli ulcer management. All these cases developed on fibrous and retractile scars. If sun exposure is the main risk factor for cutaneous squamous cell carcinoma in fair-skinned people, non-sun factors would be involved in people with pigmented skin. These are mainly chronic leg ulcers (neglected post-traumatic or infectious), HIV infection, discoid lupus, and various chronic scars [10,11]. Carcinomatous degeneration of scars, including scars from old burns, is consistently reported.

There is a lack of epidemiologic studies on this topic in North African and sub-Saharan African countries, where sunlight is high, medical resources are limited, and the risk of repeated scar ulceration becomes higher. The etiology of cancers occurring on scars is not fully understood, although the current hypotheses include proliferation due to chronic inflammation and tissue irritation. In addition, ongoing tissue exposure to toxins and co-carcinogenic factors after injury, as well as poor vascularization of scar tissue, weakens local immune defenses [12-14]. The characteristics of Buruli ulcer scars, which resemble burn scars, may explain why they are particularly prone to carcinomatous degeneration. On the other hand, our patient benefited from directed healing and, thus, a better-quality scar with good vascularization.

Moreover, one may also evoke the chronicity of the wound in this infection or wonder if the mycobacterium itself may not have played a role in carcinogenesis. This observation is, in our opinion, a warning signal. Given the number of people affected by this disease in their childhood or adolescence in Côte d'Ivoire and more generally in sub-Saharan Africa, it is to be feared that there will be a recrudescence of cases in the years to come when these adolescents reach adulthood. To this end, preventive measures should be taken from now on in the countries concerned: the introduction of systematic surveillance of patients "cured" of the Buruli ulcer in order to detect the first signs of carcinomatous degeneration and to sensitize the patients to an early consultation in front of any modification of their scars. This carcinological prevention requires very early management (at a stage without bone involvement or metastasis) of cases to improve the prognosis.

CONCLUSION

After a complete healing, the Buruli ulcer appears to have a long-term risk of progression to cancer. The scars of this condition may be considered precancerous lesions. This observation puts into question the safety of directed healing and the carcinogenic role of *Mycobacterium ulcerans*.

Consent

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REFERENCES

1. Kaloga M, Kourouma H-S, Diabaté A, Gbery P, Sangaré A Elidjé E-J, et al. Carcinomes épidermoïdes sur cicatrices d'ulcère de Buruli en Afrique de l'Ouest. Ann Dermatol Vénéréol. 2016;143:16-20.
2. Koudoukpo C, Atadokpede F, Salissou L, Assogba F, Akpadjan F, Degboe B, et al. [Clinical evaluation of the deadline of healing of the ulcer of Buruli hurts of diameter lower or equal to 10 centimeters in pobe (Benin)]. Our Dermatol Online. 2016;7:139-44.
3. Saka B, Landoh DE, Kobara B, Djadou KE, Yaya I, Yékplé KB, et al. Profil de l'ulcère de Buruli pris en charge au Centre national de reference du Togo: étude de 119 cas. Bull Soc Pathol Exot. 2013;106:326.
4. Ecra E, Yoboue P, Aka B, Gbery P, Sangare A, Kanga K, et al. Les complications de l'ulcère de Buruli: Analyse de 97 cas. Med Afr Noire. 2001;48:4.
5. Kanga JM, Kacou ED, Kouamé K, Kassi K, Kaloga M, Yao JK, et al. Lutte contre l'ulcère de Buruli. Expérience de la Côte d'Ivoire. Bull Soc Pathol Exot. 2006;99:348.
6. Kassi K, Kouame K, Allen W, Kouassi LA, Ance W, Kanga JM. Squamous cell carcinoma secondary to Buruli ulcer: A clinical case report in a young girl. Bacteriol Virusol Parazitol Epidemiol. 2010;55:258.
7. Nienhuis WA, Stienstra Y, Thompson WA, Awuah PC, Abass KM, Tuah W, et al. Antimicrobial treatment for early, limited *Mycobacterium ulcerans* infection: A randomised controlled trial. Lancet. 2010;375:66472.
8. Minutilli E, Orefici G, Pardini M, Giannoni F, Muscardin LM, Massi G, et al. Squamous cell carcinoma secondary to Buruli ulcer. Dermatol Surg. 2007;33:8725.
9. El Hadadi F, Mezni L, Znati K, Meziane M, Ismaili N, Benzekri L, et al. Pyoderma gangrenosum mimicking a Buruli's ulcer in an HIV-positive patient from Ivory Coast. Our Dermatol Online. 2022;13:158-60.
10. Saka B, Souley Z, Kombaté K, Mouhari-Toure A, Akakpo S, Napo Koura G, et al. Les cancers cutanés au Togo: 223 observations. Med Trop. 2010;70:16971.
11. Dieng MT, Diop NN, Déme A, Sy TN, Niang 50, Ndiaye B. [Squamous cell carcinoma in black patients: 80 cases]. Ann Dermatol Venereol. 2004;131:10557.
12. Ouahbi S, Droussi H, Boukind S, Dlimi M, Elatiqi OK, Elamrani MD, et al. Ulcère de Marjolin: Complication redoutable des séquelles de brûlures. Ann Burns Fire Disasters. 2013;26:199204.
13. Wallingford SC, Olsen CM, Plasmeijer E, Green AC. Skin cancer arising in scars: A systematic review. Dermatol Surg. 2011;37:123944.
14. Almamy D, Koffi KPG, Amon ASK, Irenée G, Boussou RA. A case of squamous cell carcinoma occurring on a scar of Buruli ulcer in Bouake, Ivory Coast. PAMJ. 2019;33:246.

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Our Dermatology Online

Case Report

Psoriasis induced by anti-TNF-alpha agents in a patient with Crohn's disease: A case report and review of the literature

Soukaina Sektaoui, Zoubida Mehsas, Laila Benzekri, Karima Senouci

Department of Dermatology & Venereology, Ibn Sina University Hospital, Faculty of Medicine and Pharmacy of Rabat, Mohamed V University, Rabat, Morocco

Corresponding author: Soukaina Sektaoui, MD, E-mail: soukaina.sektaoui@gmail.com

ABSTRACT

Tumor necrosis factor alpha (TNF-α) inhibitors revolutionized the treatment of autoimmune diseases, for instance, inflammatory bowel diseases, ankylosing spondylitis, and arthritis. This treatment has a good safety profile; nevertheless, its prolonged use increases the risk of adverse reactions, particularly, dermatological lesions. Herein, we present the case of a sixty-year-old female with a five-year history of Crohn's disease and segmental vitiligo, who developed psoriatic lesions (paradoxical reaction) after the second injection of adalimumab. The diagnosis was confirmed by a skin biopsy, and the patient was treated with topical corticosteroids. After two months of clinical follow-up, we achieved a complete healing of all lesions.

Key words: Psoriasis; TNF; Crohn's disease; Skin; Corticosteroids; Biopsy; Adalimumab.

INTRODUCTION

Tumor necrosis factor alpha (TNF-α) inhibitors have revolutionized the treatment of autoimmune diseases and are useful in chronic inflammatory conditions [1]. The three anti-TNF agents currently in use are etanercept, infliximab, and adalimumab [2]. They decrease not only joint inflammation yet also skin inflammation in patients with psoriatic arthritis with a safety profile [3]. According to the literature, these three traditional anti-TNF agents, along with those new (certolizumab and golimumab), cause *paradoxical psoriasis* [4,5]. This term was coined because anti-TNF-alpha agents are largely and successfully employed in the treatment of psoriasis [6]. Herein, we report the case of a sixty-year-old patient with a history of Crohn's disease and segmental vitiligo, who developed psoriatic lesions (paradoxical reaction) after treatment with adalimumab.

CASE REPORT

This is the case of a sixty-year-old female with a five-year history of segmental vitiligo and Crohn's disease. She was treated with adalimumab (50 mg every two weeks). Twelve months after the initiation of treatment, she developed a symmetric erythematous eruption on large skin folds (under the breasts, on the axilla, in the intergluteal cleft, and in the retroauricular areas) and on the scalp (Fig. 1). She had no clinical evidence of nail lesions. The skin eruptions affected less than 15% of the body's surface area. A skin biopsy of the lesions revealed parakeratosis, hypogranulosis, and papillomatosis, which confirmed the diagnosis of psoriasis (Fig. 2). The lesions responded well to treatment with topical steroids. After two months of follow-up, all lesions healed (Fig. 3). Due to the limited extent of the lesions and the highly beneficial effect of anti-TNF-α on the disease, adalimumab was restarted. After seven months of follow-up, no recurrence of the psoriatic lesions was observed.

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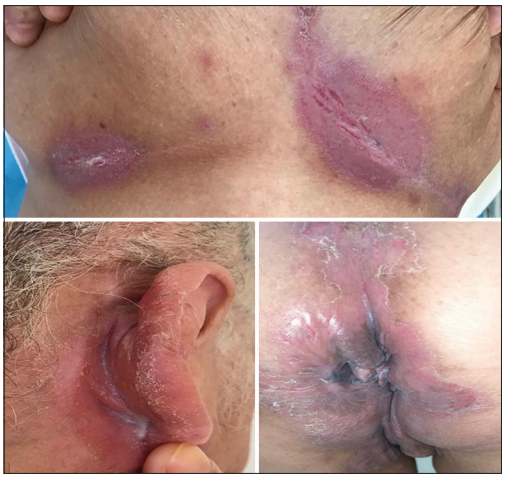

Figure 1: Psoriatic erythematous plaques under the breasts, in the intergluteal cleft, and in the retroauricular areas.

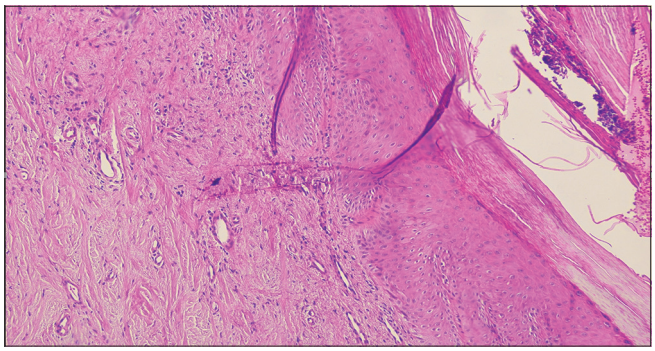

Figure 2: Skin biopsy revealing parakeratosis, hypogranulosis, and papillomatosis.

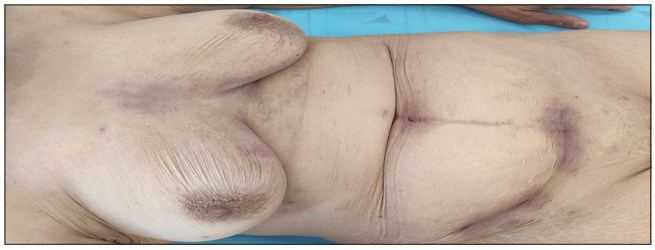

Figure 3: Final result after two months of follow-up.

DISCUSSION

Since the late 1990s, with the introduction of biological therapies such as anti-TNF agents, the management of rheumatologic conditions such as rheumatoid arthritis and seronegative arthritis has improved [7,8]. Thus, in parallel with their spread, a number of unusual and induced reactions have been reported, including paradoxical psoriasis [7]. The term *paradoxical psoriasis* was coined due to the widespread and successful use of anti-TNF agents in the treatment of psoriasis [6]. The first case was reported in 2004 by Verea et al. [9]. Following that, the British Society of Rheumatology Biologics Registry reported twenty-five cases of psoriasis caused by anti-TNF-α in 9826 patients [10]. Wollina et al. [11] and Collamer and Battafarano [12] reported 116 and 207 cases, respectively. Another prospective study noticed that patients treated with adalimumab presented a higher incidence of paradoxical reactions [10]. All of the studies concluded that these dermatological lesions are a class effect rather than a drug-specific effect because they are induced not only by the three traditional anti-TNF agents (infliximab, adalimumab, and etanercept), yet also by the newer ones (certolizumab and golimumab) [5,13]. The incidence of psoriasis caused by anti-TNF agents has been reported to be low (1.04–3.0 per 1000 person-years) and the prevalence has ranged from 0.6% to 5.3% [13], with the prevalence being higher in patients with chronic inflammatory arthritic conditions [1]. The pathophysiologic mechanisms responsible for this phenomenon remain elusive and several theories have been suggested. The first suggests that TNF-α may cause IFN-α overexpression and, thus, the onset of psoriasis, which was supported by a study by Seneschal et al. [14], who discovered a higher level of perivascular and epidermal myxovirus-resistance protein A (MxA) in inflammatory cells of psoriasis skin samples induced by anti-TNF agents, indicating a local IFN release. Anti-TNF-α agents may also promote the infiltration of autoreactive T cells into the skin, which has been found to be up-regulated in psoriatic lesions [15]. Psoriasis induced by TNF-α may be caused by a number of different mechanisms, which vary from patient to patient. However, other cytokine and T-cell pathways may be involved, which explains the appearance of psoriasiform lesions in patients treated with different biological therapies such as rituximab, anakinra, and tocilizumab [16]. These psoriasiform lesions typically appear within the first two weeks of anti-TNF treatment, which aids in ruling out a hypersensitivity drug reaction [17]. In our case, the lesions appeared twelve months after the initiation of treatment, which made the clinical diagnosis more difficult. The typical clinical manifestation of this phenomenon is plaques and pustular psoriasis with palmoplantar involvement, yet the development of guttate psoriasis and psoriasis of the nail and scalp with alopecia have also been described [18]. Skin biopsies confirm the diagnosis and show the same histological lesions present in patients with idiopathic psoriasis and may be of value in ruling out other possible causes [19]. All patients treated with anti-TNF inhibitors should remain under close surveillance. There are no guidelines for treating this

pathology, yet a wide range of therapeutic approaches may be proposed [17]. Collamer et al. [12] proposed that skin eruptions that affect less than 5% of body surface area may be treated with topical treatments (corticosteroids, keratolytics, and vitamin D analogs) without discontinuing the TNF inhibitor. However, if it covers more than 5% or when in the case of pustular psoriasis and unsuccessful topical treatment, the addition of systemic therapy (methotrexate, retinoids, cyclosporine) or PUVA may be beneficial. In the absence of a response to previous treatments, the anti-TNF agent should be discontinued [12]. In our case, skin eruptions affected more than 5% and less than 15% of body surface area, hence we decided to discontinue the TNF inhibitor, use topical treatments, and avoid switching to another anti-TNF agent because this paradoxical reaction is a class effect with a high risk of recurrence (48–85%) [17].

CONCLUSION

Psoriasis may develop during therapy with anti-TNF-α agents, sometimes with enough severity to prompt the discontinuation of the medication. The exact incidence and prevalence of this reaction are unknown, yet they are becoming more and more important [1]. TNF-α appears to play an important and complex role in the pathogenesis of psoriasis, which is still being investigated [2]. Additional studies are necessary to better clarify the pathophysiology of this unexpected skin reaction in patients undergoing anti-TNF-α treatment and to help define and improve treatment strategies. Clearly, patients should be informed of these paradoxical effects prior to the beginning of treatment, and physicians should exercise close surveillance. In the event of any appearance of these lesions, the patient should be referred immediately to the dermatologist.

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Consent

The examination of the patient was conducted according to the principles of the Declaration of Helsinki.

The authors certify that they have obtained all appropriate patient consent forms, in which the patients gave their consent for images and other clinical information to be included in the journal. The patients understand that their names and initials will not be published and due effort will be made to conceal their identity, but that anonymity cannot be guaranteed.

REFERENCES

1. Sfikakis PP, Iliopoulos A, Elezoglou A, Kittas C, Stratigos A. Psoriasis induced by anti-tumor necrosis factor therapy: A paradoxical adverse reaction. Arthritis Rheum. 2005;52:2513-8.
2. Dubertret L, Sterry W, Bos JD, Chimenti S, Shumack S, Larsen CG, et al. CLEAR Multinational Study Group. Clinical experience acquired with the efalizumab (Raptiva) (CLEAR) trial in patients with moderate-to-severe plaque psoriasis: Results from a phase III international randomized, placebo-controlled trial. Br J Dermatol. 2006;155:170-81.
3. Mease P. TNF-alpha therapy in psoriatic arthritis and psoriasis. Ann Rheum Dis. 2004;63:755-8.
4. Shelling ML, Vitiello M, Lanuti EL, Miteva M, Roma- nelli P, Kerdel FA. A case of palmoplantar pustulosis induced by certolizumab pegol: New anti-TNF-alpha demonstrates the same class effect. J Clin Aesthet Dermatol. 2012;5:40-1.
5. Mateo S, García-Martínez FJ, Sánchez-Aguilar D, Amarelo J, Toribio J. Psoriasiform exfoliative erythroderma induced by golimumab. Clin Exp Dermatol. 2014;39:813-5.
6. Oh CJ, Das KM, Gottlieb AB. Treatment with anti-tumor necrosis factor alpha (TNF-alpha) monoclonal antibody dramatically decreases the clinical activity of psoriasis lesions. J Am Acad Dermatol. 2000;42:829-30.
7. Camussi G, Lupia E. The future role of anti-tumour necrosis factor (TNF) products in the treatment of rheumatoid arthritis. Drugs. 1998;55:613-20.
8. Braun J, Sieper J. Biological therapies in the spondyloarthritides: The current state. Rheumatology (Oxford). 2004;43:1072-84.
9. Verea MM, Del Pozo J, Yebra-Pimentel MT, Porta A, Fonseca E. Psoriasiform eruption induced by infliximab. Ann Pharmacother. 2004;38:54-7.
10. British Society for Rheumatology Biologics Register Control Centre Consortium, BSRBR; Harrison MJ, Dixon WG, Watson KD, King Y, Groves R, Hyrich KL, et al. Rates of new-onset psoriasis in patients with rheumatoid arthritis receiving anti-tumour necrosis factor alpha therapy: Results from the British Society for Rheumatology Biologics Register. Ann Rheum Dis. 2009;68:209-15.
11. Wollina U, Hansel G, Koch A, Schönlebe J, Köstler E, Haroske G. Tumor necrosis factor-alpha inhibitor-induced psoriasis or psoriasiform exanthemata: First 120 cases from the literature including a series of six new patients. Am J Clin Dermatol. 2008;9:1-14
12. Collamer AN, Battafarano DF. Psoriatic skin lesions induced by tumor necrosis factor antagonist therapy: Clinical features and possible immuno-pathogenesis. Semin Arthritis Rheum. 2010;40:233-40.
13. Lee HH, Song IH, Friedrich M, Gauliard A, Detert J, Rowert J, et al. Cutaneous side-effects in patients with rheumatic diseases during application of tumour necrosis factor-alpha antagonists. Br J Dermatol. 2007;156:486-91.
14. Seneschal J, Milpied B, Vergier B, Lepreux S, Schaeverbeke T, Taïeb A. Cytokine imbalance with increased production of interferon-alpha in psoriasiform eruptions associated with antitumour necrosis factor-alpha treatments. Br J Dermatol. 2009;161:1081-8.
15. Flier J, Boorsma DM, van Beek PJ, Nieboer C, Stoof TJ, Willemze R. Differential expression of CXCR3 targeting chemokines CXCL10, CXCL9, and CXCL11 in different types of skin inflammation. J Pathol. 2001;194:398-405.
16. Palmou-Fontana N, Sánchez Gaviño JA, McGonagle D, García-Martinez E, Iñiguez de Onzoño Martín L. Tocilizumab-induced psoriasiform rash in rheumatoid arthritis. Dermatology.

2014;228:311-3.
17. Ciccarelli F, De Martinis M, Sirufo MM, Ginaldi L. Psoriasis induced by anti-tumor necrosis factor alpha agents: A comprehensive review of the literature. Acta Dermatovenerol Croat. 2016;24:169-74.
18. Laga AC, Vleugels RA, Qureshi AA, Velazquez EF. Histopathologic spectrum of psoriasiform skin reactions associated with tumor necrosis factor α inhibitor therapy. A study of 16 biopsies. Am J Dermatopathol. 2010;32:568-73.
19. Flendrie M, Vissers WH, Creemers MC, De Jong EM, Van de Kerkhof PC, Van Riel PL. Dermatological conditions during TNF-alpha-blocking therapy in patients with rheumatoid arthritis: A prospective study. Arthritis Res Ther. 2005;7:R666-76.

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Our Dermatology Online

Case Report

PAPASH syndrome: The first case report from Syria

Lina Al Soufi[1], Heba Fawal[1], Latifa Kassam[2], Zuheir Al-Shehabi[3]

[1]Department of Dermatology, National Hospital, Lattakia, Syria, [2]Faculty of Medicine, Tishreen Univesity, Lattakia, Syria, [3]Department of Pathology, Faculty of Medicine, Tishreen University, Lattakia, Syria

Corresponding author: Heba Fawal, MD, E-mail: fawalheba6@gmail.com

ABSTRACT

PAPASH syndrome is a rare autoinflammatory syndrome consisting of four essential components: pyogenic arthritis (PA), pyoderma gangrenosum (PG), acne (A), and suppurative hidradenitis (SH). The true etiology is unknown, yet genetic analysis has shown associations with PSTPIP1 mutations, which ultimately lead to elevations in interleukin-1 activity. Herein, we report a case of painful ulcers in a 47-year-old Syrian male located on the legs and swelling of both ankles, with a bad condition and hyperthermia. He also had a history of acne, suppurative hidradenitis, fistulas, and abscesses in the buttock area. The results of skin biopsy, laboratory testing, joint aspiration, and poor responding to antibiotic treatment excluded the infective nature of the case. To our knowledge, this was the first case of PAPASH syndrome diagnosed in Syria.

Key words: PAPASH syndrome; Pyoderma gangrenosum; Hidradenitis suppurativa; Hereditary autoinflammatory diseases; Acne

INTRODUCTION

PAPASH syndrome is a rare autoinflammatory syndrome consisting of the following tetrad: pyogenic arthritis (PA), pyoderma gangrenosum (PG), acne vulgaris (A), and suppurative hidradenitis (SH) [1]. The underlying pathogenesis depends on recurrent episodes of sterile inflammation consisting mainly of neutrophils and induced by the interleukin (IL)-1 family [2]. The syndrome was first described in 2013 [1].

We present this case to increase awareness of this syndrome among dermatologists and because of the very few cases of PAPASH syndrome published in the past. In addition, to our knowledge, this is the first case reported in Syria.

CASE REPORT

A 47-year-old male presented to our hospital in January 2021 for the evaluation of worsening, painful ulcers located on the legs, swelling in the ankle joint, and difficulty in walking, beginning over a month ago, with a bad condition, hyperthermia, and fatigue (Figs. 1a and 1b).

The patient had a ten-year history of diabetes mellitus type 2 and anemia. A clinical examination revealed skin acne on the face and back, suppurative hidradenitis (SH), fistulas, and abscesses in the buttock area (Figs. 2a and 2b).

Serologic testing revealed elevated C-reactive protein (290 mg/L; normal: <6 mg/L), increased white blood cells (leukocytosis: 20,000/μL), a negative rheumatoid factor, and the ESR at 75 mm (1 h) and 125 mm (2 h). The joint aspiration showed pus, and microbiology culture returned negative for aerobics and anaerobic microorganisms, which excluded a septic cause. Chest X-ray showed no changes. Liver and spleen echography was within normal limits.

The patient was previously treated with antibiotics without any significant improvement.

A skin biopsy taken from the ulcer consisted of pyoderma gangrenosum (PG), revealing epidermal

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ulceration, necrosis, and acute inflammatory cell infiltrate of neutrophils. The dermis was infiltrated by diffused and mixed inflammatory cell infiltrate of neutrophils, macrophages, and lymphocytes with scattered dilated blood vessels (Figs. 3a and 3b).

Bone marrow (BM) biopsy from the iliac spine bone was indicated to exclude leukemia and malignancy, including metastasis. Sections revealed increased cellularity (~60–70%; M: E ratio: 8:1), hyperplastic changes in myeloid cells, trilineage hematopoiesis with normal maturation, and no evidence of granuloma, fibrosis, myelodysplastic syndrome (MDS), or abnormal cellular infiltrate, including metastases (Figs. 4a and 4b).

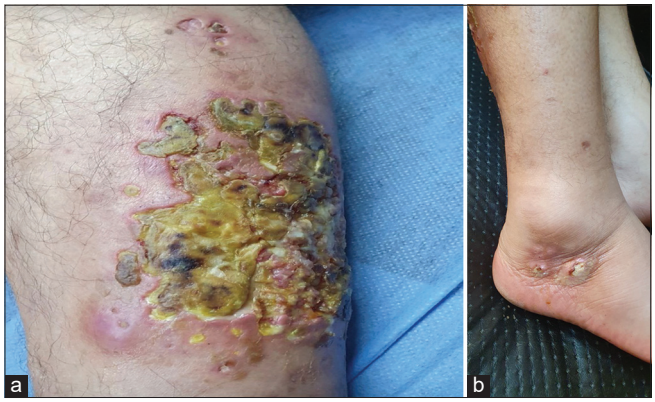

Figure 1: (a) Clinical image of the patient: multiple skin ulcers with a vegetative bed on the legs. (b) The swollen ankle with erythema and pus discharge.

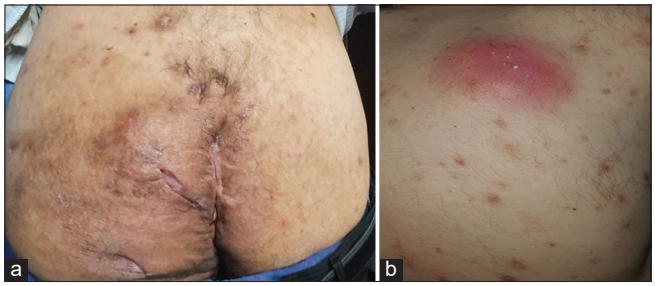

Figure 2: (a) Hidradenitis suppurativa involving the buttocks and perianal region. (b) Acne lesions and abscess on the back.

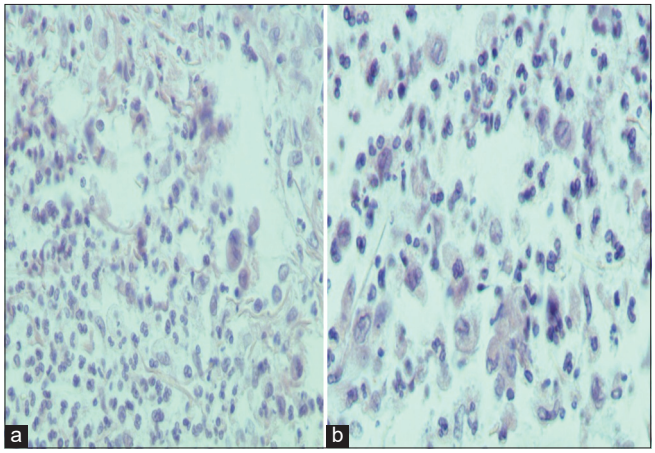

Figure 3: (a and b) Skin biopsy specimens taken from the PG ulcer showing epidermal ulceration with necrosis; a dense acute inflammatory cell infiltrate of the dermis and subcutis.

The patient was finally diagnosed with PAPASH syndrome according to the history of pyogenic arthritis (PA), pyoderma gangrenosum (PG), acne vulgaris (A), and suppurative hidradenitis (SH), with no family history of inflammatory diseases.

He was treated with prednisone 1 mg/kg for one month, then the dose was gradually reduced by 5 mg every week. Methotrexate was added 10 mg per week with 20 mg of prednisone daily.

The treatment produced remarkable clinical improvement in the skin ulcerations, and the disease was almost in complete remission, which confirmed the diagnosis of PAPASH syndrome (Figs. 5a and 5b).

DISCUSSION

Acne and hidradenitis suppurativa (HS) are chronic inflammatory skin disorders with a common

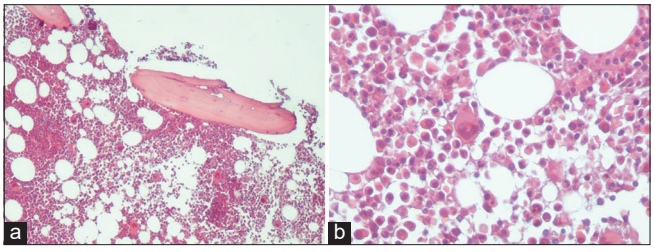

Figure 4: (a and b) Bone marrow biopsy showing increased cellularity (~60–70%; M:E ratio: 8:1), hyperplastic changes in myeloid cells, and trilineage hematopoiesis with normal maturation.

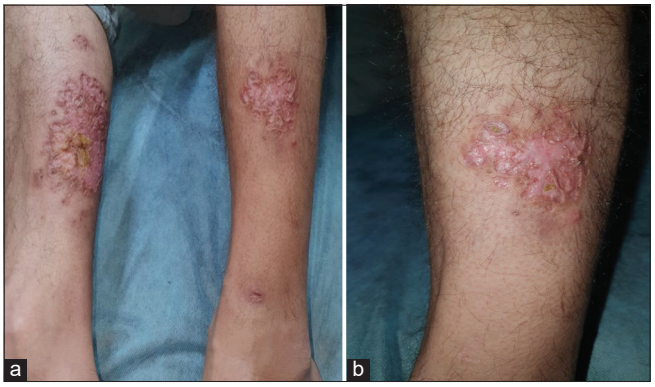

Figure 5: (a and b) Clinical improvement in the skin ulcerations after a course of treatment with prednisone and methotrexate (notice the characteristic cribriform scars after the healing of pyoderma gangrenosum).

pathogenesis, including follicular occlusion of the pilosebaceous unit with an irregular response of the immune system [3,4]. There are numerous autoinflammatory syndromes in the literature in which HS and acne are essential components [5].

PAPASH is a highly rare autoinflammatory syndrome composed of suppurative hidradenitis (SH), which is a chronic inflammatory disease of the skin defined by recurrent abscesses that form fistulas and scars, pyoderma gangrenosum (PG), acne, and pyogenic arthritis. PSTPIP1 mutations have been identified in PAPASH [1].

The rarity of this syndrome makes treatment difficult due to the lack of specific criteria for treatment. Therefore, it is important to increase medical awareness of this type of syndrome in order to improve the patient's quality of life and early diagnosis. The therapeutic approach included the use of an antibiotic [6] and a classic immunosuppressive, such as systemic glucocorticosteroids and azathioprine, dapsone, and isotretinoin, although with varied experience [7].

Suppurative hidradenitis associated with autoinflammatory syndromes is often severe (Hurley II, III) and does not respond to many usual treatments. Therefore, the combination of antibiotic therapy and surgery may lead to success in the management of the syndrome [6].

Understanding the pathogenesis of PAPASH syndrome has led to more targeted treatment approaches. Several reports have documented the efficacy of anti-interleukin (IL1) 1β treatment, more commonly with the IL1 receptor antagonist anakinra [8]. Treatment with antitumor necrosis factor-alpha (anti-TNF-α) (adalimumab) agents has shown efficacy and led to good clinical control of the symptoms [9]. In our case, however, our patient may be treated with target biological therapy at later stages.

CONCLUSION

This was a case of PAPASH syndrome in an adult Syrian male, which was, to our knowledge, the first case diagnosed in Syria. PAPASH syndrome is an exceptionally rare condition in which diagnosis remains clinical. Early diagnosis and treatment are crucial in order to prevent morbidity related to untreated diseases and to improve the quality of life of the patient. We need more studies to understand the relationship between PG-related syndromes and PAPASH syndrome to be able to establish more effective treatment and keep symptoms in a longer remission.

Consent

The examination of the patient was conducted according to the principles of the Declaration of Helsinki.

The authors certify that they have obtained all appropriate patient consent forms, in which the patients gave their consent for images and other clinical information to be included in the journal. The patients understand that their names and initials will not be published and due effort will be made to conceal their identity, but that anonymity cannot be guaranteed.

REFERENCES

1. Marzano AV, Trevisan V, Gattorno M, Ceccherini I, De Simone C, Crosti C. Pyogenic arthritis, pyoderma gangrenosum, acne, and hidradenitis suppurativa (PAPASH): A new autoinflammatory syndrome associated with a novel mutation of the PSTPIP1 gene. JAMA Dermatol. 2013;149:762-4.
2. Cugno M, Borghi A, Marzano AV. PAPA, PASH and PAPASH syndromes: Pathophysiology, presentation and treatment. Am J Clin Dermatol. 2017;18:555-62.
3. Suh DH, Kwon HH. What's new in the physiopathology of acne? Br J Dermatol. 2015;172 Suppl 1:13-9.
4. Yazdanyar S, Jemec GB. Hidradenitis suppurativa: A review of cause and treatment. Curr Opin Infect Dis. 2011;24:118-23.
5. Kastner DL, Aksentijevich I, Goldbach-Mansky R. Autoinflammatory disease reloaded: A clinical perspective. Cell. 2010;140:784-90.
6. Join-Lambert O, Duchatelet S, Delage M, Miskinyte S, Coignard H, Lemarchand N, et al. Remission of refractory pyoderma gangrenosum, severe acne, and hidradenitis suppurativa (PASH) syndrome using targeted antibiotic therapy in 4 patients. J Am Acad Dermatol. 2015;73:S66-9.
7. Braun-Falco M, Kovnerystyy O, Lohse P, Ruzicka T. Pyoderma gangrenosum, acne, and suppurative hidradenitis (PASH)--a new autoinflammatory syndrome distinct from PAPA syndrome. J Am Acad Dermatol. 2012;66:409-15.
8. Faleri S, Feichtner K, Ruzicka T. [Severe acne in autoinflammatory diseases]. Hautarzt. 2016;67:897-901.
9. Garzorz N, Papanagiotou V, Atenhan A, Andres C, Eyerich S, Eyerich K, et al. Pyoderma gangrenosum, acne, psoriasis, arthritis and suppurative hidradenitis (PAPASH)-syndrome: a new entity within the spectrum of autoinflammatory syndromes?. J Eur Acad Dermatol Venereol. 2016;30:141-3.

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Our Dermatology Online

Case Report

Verrucous squamous cell carcinoma complicating chronic intertrigo

Siham Boularbah[1], Merem Soughi[1], Sabrina Oujdi[1], Kaoutar El Fid[1], Zakia Douhi[1], Hanane Baybay[1], Sara Elloudi[1], Fatima-Zahra Mernissi[1], Imane Gouzi[2], Layla Tahiri Elousrouti[2], Laila Chbani[2]

[1]Department of Dermatology and Venerology, University Hospital Hassan II, Fez, Morocco, [2]Laboratory of Pathological Anatomy and Cytology, CHU Hassan II, Fez, Morocco

Corresponding author: Siham Boularbah, MD, E-mail: sihamboularbah1902@gmail.com

ABSTRACT

Verrucous carcinoma (VC) is a rare form of differentiated squamous cell carcinoma. These carcinomas are usually oral, laryngeal, nasal, or genital, yet may be located anywhere on the integument. Its differential diagnosis is difficult and requires the confrontation of clinical and anatomopathologic data. It is a slowly growing and locally aggressive tumor. Its etiological factors are trauma, chemical carcinogens, human papillomavirus (HPV), and chronic inflammatory skin conditions. Herein, we report a case of verrucous carcinoma on chronic intertrigo.

Key words: Verrucous carcinoma; Chronic intertrigo; Dermoscopic

INTRODUCTION

Verrucous carcinoma is an antomo-clinical variety of squamous cell carcinoma, characterized by a low-malignancy grade, described for the first time by Ackerman in 1948. A few cases of intertoe VC have been reported in the literature; its clinical and histological aspects are often misleading [1]. We describe a new case of VC on chronic intertrigo.

CASE REPORT

A ninety-year-old male with no medical history presented with a six-year history of intertrigo of the third intertoe space treated repeatedly with antifungal treatments without improvement. The evolution was marked by the appearance of an extended, painful, hyperkeratotic tumor gradually increasing in size over a year. The patient applied a traditional treatment without improvement. The patient reported a notion of naked walking and repeated trauma.

A clinical examination revealed a tumor, approx. 3 cm in size, in the entire intertoe space overflowing on the back of the foot with an ulcerated, warty surface with an infiltrated base (Figs. 1a – 1c). A dermoscopic examination revealed a verrucous appearance in some places, a polymorphic vascularization composed of dotted and hairpin vessels surrounded by whitish structures (Fig. 2).

A deeper biopsy revealed a well-differentiated verrucous squamous cell proliferation suggesting first verrucous squamous cell carcinoma. Bacteriological and mycological examinations were negative. Based on these features, verrucous carcinoma was retained. The extension assessment, X-ray of the foot, showed no underlying bone damage. Ultrasound of the lymph nodes and chest X-ray were normal. Wide excision of the lesion with a safety margin of 5 mm, carrying the third and fourth left toes, was performed. A histopathological examination of the excision specimen found an invasive differentiated and keratinizing squamous cell carcinoma of complete excision (Figs. 3a and 3b). A search for HPV 16 was negative.

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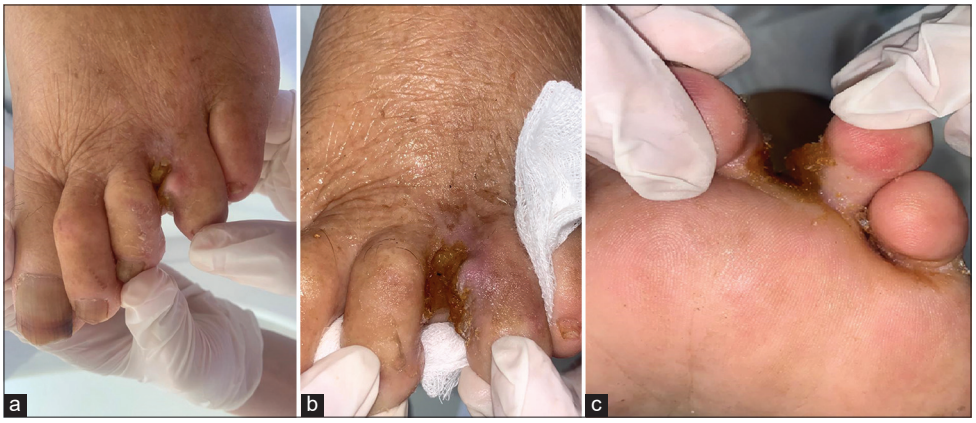

Figure 1: (a-c) Clinical pictures showing a painful verrucous tumor filling the third intertoe space.

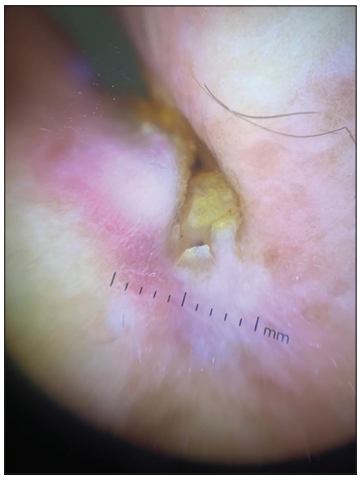

Figure 2: Dermoscopic picture showing whitish structures (black arrow), linear vessels (purple asterisk), and a white and yellow hyperkeratotic appearance (white arrows).

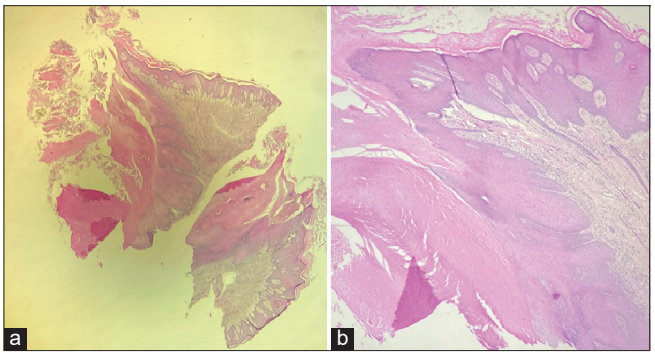

Figure 3: a and b Histological image at low magnification and at high magnification showing a papillomatous carcinomatous proliferation consisting of papillae lined with squamous cells with enlarged, hyperchromatic, and strongly nucleated nuclei; eosinophilic cytoplasm; and the absence of invasive elements.

DISCUSSION

Verrucous intertoe carcinoma is a rare tumor occurring most often at the level of the last two spaces between the toes on benign chronic lesions that do not respond to appropriate treatment and most often on lesions of mycotic intertrigo. Factors favoring the occurrence of VC at the intertoe level have been reported in certain publications, in which maceration was considered the main etiological factor [2,3]. The other eventualities, in particular, inverted psoriasis and callus, remain unlikely.

In most cases reported in the literature, In most cases reported in the literature, squamous cell carcinoma inter toe was confused with lesions of the intertrigo inter toe [2,3]. which in this patient was the cause of a delay in diagnosis, despite several consultations.

Clinically, they present in the form of vegetative, exophytic tumors with a verrucous and ulcerated surface with nausea-bond keratin debris and an infiltrated base exceeding the visible limits of the tumor. The tumor then extends in surface and height by overflowing the dorsal side of the feet.

The main differential diagnoses are keratoacanthoma, Bowen's disease, verrucous tuberculosis, deep mycoses, atypical mycobacteriosis, common warts [4].

The dermoscopic features of verrucous carcinoma are the presence of a white background (amorphous masses of keratin, yellowish-white to light brown), a verrucous appearance, a polymorphous vascular pattern with more than one vessel type dominating (consisting of linear, irregular, hairpin-like, glomerular, and, rarely, dotted types), and ulcerations [5].

Histopathological examination is the gold standard for establishing the CV diagnosis, yet the histological characteristics may still be falsely reassuring and a

source of delay and diagnostic difficulties, partly due to the verrucous nature and keratinization of verrucous carcinoma, hence the need for large and deep biopsies [6,7]. On the other hand, the histological aspect may correspond to the following three stages:

- Stage 1: A benign appearance of squamous epithelial proliferation associating acanthosis, papillomatosis, and hyperkeratosis.
- Stage 2: A benign epithelial proliferation with a base still very well preserved, yet the deep infiltration very marked.
- Stage 3: Areas of *in situ* or invasive carcinoma with cytonuclear abnormalities and architectural disorganization, basal rupture, and invasion of the dermis by the epithelial cords.

The evolution is essentially local with a risk of bone lysis. The risk of metastasis is low [6]. The treatment of choice is surgical excision. The clinical follow-up of these patients is highly important because recurrences remain frequent even after extensive surgery.

CONCLUSION

The particularity of our observation is the occurrence of squamous cell carcinoma on chronic intertrigo lesions. This new observation reminds us of the need for regular clinical and dermoscopic monitoring of chronic cutaneous intertrigo, as well as other benign lesions which must be biopsied in the slightest doubt in order to make an early diagnosis and early therapeutic management.

Consent

The examination of the patient was conducted according to the principles of the Declaration of Helsinki.

The authors certify that they have obtained all appropriate patient consent forms, in which the patients gave their consent for images and other clinical information to be included in the journal. The patients understand that their names and initials will not be published and due effort will be made to conceal their identity, but that anonymity cannot be guaranteed.

REFERENCES

1. Ackerman LV. Verrucous carcinoma of oral cavity. Surgery. 1948;23:670–8.
2. Bartoš V. Cutaneous squamous cell carcinoma arising from the hair follicle. Our Dermatol Online. 2019;10:208-10.
3. Terrab Z, Azzouzi S, Benchikhi H, Chlihi A, Lakhdar H. Inter-toes space cutaneous epidermoid carcinoma. Ann Dermatol Venereol. 2006;133:456-8.
4. Lamchahab EF, Guerrouj B, Bourra B, Marot L, Zouaidia F, Lamzaf O. Aggressive course of intertoe verrucous carcinoma. Ann Dermatol Venereol. 2012;139:510-3.
5. D Sgouros, M Theofili, V Damaskou, S Theotokoglou, K Theodoropoulos, et al. dermoscopy as a tool in differentiating cutaneous squamous cell carcinoma from its variants. Dermatol Pract Concept. 2021;11:e2021050.
6. Varma R, Asokan N, Sarin A, Rahman N. Unusually localised cutaneous multifocal squamous cell carcinoma. Our Dermatol Online. 2019;10:170-2.
7. EL Amraoui M, Frikh R, Hjira N, Boui B. Degeneration of chronique intertrigo into squamous cell carcinoma. Our Dermatol Online. 2021;12:76.

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Clinical Image

Rare case of tongue hyperpigmentation with capecitabine

Ephraïm Lonté Kintossou, Kalil Cisse, Rhizlane Belbaraka

Department of Medical Oncology, CHU Mohammed VI, University Cadi Ayyad, Marrakech, Morocco

Corresponding author: Ephraïm Lonté Kintossou, MD, E-mail: ephrakint90@gmail.com

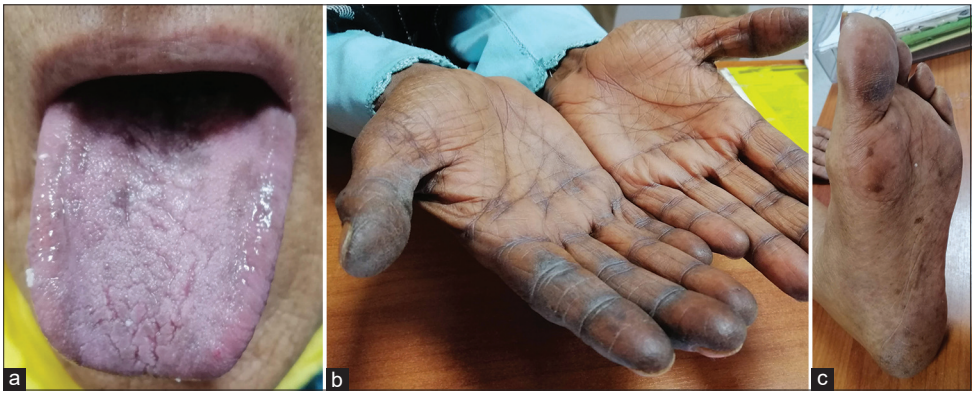

Figure 1: (a) Tongue hyperpigmentation after the third session of capecitabine, (b and c) Hand-foot syndrom grade II and hyperpigmentation after the third session of capecitabine

Hyperpigmentation of the tongue has been demonstrated by chemotherapy, particularly with cytotoxic drugs, yet the precise pathophysiological mechanism remains poorly understood [1].

Drug-induced pigmentation accounts for at least 20% of all cases of acquired pigmentation [2]. Antineoplastic agents have been demonstrated in the pigmentation of mucous membranes and nails [3].

Herein, we report the case of a 78-year-old patient followed for metastatic hepatic sigmoid ADK and carcinosis under capecitabine-type chemotherapy who presented grade II hand-foot syndrome (Figs. 1a and 1c) and hyperpigmentation of the tongue (Fig. 1b) after the third session of capecitabine. She was placed on symptomatic treatment with a one-week interruption in her treatment with improvement in the symptomatology. However, the hyperpigmentation failed to disappear completely; it persists yet in an attenuated manner.

Such cases as this is a challenge for healthcare professionals and patients as they draw attention to the importance of documentation in improving patient care in the management of side effects associated with certain medications [1].

Consent

The examination of the patient was conducted according to the principles of the Declaration of Helsinki. The authors certify that they have obtained all appropriate patient consent forms, in which the patients gave their consent for images and other clinical information to be included in the journal. The patients understand that their names and initials will not be published and due effort will be made to conceal their identity, but that anonymity cannot be guaranteed.

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REFERENCES

1. Lucia Moreira Gil, Joana Marques, Duarte Salgado. Hyperpigmentation de la langue associée au témozolomide en monothérapie: étude de cas. Port Acta Med. 3 février 2022.
2. Nahhas AF, Braunberger TL, Hamzavi IH. An update on drug-induced pigmentation. Am J Clin Dermatol. 2019;20:75-96
3. Casamiquela KM, Cohen PR. Chemotherapy-associated tongue hyperpigmentation and blue lunula. J Drugs Dermatol. 2013;12:223-6.

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Case Letter

Palmoplantar and plaque psoriasis developed during pembrolizumab therapy in a patient with lung cancer

Mai Endo, Kinuko Irie, Toshiyuki Yamamoto

Department of Dermatology, Fukushima Medical University, Fukushima, Japan

Corresponding author: Prof. Toshiyuki Yamamoto, MD, E-mail: toyamade@fmu.ac.jp

Sir,

Various immunity-related adverse cutaneous events, including psoriasis, lichen planus, autoimmune bullous disease, and vitiligo, are induced in patients under immune checkpoint inhibitor (ICI) therapy for several types of cancers. Herein, we describe a case of the *de novo* development of psoriasis, in which the palms and soles were mainly affected, in a patient under treatment with pembrolizumab.

An 85-year-old male suffering from non-small cell lung cancer treated with pembrolizumab (200 mg) every three weeks for three months developed a skin eruption after the fifth infusion and was referred to our department. A physical examination revealed coalesced, keratotic erythemas and scaly, nail-plate-sized erythemas on the palms and soles (Figs. 1a and 1b). Similar lesions were scattered on the extensor aspect of the bilateral elbows and lower extremities. The psoriasis area and severity index (PASI) score was 2.4. A biopsy taken from the left palm and sole revealed similar histopathological features, such as hyperkeratosis with parakeratosis and acanthosis of the epidermis (Fig. 2). Eosinophil infiltration was absent. Immunohistochemistry revealed CD4- and CD8-positive T-cells infiltration within and below the epidermis (Figs. 3a and 3b). Soon after the initiation of treatment with topical calcipotriol/betamethasone dipropionate (Dovobet®) ointment, the patient developed interstitial pneumonia and oral prednisolone (40 mg/day) was administered along with the withdrawal of pembrolizumab. The skin lesions were cleared.

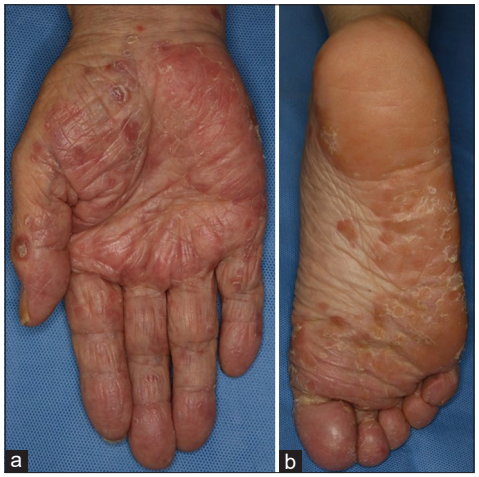

Figure 1: Scaly erythemas and keratotic plaques on (b) the palm and (b) the sole.

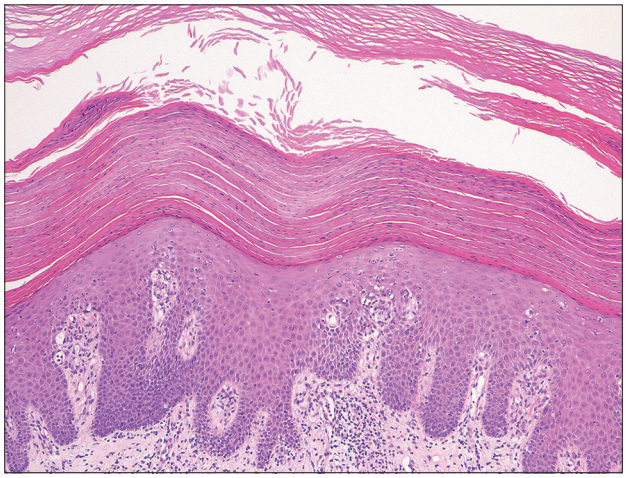

Figure 2: Histopathology showing elongation of the epidermis with parakeratosis of the overlying corny layers, epidermal mononuclear cells, and perivascular infiltration of mononuclear cells in the upper dermis.

Psoriasis or psoriasiform scaly erythema is occasionally induced by ICIs, affecting the trunk and extremities [1]. Previous reports showed that the majority of cases occurred as exacerbations of pre-existing psoriasis,

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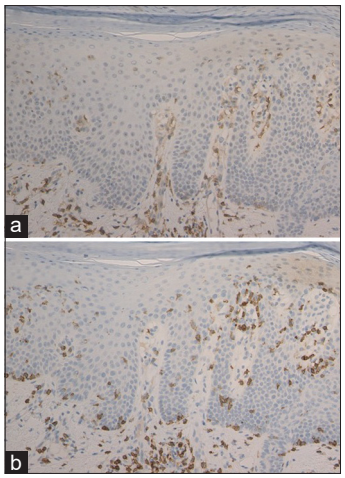

Figure 3: Immunohistochemistry revealing both (a) CD4- and (b) CD8-positive T-cells within and below the epidermis.

whereas a new onset of psoriasis was relatively rare [2,3]. By contrast, according to the largest data, examining 115 patients with anti-programmed cell death 1 (PD-1)/programmed cell death ligand 1 (PDL1)-induced psoriasis, nearly 30% had a previous history of psoriasis, whereas 70% developed psoriasis *de novo* [4]. Plaque-type psoriasis was the most common (49/115; 42.6%), followed by palmoplantar psoriasis (12.2%), pustular psoriasis (7%), and guttate psoriasis (7%). Mixed-type, such as plaque and palmoplantar, psoriasis was observed in 9.6%. The mean duration between the initiation of ICIs and the onset or exacerbation of psoriasis/psoriasiform eruptions was several months [4]. Other studies revealed that the palms and soles were affected in some cases, and small-sized lesions presented as guttate-type psoriasis [5-7]. The present case did not have a previous history of psoriasis yet developed diffuse, keratotic erythemas and well-defined, scaly erythemas on the palms and soles, as well as on other sites such as the elbows, twelve weeks after the initiation of pembrolizumab. A biopsy was taken from palmar and plantar lesions, both of which showed similar histopathological features compatible with psoriasis.

Psoriasis is mediated by the Th17/IL-23 axis, and Th cells are downregulated by the PD-1 pathway. Thus, PD-1 inhibition by ICIs induces the activation and overexpression of IL-17, leading to psoriasis. The reason why the palms and soles were predominantly involved is unknown. As our patient had been working as a courier for a considerable time, it may have imposed a physical burden on his hands/feet, and thus psoriasis may have been induced on the previously damaged sites. Our case suggests that ICIs may induce rare types of psoriasis, such as palmoplantar psoriasis.

Consent

The examination of the patient was conducted according to the Declaration of Helsinki principles.

REFERENCES

1. Ohtsuka M, Miura T, Mori T, Ishikawa M, Yamamoto T. Occurrence of psoriasiform eruption during Nivolmab therapy for a patient with mucosal melanoma. JAMA Dermatol. 2015;151;797-9.
2. Cutroneo P, Ingrasciotta Y, Isgrò V, Rullo EV, Berretta M, Fiorica F, et al. Psoriasis and psoriasiform reactions secondary to immune checkpoint inhibitors. Dermatol Ther. 2021;34:e14830.
3. De Bock M, Hulstaert E, Kruse V, Brochez L. Psoriasis vulgaris exacerbation during treatment with a PD-1 checkpoint inhibitor: Case report and literature review. Case Rep Dermatol. 2018;10:190-7.
4. Nikolaou V, Sibaud V, Fattore D, Sollena P, Ortiz-Brugués A, Giacchero D, et al. Immune checkpoint-mediated psoriasis: A multicenter European study of 115 patients from the European Network for Cutaneous Adverse Event to Oncologic Drugs (ENCADO) group. J Am Acad Dermatol. 2021;84:1310-20.
5. Yamamoto T. Anti-programmed cell death-1-induced plaque and guttate psoriasis. Indian J Dermatol. 2018;63:88-9.
6. Elosua-González M, Pampín-Franco A, Mazzucchelli-Esteban R, Mielgo-Rubio X, Rodriguez-Vásquez X, García-Zamora E, et al. A case of *de novo* palmoplantar psoriasis with psoriatic arthritis and autoimmune hypothyroidism after receiving nivolumab therapy. Dermatol Online J. 2017;23:19.
7. Di Altobrando A, Bruni F, Alessandrini A, Starace M, Misciali C, Piraccini BM. Severe *de novo* palmoplantar and nail psoriasis complicating nivolumab treatment for metastatic melanoma. Dermatol Ther. 2020;33:e13363.

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Conflict of Interest: The authors have no conflict of interest to declare.

Case Letter

Clinical, dermoscopic and histopathological description of hyperkeratotic porokeratosis of Mibelli

Chaymae Jroundi[1], Hanane Baybay[1], Jihad Kassel[1], Samia Mrabat[1], Zakia Douhi[1], Sara Elloudi[1], Fatima Zahra Mernissi[1], Mouna Rimani[2]

[1]Department of Dermatology, University Hospital Hassan II, Fes, Morocco, [2]Hassan Center of Pathology, Rabat, Morocco

Corresponding author: Chaymae Jroundi, MD, E-mail: chaymaejr92@gmail.com

Sir,

Porokeratosis of Mibelli is a clinical form of porokeratosis among an original set of dermatoses characterized by disorders of epidermal differentiation and keratinization. It represents one third of all cases of porokeratosis. Its etiology is not well established. It occurs most often in childhood or adolescence and predominantly in males. It is clinically characterized by one or more annular plaques with raised borders, atrophic centers, and a centrifugal evolution located on the extremities [1]. It has, recently, been reported that some cases of porokeratosis of Mibelli show a low frequency of hyperkeratotic lesions, which some authors have called the hyperkeratotic variant of porokeratosis Mibelli. Diagnostic confirmation is achieved through a histopathological examination with the finding of the cornoid lamella and hypogranulosis [2]. The hyperkeratotic variant is characterized by more severe hyperkeratosis with abundant coronal lamellae on histology. The usefulness of dermoscopy lies in the fact that it orientates the diagnosis by showing classically white, central areas without structures, dots and reddish-brown globules, and a peripheral border with a double margin translating the coronoid lamellae. Therapeutic management is based on keratolytic agents [2,3]. Herein, we present a clinical and dermoscopic description of the hyperkeratotic variant of porokeratosis of Mibelli.

A nineteen-year-old patient with a history of peripheral spondyloarthritis presented with slightly pruritic lesions on the back of the hand persistent for five years, treated as psoriasis with topical steroids with no improvement. A clinical examination revealed multiple, verrucous, slightly erythematous, and hyperkeratotic papules located on the back of the left hand (Fig. 1). Dermoscopy without immersion showed the predominance of whitish, verrucous areas without structures, white scales, after immersion: brown spots and globules and erythema (Fig. 2). A skin

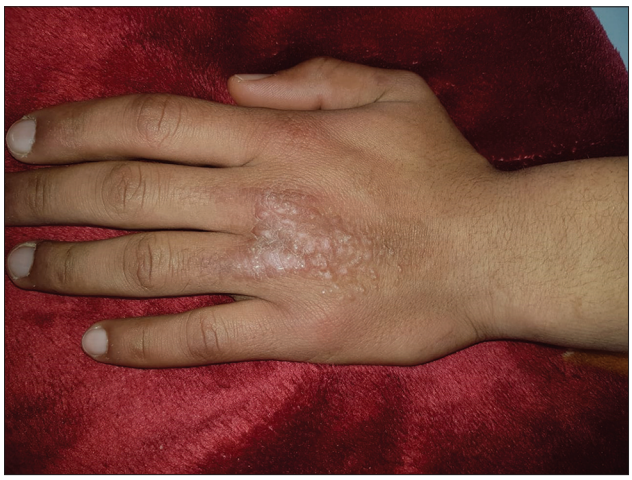

Figure 1: Multiple, verrucous, slightly erythematous, and hyperkeratotic papules located on the back of the left hand.

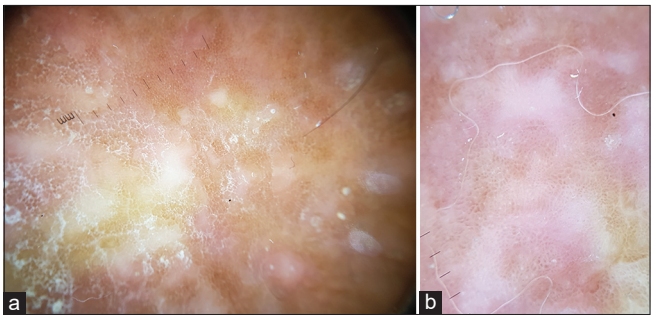

Figure 2: Dermoscopic findings without immersion: whitish verrucous areas without structures (blue star), white scales (a) with immersion brown spots and globules (black arrow), erythema (b).

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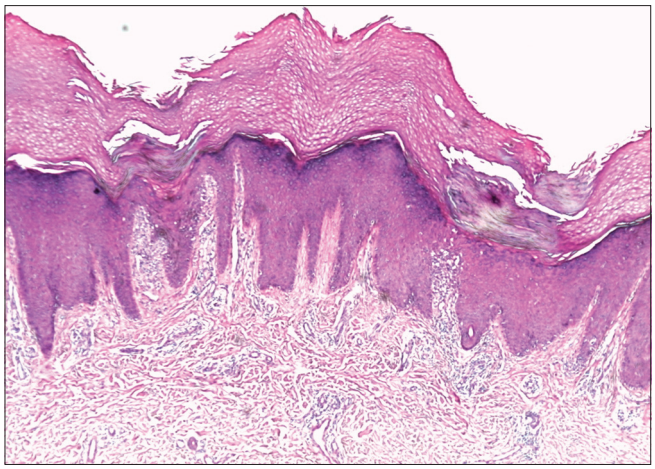

Figure 3: Coronoid lamellae above an epidermal depression with agranulosis, vacuolation of the underlying epidermal cells, and a lichenoid reaction (H&E: G x 50 : 2).

biopsy was performed showing a large predominance of coronoid lamellae consisting of parakeratotic cells in a "stack of plates" resting on a sudden depression of the epidermis without a granular layer at this level and a lichenoid reaction suggesting porokeratosis of Mibelli (Fig. 3). The case of our patient differed from the classical form characterized by a rather verrucous and hyperkeratotic aspect of the lesions. This observation is, therefore, closer to the hyperkeratotic form, which is rarer. A dermoscopic description of this entity has, to the best of our knowledge, not yet been reported.

Consent

The examination of the patient was conducted according to the principles of the Declaration of Helsinki.

The authors certify that they have obtained all appropriate patient consent forms, in which the patients gave their consent for images and other clinical information to be included in the journal. The patients understand that their names and initials will not be published and due effort will be made to conceal their identity, but that anonymity cannot be guaranteed.

REFERENCES

1. Jha AK, Sonthalia S, Lallas A. Dermoscopy of porokeratosis of Mibelli. Indian Dermatol Online J. 2017;8:304-5.
2. Ferreira FR, Santos LD, Tagliarini FA, Lira ML. Porokeratosis of Mibelli--Literature review and a case report. An Bras Dermatol. 2013;88(6 Suppl 1):179-82.
3. Mrabat S, Baybay H, Oujdi S, Douhi Z, Elloudi S, Mernissi FZ. Porokeratosis: A diagnosis made easy by the dermoscope! Our Dermatol Online. 2020;11:e141.1.

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Case Letter

Pyogenic granuloma-like Kaposi sarcoma: A diagnostic challenge

Jihane Benahmed[1], Amani Fliti[1], Pappys Mendes[2], Kawtar Znati[2], Mariam Meziane[1], Karima Senouci[1]

[1]Department of Dermatology, Ibn Sina hospital, Mohamed V university, Rabat, Morocco, [2]Department of Pathology, Ibn Sina hospital, Mohamed V university, Rabat, Morocco

Corresponding author: Benahmed Jihane, MD, E-mail: jihanebenahmed3@gmail.com

Sir,

Pyogenic granuloma-like Kaposi's sarcoma is a vascular tumor caused by HHV8. It may be challenging in diagnosis. Dermoscopy is a valuable tool in the diagnosis. Herein, we report the case of a female patient with pyogenic granuloma-like Kaposi's sarcoma.

A 65-year-old female patient with no relevant medical history presented with a one-month history of a painful tumor between the first and second toe of the right foot that had been quickly increasing in size. The patient received antibiotics without any improvement. A physical examination revealed the presence of a red firm mass, approx. 3 × 2 cm in diameter (Fig. 1a). Dermoscopy revealed reddish and yellowish homogeneous areas and the "sticky fiber" sign was noted (Fig. 1b). A surgical resection was performed. Histological examination of the mass showed nodules of spindles cells mixed with red blood cells (Fig. 1c); Immunochemistry was positive for CD34 and HHV8, consistent with Kaposi's sarcoma (Fig. 1d). Further radiologic investigation showed no other signs suggestive of Kaposi's sarcoma. An HIV screening test was negative. No recurrence during a one-year follow-up was observed.

Kaposi's sarcoma (KS) is a low-grade vascular malignancy. Four epidemiological forms have been described: classic KS, most commonly affecting elderly males of middle eastern and Mediterranean ancestry, endemic KS, iatrogenic KS in association with immunosuppression, and HIV/AIDS-associated KS [1].

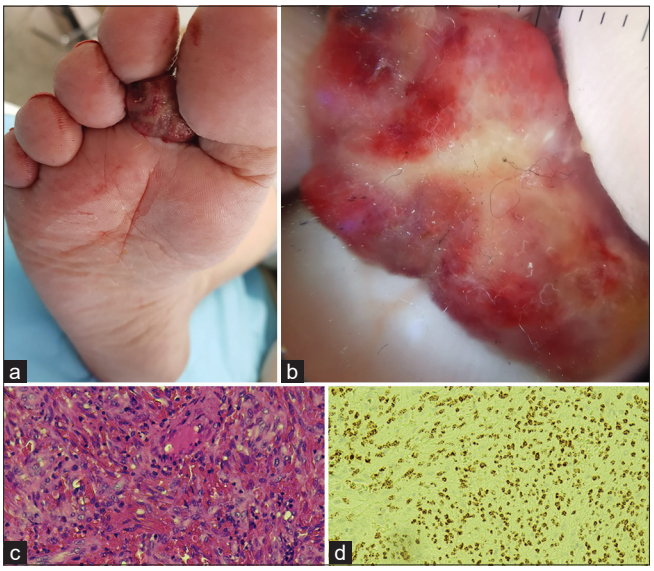

Figure 1: (a) Red, firm tumor, approx. 3 × 2 cm in diameter. (b) Dermoscopy revealing reddish and yellowish homogeneous areas with the "sticky fiber" sign. (c) Histological findings showing spindle cells mixed with red blood cells. (d) Immunohistochemistry staining for HHV8.

PG-like KS has been reported in patients with HIV-positive and HIV-negative status. In the literature, it was found on the hands in three patients and on the sole in two patients [2,3]. Dermoscopy is a valuable tool in the diagnosis of Kaposi's sarcoma. The most common dermoscopic features of KS are white lines, white clods, a polychromatic color change, or a rainbow pattern. In our case, we noted the presence of yellowish and reddish homogeneous areas. PG-like KS may be challenging in diagnosis because of overlapping histologic features, such as nodular prominence, ulceration, and inflammation. HHV-8 is the causative agent in all forms of KS, and immunohistochemical

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staining with HHV8 antibody is highly sensitive and specific to KS [4].

Physicians should be aware of this rare variant mimicking pyogenic granuloma. Immunohistochemistry should be performed to exclude Kaposi's sarcoma.

Consent

The examination of the patient was conducted according to the principles of the Declaration of Helsinki.

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REFERENCES

1. Urquhart JL, Uzieblo A, Kohler S. Detection of HHV-8 in pyogenic granuloma-like Kaposi sarcoma. Am J Dermatopathol. 2006;28:317–21.
2. Ho B, Rinaldi G, Khan I, Szakacs S. Pyogenic granuloma-like Kaposi sarcoma presenting in an HIV-negative man who has sex with men. BMJ Case Rep. 2020;13:e237420.
3. Cabibi D, Giannone AG, Guarnotta C, Schillaci O, Franco V. D2-40 negative pyogenic granuloma-like Kaposi's sarcoma: Diagnostic features and histogenetic hypothesis of an uncommon skin tumor in HIV-negative patients. Pathol Res Pract. 2015;211:528-32.
4. Hbid O, Belloul L, Fajali N, Ismaili N, Duprez R, Tanguy M, et al. Kaposi's sarcoma in Morocco: A pathological study with immunostaining for human herpesvirus-8 LNA-1. Pathology. 2005;37:288-95.

Source of Support: Nil, **Conflict of Interest:** None declared.

Our Dermatology Online

Case Letter

Mucocele on the tongue misdiagnosed as condyloma acuminatum

Ngo Binh Trinh[1], Nguyen Anh Thu Luu[2], Giang Huong Tran[3]

[1]Department of Dermatology, Nguyen Tat Thanh University, Ho Chi Minh City, Vietnam, [2]Department of Pathology, Ho Chi Minh City Hospital of Dermato-Venereology, Ho Chi Minh City, Vietnam, [3]Department of Pathology, University of Medicine and Pharmacy at Ho Chi Minh City, Vietnam

Corresponding author: Ngo Binh Trinh, MD, E-mail: mdbinhtrinh@gmail.com

Sir,

Mucocele is caused by the accumulation of mucous secretion commonly seen on the lower lip [1]. Herein, we report a case of mucocele on the anterior ventral surface of the tongue.

A 26-year-old male presented with a painless nodule on the tongue evolving for three months. He was clinically diagnosed with condyloma acuminatum for one month before admitting to our hospital. A physical examination revealed a painless, smooth, soft nodule, around 1 cm in diameter, on the anterior ventral surface of the tongue (Fig. 1a). Other abnormalities and lymphadenopathy were not detected. He reported no history of trauma or oral sex. Histological findings revealed a cyst-like cavity containing extravasated mucin without epithelial cyst lining (Fig. 1b). Mucin appeared diffusely in the connective tissue with proliferating capillaries and inflammatory cells (Fig. 1c). Based on the clinical and histological findings, the diagnosis of mucocele extravasation cyst was established. The entire removal was performed when doing the biopsy and no signs of recurrence were observed.

Mucocele of the tongue may be classified as a mucus extravasation cyst and a mucus retention cyst. Five cases of mucus extravasation cysts have been previously reported; however, only two cases had a similar location as ours [1,2].

The salivary glands in the tongue include the glands of Blandin–Nuhn, the glands of Weber, and the glands of von Ebner. Mucocele of the Blandin–Nuhn glands is caused by the leaking fluid of seromucous acini located on the anterior ventral surface of the tongue into the surrounding tissues [1].

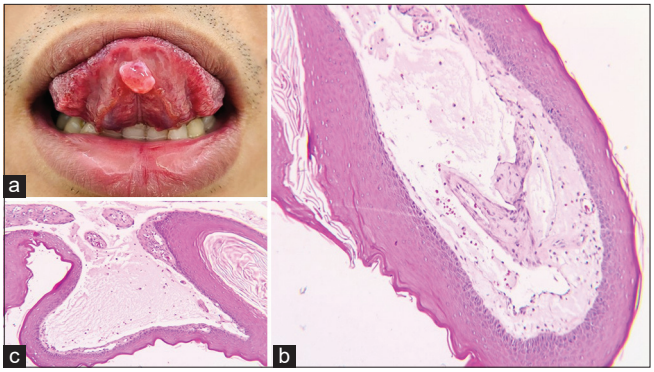

Figure 1: (a) A painless, smooth, soft nodule, around 1 cm in diameter, on the anterior ventral surface of the tongue. (b) An intact squamous mucosa subtended by a large collection of mucus (H&E, 100×). (c) Extravasated mucin in the stroma associated with an inflammatory response (H&E, 100×).

The differential diagnosis of mucocele of the Blandin–Nuhn glands consists of vascular lesions, pyogenic granulomas, polyps, and squamous papilloma [3].

There is no need for treatment unless the mucocele is bothersome. Depending on the size of the mucocele, there are three possible ways of treatment, including the complete excision of the connected salivary gland tissue, the unroofing procedure, and the dissecting of the mucocele accompanied by its supporting mucous glands [2].

Mucocele on the tongue is a benign lesion, usually overlooked in our daily practice. We report this case to

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raise awareness and to include mucocele as a different diagnosis of excessive growths on the midline of the ventral surface of the tongue.

Consent

The examination of the patient was conducted according to the principles of the Declaration of Helsinki.

The authors certify that they have obtained all appropriate patient consent forms, in which the patients gave their consent for images and other clinical information to be included in the journal. The patients understand that their names and initials will not be published and due effort will be made to conceal their identity, but that anonymity cannot be guaranteed.

REFERENCES

1. Titsinides S, Kalyvas D, Tosios K. Mucocele of the dorsal surface of the tongue: A case report. J Clin Exp Dent. 2018;10:e495.
2. Nagar SR, Fernandes G, Sinha A, et al. Mucocele of the tongue: A case report and review of literature. J Oral Maxillofac Pathol: JOMFP. 2021;25(Suppl 1):S37.
3. Sarada P, Reddy CS, Patil A, et al. Solitary nodular lesion of tongue: A rare entity. J Clin Diagn Res. 2014;8:256.

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Case Letter

Acute urticaria induced by methylprednisolone in universal alopecia areata

Sokaina Chhiti, Zakia Douhi, Fatima Zahra Hashas, Sara Elloudi, Hanane Baybay, Fatima Zahra Mernissi

Department of Dermatology, University Hospital Hassan II Fez, Morocco

Corresponding author: Sokaina Chhiti, MD, E-mail: sokaina.chhiti@usmba.ac.ma

Sir,

Systemic glucocorticoids only exceptionally produce immediate allergic-type reactions, despite their frequent use for a number of diseases. The diagnosis is often unrecognized early on, hence the value of skin tests [1,2].

Herein, we report the case of a twenty-year-old patient followed for universal alopecia areata without a notion of atopy. The patient received the first bolus of methylprednisolone at a dose of 1 g without incident yet, during the second bolus, five minutes after the infusion of methylprednisolone dilute in 500 cc of 5% glucose serum, the patient developed an especially itchy, erythematous rash on the body. There were no other medications or foods that were specific or likely to trigger a hives reaction. An examination found a patient with no signs of severity, with multiple, hot, well-limited, edematous papules and erythematous plaques on the areas of the extensions of the upper limbs, trunk, and face (Figs. 1a and 1b).

The evolution was marked by the regression of the lesions after the immediate withdrawal of the infusion. One hour later, the bolus was re-administered with the same clinical observation, which made it necessary to stop any infusion with a good progress. A pharmacovigilance statement implicated methylprednisolone. A prick test was positive and an intradermoreaction (IDR) was positive for methylprednisolone and negative for 5% glycose serum without any late reaction after 48 hours.

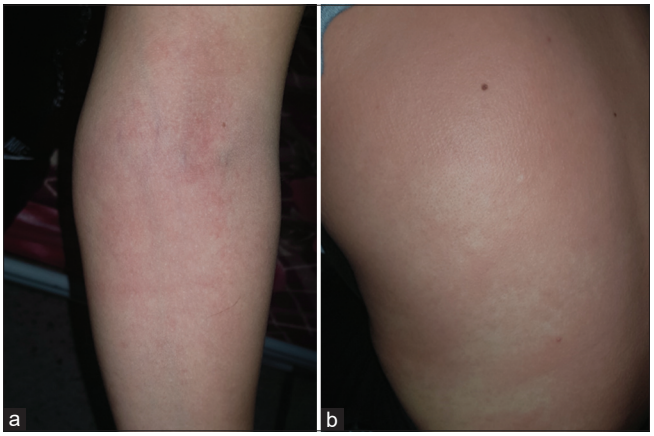

Figure 1: (a) Edematous erythematous plaque on the trunk. (b) Edematous erythematous plaque on the arms.

Immediate hypersensitivity reactions secondary to a glucocorticoid are extremely rare, varying in incidence between 0.1% to 5% [1,2]. They include mild, moderate, or severe reactions (laryngeal edema, anaphylactic shock). It is essential to perform a prick test as well as an intradermoreaction for diagnostic purposes; if they are negative, a provocation test in a hospital setting is necessary [3].

Allergies to corticosteroids may be due to the molecule itself, yet also to excipients (in particular, carboxymethyl cellulose) and salts (succinate) [4]. This is the reason why it is necessary to test the excipients and salts as well [4-6].

The place of glucocorticoids in the therapeutic arsenal for alopecia areata is essential. However, other therapeutic alternatives may be proposed either

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topically or systemically. Some studies find that azathioprine, methotrexate, and ciclosporin may be employed, alone or in combination, with prednisone as a second line to initiate regrowth and prevent relapse [7].

In our observation, the clinical picture and the positive skin test suggested an immediate hypersensitivity mediated by IgE to methylprednisolone. The outcome was favorable after discontinuation and a proposed treatment of a topical corticosteroid, methotrexate combined with prednisone.

Consent

The examination of the patient was conducted according to the principles of the Declaration of Helsinki.

The authors certify that they have obtained all appropriate patient consent forms, in which the patients gave their consent for images and other clinical information to be included in the journal. The patients understand that their names and initials will not be published and due effort will be made to conceal their identity, but that anonymity cannot be guaranteed.

REFERENCES

1. Baeck M, Marot L, Nicolas J-F, Pilette C, Tennstedt D, Goossens A. Allergic hypersensitivity to topical and systemic corticosteroids: A review. Allergy. 2009;64:978-94.
2. Kamm GL, Hagmeyer KO. Allergic-type reactions to corticosteroids. Ann Pharmacother. 1999;334:451-60.
3. Amano H, Kitagawa Y, Hayakawa T, Muto T, Okumura A, Iwayama H. Methylprednisolone-induced anaphylaxis diagnosed by intradermal skin test: A case report. Allergy Asthma Clin Immunol. 2021;171:70.
4. Otani IM, Banerji A. Immediate and delayed hypersensitivity reactions to corticosteroids: Evaluation and management. Curr Allergy Asthma Rep. 2016;16:18.
5. Venturini M, Lobera T, del Pozo MD, González I, Blasco A. Immediate hypersensitivity to corticosteroids. J Investig Allergol Clin Immunol. 2006;161:51-6.
6. Peces R, Gorostidi M, Azofra J, Sanchez L, Alvares J. Anaphylaxis following intravenous methylprednisolone sodium succinate in a renal transplant recipient. Nephron. 1991;59:497-8.
7. Erdmann SM, Abuzahra F, Merk HF, Schroeder A, Baron JM. Anaphylaxis induced by glucocorticoids. J Am Board Fam Pract. 2005;18:143-6.

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Case Letter

Successful treatment with apremilast for palmar, yet not plantar, plaque psoriasis in a pediatric patient

Natsumi Norikawa, Toshiyuki Yamamoto

Department of Dermatology, Fukushima Medical University, Fukushima, Japan

Corresponding author: Natsumi Norikawa, MD, E-mail: nnatsumi@fmu.ac.jp

Sir,

Pediatric psoriasis is rare in Japan [1]. Herein, we report a pediatric case of plaque-type psoriasis with predominant palmoplantar involvement, in which apremilast created a rapid, favorable effect on palmar lesions.

A fourteen-year-old boy developed itchy eruptions on the trunk and extremities at the age of four years. He had been treated with topical corticosteroid ointment under the suspicion of atopic dermatitis. Because the control was insufficient, the patient was referred to our hospital. Physical examination revealed diffuse, coalesced, keratotic erythemas on the palms and soles (Figs. 1a and 1b), as well as on the anterior aspects of the lower legs. The PASI score was 6.0. A biopsy was taken from the outer edge of the right foot, revealing acanthosis of the epidermal corneal layers with parakeratosis, regular epidermal proliferation, and infiltration of mononuclear cells below the epidermis (Fig. 2). Oral apremilast was administered with a standard regimen: an initial dose of 10 mg once daily, and daily escalated to 30 mg twice daily, thereafter maintaining the dose. The administration of 30 mg apremilast twice daily was tolerable. One month later, the palmar lesions much improved (Fig. 3), whereas the improvement of plantar lesions was insufficient.

The present case developed keratotic plaques on the palms and soles, as well as the lower extremities. He developed psoriasis at the age of four years yet had been misdiagnosed as a case of atopic dermatitis at the nearby dermatology clinic. Because treatment with a topical corticosteroid was insufficient, we introduced

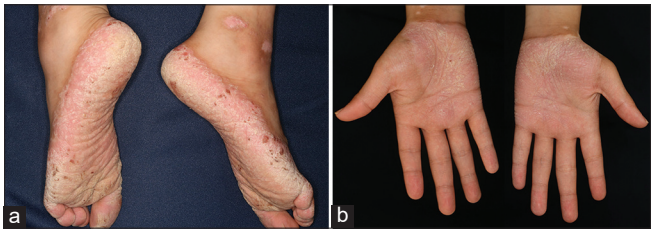

Figure 1: Clinical appearance of the plantar (a) and palmar (b) keratotic lesions.

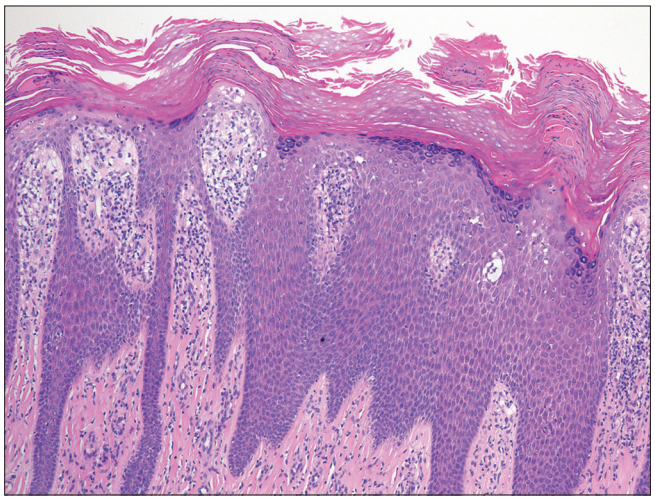

Figure 2: Histopathological features revealing regular proliferation in the epidermis with parakeratosis, epidermal infiltration of mononuclear cells and neutrophils, and perivascular mononuclear cell infiltration in the papillary dermis.

apremilast, an oral small molecule phosphodiesterase-4 inhibitor. The palmar lesions improved as early as after four weeks of intake, while the plantar lesions did not. His body weight was 80 kg (BMI: 29), and, as we speculated due to the burden of the body weight, the plantar lesions did not sufficiently improve. In a previous review of 1262 cases of childhood psoriasis,

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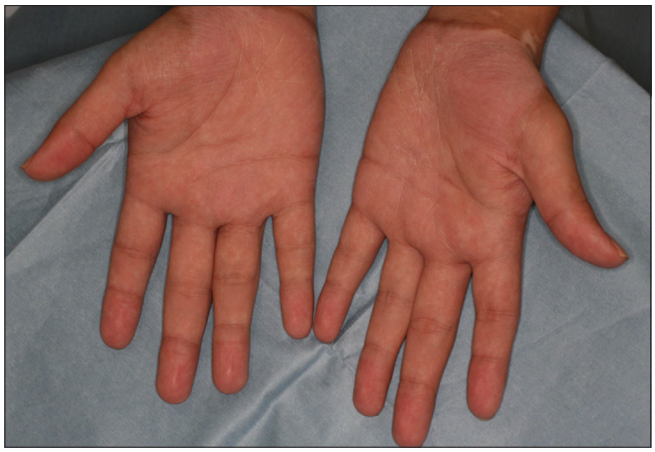

Figure 3: Marked improvement of the palmar lesions after four weeks.

palmoplantar psoriasis was observed in 3.9% [2]. The palms and soles are one of the refractory sites that do not respond to topical therapies. Recent studies have shown that apremilast is effective for palmoplantar psoriasis [3-5]. Another study revealed that apremilast showed a comparative efficacy and safety profile to methotrexate in the treatment of palmoplantar psoriasis [6]. These results suggest that apremilast is effective for palmoplantar psoriasis, which is refractory to conventional topical therapy. The safety profile of apremilast in children is similar to that in adults, yet the incidence of common adverse events, such as diarrhea, nausea, abdominal pain, viral upper respiratory tract infection, headache, and vomiting, was frequent [7].

This was the report of a pediatric case of plaque-type palmoplantar psoriasis. Although pediatric cases of psoriasis are not severe in the majority of cases, apremilast may be one of the useful options for pediatric psoriasis with palmoplantar involvement.

Consent

The examination of the patient was conducted according to the principles of the Declaration of Helsinki.

The authors certify that they have obtained all appropriate patient consent forms, in which the patient gave their consent for images and other clinical information to be included in the journal. The patient understands that his name and initial will not be published and due effort will be made to conceal his identity, but that anonymity cannot be guaranteed.

REFERENCES

1. Kamiya K, Oiso N, Kawada A, Ohtsuki M. Epidemiological survey of the psoriasis patients in the Japanese Society for Psoriasis Research from 2013 to 2018. J Dermatol. 2021;48:864-75.
2. Morris A, Rogers M, Fischer G, Williams K. Childhood psoriasis: A clinical review of 1262 cases. Pediatr Dermatol. 2001;18:188-98.
3. Bissonnette R, Pariser DM, Wasel NR, Goncalves J, Day RM, Chen R, et al. Apremilast, an oral phosphodiesterase-4 inhibitor, in the treatment of palmoplantar psoriasis: Results of a pooled analysis from phase II PSOR-005 and phase III efficacy and safety trial evaluating the effects of apremilast in psoriasis (ESTEEM) clinical trials in patients with moderate to severe psoriasis. J Am Acad Dermatol. 2016;75:99-105.
4. Pavia G, Gargiulo L, Cortese A, Valenti M, Sanna F, Borroni RG, et al. Apremilast for the treatment of palmo-plantar non-pustular psoriasis: A real-life single-center retrospective study. Dermatol Ther. 2022;35:e15253.
5. Smith RL. Pediatric psoriasis treated with apremilast. JAAD Case Rep. 2016;2:89-91.
6. Kt S, Thakur V, Narang T, Dogra S, Handa S. Comparison of the efficacy and safety of apremilast of apremilast and methotrexate in patients with palmoplantar psoriasis: A randomized controlled trial. Am J Clin Dermatol. 2021;22:415-23.
7. Paller AS, Hong Y, Becker EM, Lucas R, Paris M, Zhang W, et al. Pharmacokinetics and safety of apremilast in pediatric patients with moderate to severe plaque psoriasis: Results from a phase 2 open-label study. J Am Acad Dermatol. 2020;82:389-97.

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Conflict of Interest: The authors have no conflict of interest to declare.

Our Dermatology Online

Case Letter

Hypertrophic lichen planus of the soles: A rare variant in a rare location

Chaymae Jroundi[1], Sara Elloudi[1], Jihad Kassel[1], Zakia Douhi[1], Hanane Baybay[1], Fatima Zahra Mernissi[1], Mouna Rimani[2]

[1]Department of Dermatology, University Hospital Hassan II, Fes, Morocco, [2]Hassan Center of Pathology, Rabat, Morocco

Corresponding author: Chaymae Jroundi, MD, E-mail: chaymaejr92@gmail.com

Sir,

Lichen planus (LP) is a chronic inflammatory and immune-mediated condition of unknown etiology that affects the skin, hair, and nails. It usually occurs in females and is most often characterized by pruritic, purple, plane papules located on the flexural extremities [1]. Numerous variants of LP have been described, including actinic, annular, atrophic, eruptive, follicular, hypertrophic, inverse, linear, palmoplantar, pemphigoids, pigmentosus, ulcerative, vesiculobullous, and vulvovaginal [1,2]. Palmoplantar LP is a rare variant presumed to be more common in males and is usually associated with oral Wickham striae and skin lesions in regions other than the palms and soles. The clinical presentation in this particular location may vary from hypertrophic plaques to erosive, erythematous patches and may be considered a diagnostic challenge [1]. Hypertrophic lichen planus (HLP) is characterized by hyperkeratotic, itchy papules and plaques, involving commonly the extremities, especially the anterior legs, and also the upper extremities and trunk [3]. Dermoscopy may be a useful, non-invasive tool that aids in the diagnosis of LP. Dermoscopic features of classic LP have been widely described. Recently, more reports of LP variants have found some dermoscopic structures to be more specific of hypertrophic LP than others, such as comedo-like openings, also known as corn pearls, peripheral striations, bluish-gray/brown globules, and a globular pattern of Wickham striae [4,5]. On dermoscopy, corn pearls may increase in number and size and conglomerate forming a "bouquet of white roses," which reflects the degree of hyperkeratosis [6]. Diagnosis is usually clinical, with the typical presentation of classic LP. However, a skin biopsy might be required to confirm the diagnosis in atypical presentations [4]. The histopathological features of palmoplantar LP are similar to those of classical LP, including hyperkeratosis with parakeratosis, a focal increase in the granular cell layer, vacuolar degeneration of the basal cell layer, and a band-like lymphocytic infiltrate at the dermal–epidermal junction [2]. Due to the varied presentation and a large number of similar appearing conditions, recognition is often delayed, which makes it essential to keep this entity in mind [4,7]. Herein, we report three cases of hypertrophic lichen planus of the soles with no other skin involvement in two females and one male.

CASE 1

A sixty-year-old female patient, with a history of diabetes, presented with pruritic lesions on the soles of both feet evolving for four years, for which she had applied topical antifungals without improvement. A clinical examination found three hyperkeratotic, pigmented plaques with achromic centers, well-limited and oval in shape, located on the internal plantar arch of both feet and on the ankle, without any other skin lesions (Fig. 1a). Dermoscopy revealed comedo-like openings, Wickham striae with a globular pattern, a reticulated and globular pigmented pattern, whitish areas without structures, and pointed vessels (Fig. 1b). Anatomopathological analysis of a skin biopsy showed hyperacanthosis, marked hyperkeratosis, and a thickened granular layer with hypertrophic epidermal ridges in a sawtooth pattern, sometimes in the form of clubs, associated with a lichenoid interface dermatitis, concluding to a hypertrophic lichen (Fig. 1c). The patient was treated with high-potency topical steroids.

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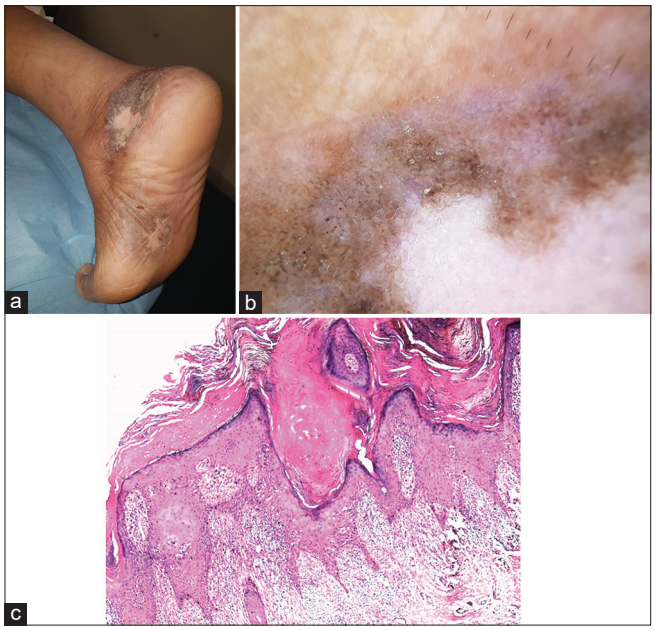

Figure 1: (a) Hyperkeratotic, pigmented plaques with achromic centers, well-limited and oval in shape, located on the internal plantar arch of both feet and on the ankle; (b) dermoscopy showing comedo-like openings, Wickham striae with a globular pattern, a reticulated and globular pigmented pattern, whitish areas without structures, and pointed vessels.

CASE 2

In a 54-year-old female patient, with a history of lichen planus confirmed on a skin biopsy five years prior, the lesions were initially located on the thighs and arms with no palmoplantar involvement and were treated with topical steroids with complete regression of all lesions. The patient presented three years later with slightly pruritic lesions on the soles evolving for over two years. On examination, hyperkeratotic pigmented plaques with fissurations were found on the inner arches of the soles of both feet extending to the back of the foot (Fig.2a). Dermoscopy showed comedo-like openings, whitish scales, pointed vessels, fissuring, homogeneous pigmentation, in favor of a plantar hypertrophic lichen (Fig. 2b). The rest of the skin examination was normal. This patient was also treated with high-potency topical steroids with good improvement.

CASE 3

A 54-year-old male patient, without a previous history, had pruritic lesions on the palmoplantar area for four years as well as pigmented lesions on the face and trunk. A dermatological examination revealed an erosive palmoplantar keratoderma with fissurations

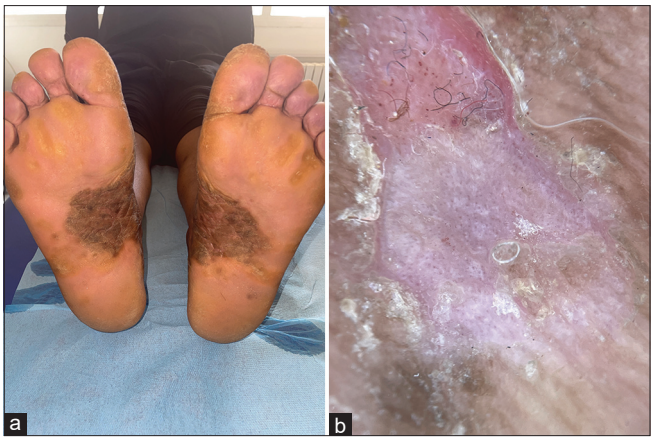

Figure 2: Hyperacanthosis, marked hyperkeratosis, and a thickened granular layer with hypertrophic epidermal ridges in a sawtooth pattern, a lichenoid interface dermatitis (H&E, 50×).

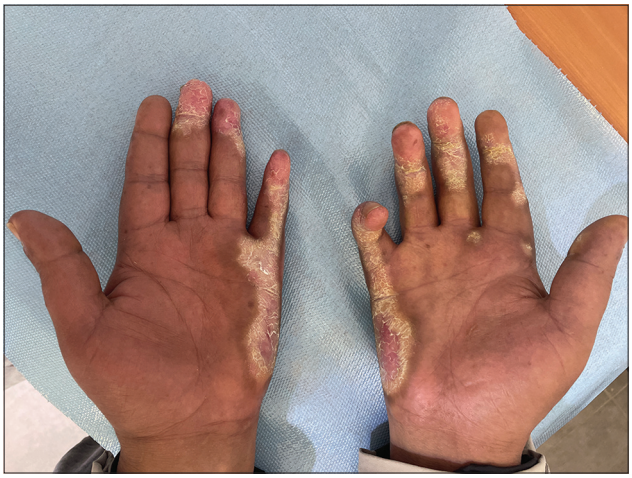

Figure 3: (a) Hyperkeratotic, pigmented plaques with fissurations on the inner arches of the soles of both feet; (b) dermoscopy showing comedo-like openings, whitish scales, pointed vessels, fissuring, and homogeneous pigmentation.

(Fig. 3) and well-limited, macular, pigmented patches on the face and trunk. The patient underwent two skin biopsies in favor of a lichen pigmentosus of the face and a lichen planus of the feet. A treatment based on topical steroids initially, then oral corticosteroids at a dose of 0.5 mg/kg/day was administered along with localized UVB therapy with partial improvement.

Consent

The examination of the patient was conducted according to the principles of the Declaration of Helsinki.

The authors certify that they have obtained all appropriate patient consent forms, in which the patients gave their consent for images and other clinical information to be included in the journal. The patients understand that their names and initials will not be published and due effort will be made to conceal their identity, but that anonymity cannot be guaranteed.

REFERENCES

1. Riahi RR, Cohen PR. Hypertrophic lichen planus mimicking verrucous lupus erythematosus. Cureus. 2018;10:e3555.
2. Koh YP, Su P. An unusual case of pigmented plaques on the sole. Dermatol Online J. 2020;26:13030/qt5q9169rw.
3. Korbi M, Rouatbi J, Njima M, Belhadjali H, Youssef M, Zili J. Hypertrophic lichen planus on the face. Our Dermatol Online. 2020;11:e112.1-2.
4. Mirchandani S, Ballal DS, Rodrigues G, Pai K. Generalized hypertrophic lichen planus: An atypical presentation of a characteristic disease. Med Pharm Rep. 2020;93:210-12.
5. Hanumaiah B, Joseph JM. Role of dermoscopy in the diagnosis of hypertrophic lichen planus and prurigo nodularis. Indian J Dermatol. 2019;64:341-5.
6. Malakar S, Mehta P, Save S, Malakar SS. "Bouquet of white roses": A dermoscopic marker for hypertrophic lichen planus. Our Dermatol Online. 2021;12:96-8.
7. Abreu Velez AM, Howard MS, Pereyo N. Palmar and plantar lichen planus: A case report and review of the literature. An Bras Dermatol. 2015;90(3 Suppl 1):175-7.

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Our Dermatology Online

Case Letter

Ulcerative Zoon balanitis in an HIV-infected male

Pham Phuoc Hung Lam[1], Nguyen Anh Thu Luu[2], Ngo Binh Trinh[3]

[1]Department of Dermatology, Ho Chi Minh City Hospital of Dermato-Venereology, Vietnam, [2]Department of Pathology, Ho Chi Minh City Hospital of Dermato-Venereology, Vietnam, [3]Department of Dermatology, Nguyen Tat Thanh University, Ho Chi Minh City, Vietnam

Corresponding author: Pham Phuoc Hung Lam, MD, E-mail: mdbinhtrinh@gmail.com

Sir,

Zoon balanitis is a non-venereal disease characterized by a solitary, smooth, erythematous plaque on the glans penis [1]. Herein, we report the case of an unusual manifestation of Zoon balanitis in an HIV-infected male.

A 46-year-old, uncircumcised male on antiretroviral treatment presented with an exudative ulcer on the prepuce persistent for one month. During this time, he was diagnosed with fixed drug eruption and was treated with oral corticosteroids (0.6 to 0.8 mg/kg/day), yet the lesion remained unchanged. Then, the patient came to us with the clinical manifestation of a painless sore. He reported no personal history of sexual intercourse, trauma, or new drug intake in the previous four months. Clinical examination revealed a rounded, well-defined, exudative ulcer with a smooth pseudomembranous surface and a soft base on the prepuce (Fig. 1a). No inguinal lymphadenopathy was seen. Other systemic examinations were normal.

Laboratory evaluation showed that the rapid plasma reagin (RPR) and treponema pallidum hemagglutination (TPHA) tests were negative. CD4 count was 823 cells/mm^3, and the HIV (human immunodeficiency virus) load was 22 copies/mL. The bacterial culture was negative.

A biopsy of the ulcer revealed acanthosis, focal spongiosis of the epidermis, and focal ulceration. There was dense, sheet-like dermal infiltration with plasma cells (> 50%) and numerous capillaries, vascular ectasia, and extravasated erythrocytes (Figs. 2a-d).

Based on the clinical and histological findings, the diagnosis of Zoon balanitis was made (Figs. 2a – 2d).

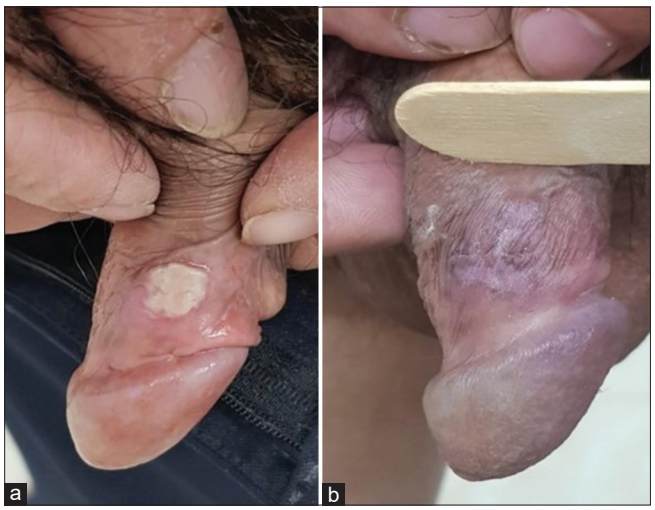

Figure 1: (a) A rounded, well-defined, exudative ulcer with a smooth pseudomembranous surface and a soft base on the prepuce. (b) After treatment.

The lesion improved in one month with a topical steroid (betamethasone valerate) combined with fusidic acid (Fig. 1b). Circumcision was recommended due to the recurrence.

Although Zoon balanitis was first reported by Zoon in 1952, its etiology remains unknown. It has been hypothesized that various triggers, such as uncircumcision, heat, poor hygiene, friction, trauma, hypospadias, and chronic infection with *Mycobacterium smegmatis* may contribute to the pathogenesis [2,3]. It typically presents as well-marginated, reddish-orange, shiny plaques on the glans or the prepuce. Other clinical variants of Zoon balanitis such as the erosive type and vegetative type have been reported in the literature [2]. However, to the best of our knowledge, the atypical manifestation of an exudative pseudomembranous ulcer in HIV-infected patients

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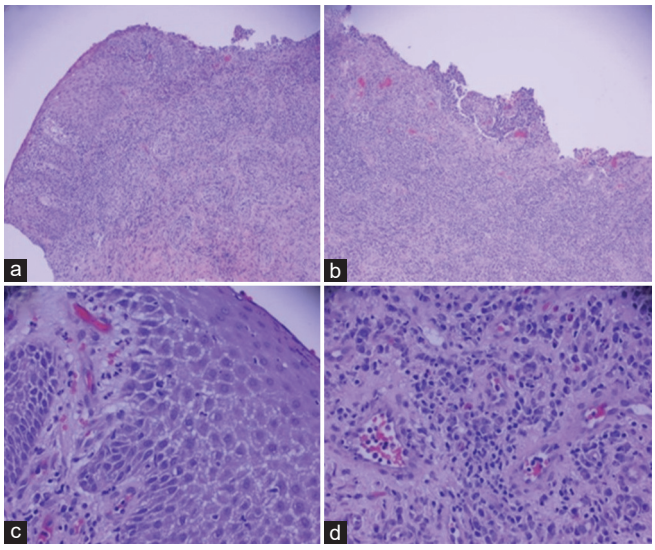

Figure 2: Histological findings. (a) Acanthosis with spongiosis and focal ulceration of the epidermis, dense inflammation of the superficial and deep dermis (H&E, 100×). (b) Vascular ectasia and deep inflammation in the dermis with an overlying ulcerated epidermis (H&E, 100×). (c) Spongiotic epidermis and edema of the papillary dermis with numerous extravasated erythrocytes (H&E, 400×). (d) Dense, sheet-like dermal infiltration of plasma cells (> 50%) with numerous capillaries (H&E, 400×).

with Zoon balanitis is rarely reported. This form is clinically difficult to distinguish from ulcers in syphilis, chancroid, erythroplasia of Queyrat, Behçet's disease, and erosive lichen planus. Therefore, in addition to microbiological and immunological tests, histopathology plays an important role in the diagnosis because of its characteristic images. As in our case, the skin biopsy revealed spongiotic and acanthotic epidermis, dense dermal infiltration with plasma cells, and vascular ectasia with extravasated erythrocytes, which was most suitable for the diagnosis of Zoon balanitis.

There are numerous options for the treatment of the disease, such as topical steroids, topical calcineurin inhibitors, 5% imiquimod, photodynamic therapy, carbon dioxide laser, Er: YAG laser, and circumcision [2].

Zoon balanitis, especially its ulcerative type, is underdiagnosed. We report this case to raise awareness to include Zoon balanitis as a differential diagnosis in patients with genital ulcers.

Consent

The examination of the patient was conducted according to the principles of the Declaration of Helsinki.

The authors certify that they have obtained all appropriate patient consent forms, in which the patients gave their consent for images and other clinical information to be included in the journal. The patients understand that their names and initials will not be published and due effort will be made to conceal their identity, but that anonymity cannot be guaranteed.

REFERENCES

1. Bari O, Cohen PR. Successful management of Zoon's balanitis with topical mupirocin ointment: A case report and literature review of mupirocin-responsive balanitis circumscripta plasmacelluaris. Dermatol Ther (Heidelb). 2017;7:203-10.
2. Dayal S, Sahu P. Zoon balanitis: A comprehensive review. Indian J Sex Transm Dis AIDS. 2016;37:129-38.
3. Daga SO, Wagaskar VG, Jumnake SF, Patwardhan SK. Zoon's balanitis treated with topical tacrolimus. Urol Ann. 2017;9:211-3.

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Our Dermatology Online

Case Letter

Yellowish nodule on the tongue

Sabrina Oujdi, Zakia Douhi, Siham Boularbah, Hanane Baybay, Sara Elloudi, Meryem Soughi, Fatima Zahra Mernissi

Department of Dermatology, University Hospital Hassan II, Fes, Morocco

Corresponding author: Sabrina Oujdi, MD, E-mail: sabrinaoujdi92@gmail.com

Sir,

The presence of a yellowish nodule on the tongue is a clinical situation that the clinician may be confronted with in daily practice. The knowledge of the anatomy of the tongue allows to orientate the diagnosis properly in the event of the rare consultation.

A seventy-year-old patient reported a six-year nodule, 2.5 cm in size, on a large, yellowish axis, well-limited, with a regular and roughly rounded contour and a surface covered with telangiectasias of firm consistency located on the right free edge of the tongue (Fig.1a). In addition, the absence of other cutaneous or mucous lesions was noted.

A biopsy excision was in favor of lipoma (Fig. 1b).

Lipomas are benign tumors of the adipose mesenchyme that rarely occur in the oral cavity. They are the most common mesenchymal tumors in the human body. They account for only around 1–4% of benign tumors of the oral cavity [1].

The etiology and pathogenesis of lipomas remain unclear. Previously, it was argued that lipoblast and embryonic mesoderm proliferation were the origins of lipomas.

Two theories are currently held. The hypertrophy theory states that obesity and additional adipose tissue deposition may lead to oral lipoma formation, yet it is not widely accepted. Another theory of lipoma formation is the metaplasia theory, according to which lipoblast formation may be due to abnormal differentiation of mesenchymal cells. Trauma, hormonal influence, chromosomal abnormalities, and chronic irritation may play a role in the differentiation of dormant cells into fat cells. It is proposed that, after soft tissue injury and subsequent hematoma formation, cytokines involved in the repair process trigger the differentiation and proliferation of adipocytes [1,2].

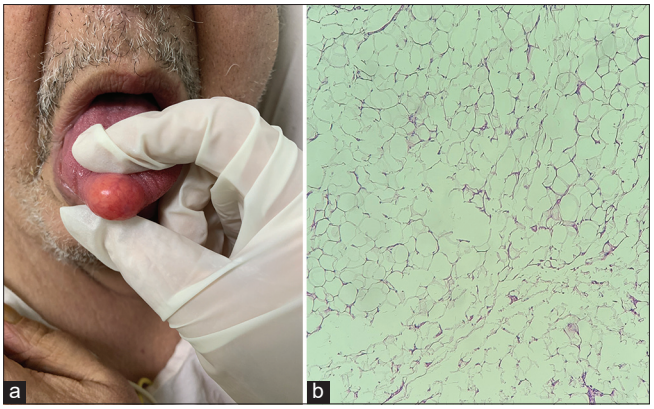

Figure 1: (a) Yellowish nodule on the tongue. (b) Histological picture of the lipoma: multiple fat lobules separated by septa.

Superficial oral lipomas may have a yellowish hue, yet deep oral lipomas may appear pink. They are often asymptomatic and may be noted after several months or years. Lipoma involves fatty tissue, thus sites on the oral mucosa with fatty tissue are the most frequently affected areas. The oral mucosa is the most common intra-oral site for lipomas. The least common sites are the tongue, floor of the mouth, retromolar region, and lips. The most affected patients are forty years of age or older.

Lipomas are common soft tissue tumors, yet few cases of lipomas of the tongue have been reported. Ours was a case of lipoma on the right lateral border of the tongue in a seventy-year-old male.

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Consent

The examination of the patient was conducted according to the principles of the Declaration of Helsinki.

The authors certify that they have obtained all appropriate patient consent forms, in which the patients gave their consent for images and other clinical information to be included in the journal. The patients understand that their names and initials will not be published and due effort will be made to conceal their identity, but that anonymity cannot be guaranteed.

REFERENCES

1. Varma BR, Kumar KS, Verghese RS, Janardhanan M. Unusual presentation of lipoma on the tongue. BMJ Case Rep. 2020;13:e232485.
2. Tiwary AK, Lal YA, Mishra DK. Granular cell tumour: An uncommon tumour of Schwann cell origin. Our Dermatol Online. 2016;7:409-11.

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Our Dermatology Online

Case Letter

Acquired non-scarring vertex alopecia in three women revealing trichotillomania: Diagnostic accuracy of trichoscopy

Basma Karrakchou, Amani Fliti, Soumaya Hamich, Nadia Ismaili, Laila Benzekri, Mariame Meziane, Karima Senouci

Dermatology and Venereology Department, Ibn Sina Hospital, Mohammed V University of Rabat, Morocco

Corresponding author: Basma Karrakchou, MD, E-mail: karrakchou.basma@gmail.com

Sir,

Trichotillomania is an obsessive-compulsive disorder affecting generally young women who often deny hair manipulation. It is responsible for polymorphic non-scarring alopecia, causing a diagnostic wavering. Herein, we report three cases of trichotillomania and determine the place of trichoscopy in the diagnosis.

Observation 1: An 18-year-old female consulted for vertex hair loss developing for three months during exams. A physical examination revealed decreased vertex hair density (Fig. 1a) and a negative pull test. Dermoscopy revealed thick hairs irregularly broken at different lengths, flame hairs, black dots, and hair powder (Fig. 1b). The biological assessment was normal (hemoglobin, ferritin, vitamin D, thyroid function, and antithyroid antibodies). Hair manipulation was denied by the patient yet confirmed by her mother. A diagnosis of trichotillomania was established and the patient was referred to psychiatry.

Observation 2: A 20-year-old young female consulted for a ten-year history of vertex hair loss leading to a large patch of alopecia with geometrical borders and variable hair length (Fig. 2a). The scalp palpation was rough as a consequence of short, thick, broken hairs, and the pull test was negative. Trichoscopy revealed several broken hairs with a normal hair diameter, hemorrhagic crusts, coiled hairs, hooked hairs, trichoptilosis, flame hairs, V-sign, black dots, and hair powder (Fig. 2b). The blood assessment was normal. A diagnosis of trichotillomania was established and confirmed by the mother. The patient was referred to psychiatry.

Observation 3: A 58-year-old, postmenopausal female presented with acute alopecia of the vertex occurring one month after scalp surgery. A clinical examination found a large, asymmetric patch of alopecia accentuated on the dominant hand side (Fig. 3a) and with a positive pull test. Dermoscopy, on the one hand, revealed broken hairs at different levels, hemorrhagic crusts, black dots, hair powder, coiled and hook hairs and, on the other, anisotrichia, perifollicular hyperpigmentation, and one hair per pilosebaceous unit (Fig. 3b). The blood assessment was normal. The diagnosis was trichotillomania associated with androgenetic alopecia. The patient was put on local minoxidil while waiting for the trichotillomania to be healed.

Trichoscopy in trichotillomania shows patterns resulting from compulsive hair pulling [1]. Stretching of the hair shafts is responsible for totally or partially curled hairs (coiled and hook hairs). Depending on the strength and direction of hair pulling, we see irregularly broken hairs, some with darker ends (tulip hairs), flame hairs, and split ends (trichoptilosis). Hair shafts fracture at different levels and are responsible for black dots (scalp level of break) and the V-sign (two hair shafts from the same pilosebaceous unit break at the same level). Residual destroyed hair shafts appear as hair powder. Peripilar hemorrhages reveal scalp trauma.

These features establish the diagnosis of trichotillomania when seen together. However, they are not always

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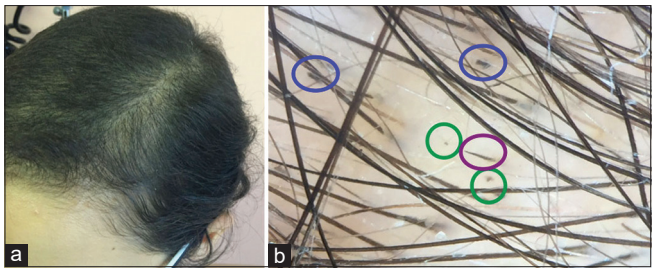

Figure 1: (a) Clinical aspect: diffuse, decreased vertex hair density (patient 1). (b) Trichoscopic aspect: broken hairs (blue circle), flame hair (purple circle), black dots, and hair powder (green circle) with a normal hair diameter and healthy underlying skin.

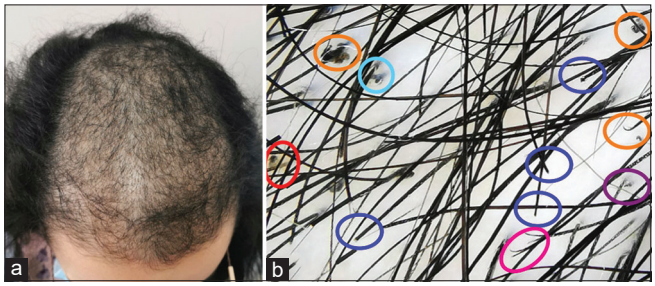

Figure 2: (a) Clinical aspect: large vertex patch of alopecia with geometrical borders and a variable hair length (patient 2). (b) Trichoscopic aspect: irregularly broken hairs (dark blue circle), a hemorrhagic crust (red circle), the V-sign (light blue circle), trichoptilosis (pink circle), a flame hair (purple circle), coiled and hook hairs (orange circle) with thick hairs and normal skin.

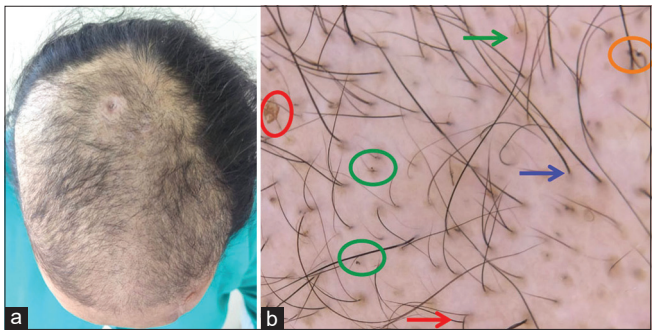

Figure 3: (a) Clinical aspect: large, asymmetrical vertex patch of alopecia more pronounced on the right side, with sharp borders and variability in hair length. A post-surgical scar for a trichilemmal cyst (patient 3). (b) Trichoscopic aspect: a hemorrhagic crust (red circle), coiled hairs (orange circle), black dots, and hair powder (green circle). Patterns of androgenetic alopecia seen: anisotrichia (red arrow), one hair per pilosebaceous unit (blue arrow), and peripilar hyperpigmentation (green arrow).

present simultaneously, nor are they specific [2]. Some are shared with other non-scarring types of alopecia, such as black dots, broken hairs, flame hairs, and tulip hairs in alopecia areata [3]; broken hairs, black dots, and the V-sign in tinea capitis [3]. The diagnosis is then rectified by a negative pull test associated with the five most characteristic trichoscopic signs (hemorrhages, V-sign, hook and coiled hairs, trichoptilosis, and hair powder) [3,4].

Trichotillomania may also be associated with other hair disorders, and the pull test is then positive. It should be considered facing treatment failure in a non-scarring alopecia, and the main trichoscopic patterns should be sought, especially microhemorrhages [4].

Trichoscopy is, thus, a sufficient tool in diagnosing trichotillomania when it shows the five most characteristic patterns associated with a negative pull test. It is also a reliable tool in detecting an added trichotillomania in other hair disorders and should then be systematically performed in alopecia.

Consent

The examination of the patient was conducted according to the principles of the Declaration of Helsinki.

The authors certify that they have obtained all appropriate patient consent forms, in which the patients gave their consent for images and other clinical information to be included in the journal. The patients understand that their names and initials will not be published and due effort will be made to conceal their identity, but that anonymity cannot be guaranteed.

REFERENCES

1. Martín JM, Montesinos E, Cordero P, Gonzalez V, Ramon D. Trichoscopy features of trichotillomania. Pediatr Dermatol. 2019;36:265-7.
2. Kaczorowska A, Rudnicka L, Stefanato CM, Waskiel-Burnat A, Warszawik-Hendzel O, Olszewska M, et al. Diagnostic accuracy of trichoscopy in trichotillomania: A systematic review. Acta Derm Venereol. 2021;101:adv00565.
3. Kinoshita-Ise M, Sachdeva M. Update on trichoscopy: Integration of the terminology by systematic approach and a proposal of a diagnostic flowchart. J Dermatol. 2022;49:4-18.
4. Ise M, Amagai M, Ohyama M. Follicular microhemorrhage: A unique dermoscopic sign for the detection of coexisting trichotillomania in alopecia areata. J Dermatol. 2014;41:518-20.

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Our Dermatology Online

Original Article

Psoriasis worsening related to COVID-19 vaccination: A single-center report

Ibtissame Boubnane[1,2], Soumaya Faras[1,2], Maryam Aboudourib[1,2], Ouafa Hocar[1,2], Said Amal[1,2]

[1]Dermatology Department, Cadi Ayyad University, Mohammed the VI[th] University Hospital, Marrakech, Morocco,
[2]Bioscience and Health Laboratory, Cadi Ayyad University, Mohammed the VI[th] University Hospital, Marrakech, Morocco

Corresponding author: Ibtissame Boubnane, MD, E-mail: ibtissam.boubnane@gmail.com

ABSTRACT

Background: Recently, reports have described cases of the onset or exacerbation of psoriasis related to COVID-19 vaccination. In this study, we sought to describe the clinical features and evolutionary aspects of psoriasis exacerbation after COVID-19 vaccination. **Materials and Methods**: This was a prospective and descriptive study conducted over a period of eighteen months at the Department of Dermatology and Venereology of the Mohammed VI University Hospital in Marrakech. We included all patients followed for psoriasis who received at least one dose of Sinopharm, AstraZeneca, or Pfizer COVID-19 vaccine. **Results**: A total of 148 patients were included in the study, among which 69 received a Sinopharm vaccine, 48 received an AstraZeneca vaccine, and 31 received a Pfizer vaccine. The mean age was 49 years. There were 82 males and 66 females, giving a sex ratio of 1.6. The comorbidities included hypertension in 27.7% of the cases, diabetes in 14.8%, dyslipidemia in 10.8%, and thyroiditis in 2%. Eight exacerbations of psoriasis after COVID-19 vaccination were noted. The mean duration of lesion development was 11.5 days. The vaccines involved were Sinopharm in 5 patients and AstraZeneca in 3 patients. The median PASI before vaccination was 7.8 and the median PASI after vaccination was 20.5. Three patients presented with severe erythematous lesions requiring hospitalization and the introduction of systemic therapy. Extension of the lesions to localized psoriasis was noted in five patients. **Conclusion**: COVID-19 vaccination may be a trigger for psoriasis, as suggested by multiple studies. However, these events should in no way contraindicate vaccination in patients with psoriasis.

Key words: vaccination; COVID-19; psoriasis; exacerbation

INTRODUCTION

The COVID-19 pandemic has had a significant impact on general health worldwide. Therefore, vaccination programs were created to protect and control viral transmission. There are certainly possible cutaneous adverse reactions of COVID vaccination, including urticaria, morbilliform rash, pityriasis rosea, and the exacerbation of pre-existing dermatoses [1,2]. Psoriasis is a chronic cutaneous inflammatory condition that may be triggered by stress, certain drugs, infection, including COVID-19, and less commonly, vaccines [3-10].

Recently, there have been reports describing cases of the onset or exacerbation of psoriasis related to COVID-19 vaccination [11-13]. The aim of our study was to describe the clinical features and evolutionary aspects of the aggravation of psoriasis after COVID-19 vaccination.

MATERIALS AND METHODS

We conducted a prospective and descriptive study over a period of eighteen months at the Department of Dermatology and Venereology of the Mohammed VI University Hospital in Marrakech. We included all patients followed for psoriasis who received at

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least one dose of Sinopharm, AstraZeneca, or Pfizer COVID-19 vaccination. We collected all anamnestic elements concerning age, sex, comorbidities, type of psoriasis, PASI score, current treatments, and evolution of psoriasis after the first, second, and third doses of the vaccine. Data entry and analysis were performed with SPSS.

RESULTS

A total of 148 patients were included in the study, among which 69 received a Sinopharm vaccine (46.6%), 48 received an AstraZeneca vaccine (32.4%), and 31 received a Pfizer vaccine (20.9%). Among all patients, 21 received only one dose of the vaccine (14.1%), 73 received two doses (49.3%), and 54 received three doses (36.4%). The mean age was 49 years, with extremes of 20 to 74 years. There were 82 males and 66 females, giving a sex ratio of 1.6. The comorbidities included hypertension in 27.7%, diabetes in 14.8%, dyslipidemia in 10.8%, and thyroiditis in 2%. All patients suffered from long-lasting psoriasis. Sixty-nine patients were on topical treatment, 51 were on methotrexate, 17 were on acitretin, and 11 were on biotherapy.

Among all patients, eight deteriorations of psoriasis after COVID-19 administration (5.4%) were noted (Figs. 1 and 2). No significant aggravating factors, such as stress, infection, and medications, were reported. The median duration of lesion development was 11.5 days (7–20 days). The vaccines involved were Sinopharm in 5 patients and AstraZeneca in 3 patients (Table 1).

DISCUSSION

Psoriasis is a chronic inflammatory skin condition that may be triggered by stress, certain medications, and infections, including COVID-19 [3-5]. However, the association between vaccination and the worsening of psoriasis has been reported mainly after vaccines against influenza (H1N1), pneumococcal pneumonia, and yellow fever [6]. Recently, this association has been suggested with COVID-19 vaccines [11-14].

To date, there have only been several studies reporting an exacerbation of psoriasis after a COVID-19 vaccine. In a study on 414 individuals with skin reactions after Pfizer/BioNTech and Moderna vaccines, McMahon et al. reported only two psoriasis flares [15]. In addition, Safoura et al. reported three cases of the worsening of psoriasis after a Sinopharm vaccine [16]. Besides, Wei et al. studied 83 patients at their center and found fifteen cases of psoriasis exacerbation after Moderna and AstraZeneca vaccines [17]. Finally, Sotiriou et al. reported fourteen cases of a psoriasis flare; they observed six cases after the Pfizer vaccine, seven after the AstraZeneca vaccine, and one after the Moderna vaccine [11].

To the best of our knowledge, our series is the first study of psoriasis flares after COVID-19 vaccination reported in Africa. Herein, we report eight cases of the worsening of psoriasis after vaccination, including five cases with the Sinopharm vaccine and three with the AstraZeneca vaccine. In contrast, there were no cases with the Pfizer/BioNTech vaccine.

The median interval between vaccine injection and psoriasis deterioration was 11.5 days. This result was comparable to that reported by Sotiriou et al. (10.4 days) [11].

The median PASI in our study was significantly increased. Other authors made the same observation, notably, Wei et al., who found an increase from 3.1 to 8.0 [17].

Regarding treatment, three patients were hospitalized at our department and received biotherapy for two cases and methotrexate for one. Five patients were on topical therapy. While a majority of the patients

Table 1: Psoriasis exacerbation after COVID-19 vaccination (MTX: methotrexate; PASI: Psoriasis Area Severity Index).

	Age (yrs.)	Sex	Psoriasis Type	PASI before Vaccination	Treatment	Vaccine Type	Deadline (days)	PASI after Vaccination	Treatment after Vaccination
1	22	M	Psoriasis inversed	2.4	Topical	Sinopharm	15	12.2	Topical/UVB
2	26	F	Psoriasis vulgaris	12	Topical/MTX	Sinopharm	10	24.6	Biotherapy
3	47	M	Guttate psoriasis	8.4	Topical	Sinopharm	10	48.2	MTX
4	48	F	Palmoplantar psoriasis	4.4	Topical	AstraZeneca	12	11.1	Topical/UVB
5	54	F	Psoriasis vulgaris	15.8	Topical/UVB	AstraZeneca	17	22.3	MTX
6	55	M	Palmoplantar psoriasis	3.4	Topical	Sinopharm	11	16.4	Topical/UVB
7	67	M	Psoriasis vulgaris	15	Topical/UVB	Sinopharm	20	57.4	Biotherapy
8	68	M	Psoriasis vulgaris	7.2	Topical	AstraZeneca	7	15.7	MTX

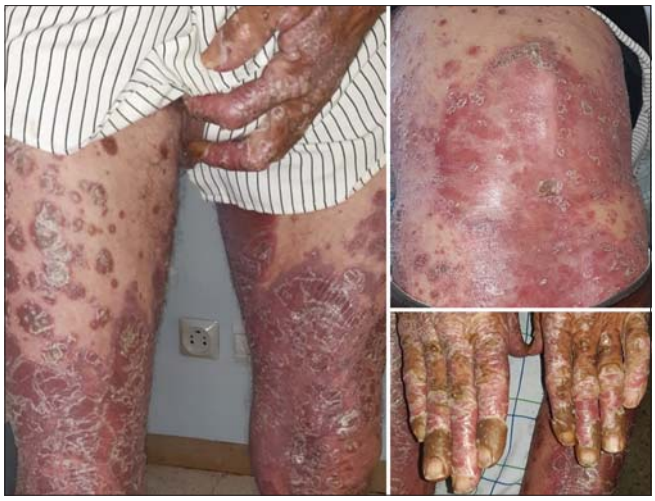

Figure 1: Psoriatic erythroderma following a Sinopharm vaccine.

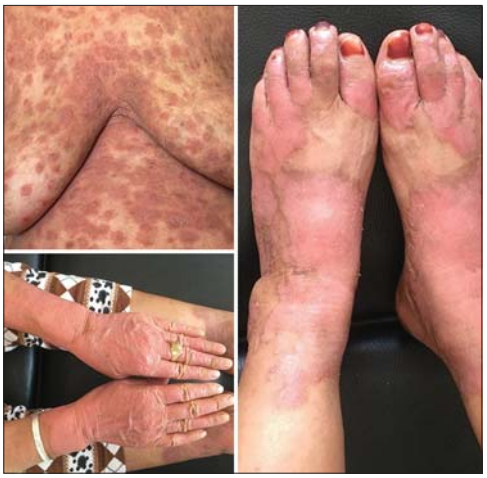

Figure 2: Psoriasis exacerbation following an AstraZeneca vaccine.

reported by Wei et al. were receiving biotherapy, one was taking a topical steroid and one was receiving methotrexate [17].

The mechanism of psoriasis exacerbation after COVID-19 vaccination is still poorly elucidated. Nevertheless, it has been suggested that a Th17-mediated immunological response may play a role, especially as there is increasing evidence that Th17 cells play a role in the pathogenesis of psoriasis as well as in the immunopathology of COVID-19 and vaccine-induced immune enhancement [18,19].

CONCLUSION

Vaccination against COVID-19 may be a trigger for psoriasis, as suggested by multiple studies. However, these events should in no way contraindicate vaccination in patients with psoriasis. This recommendation is based on the documented efficacy of vaccines in preventing COVID-19 and reducing mortality in this high-risk population [20,21].

The association between psoriasis exacerbation and COVID-19 vaccines is still poorly elucidated. Therefore, further research and large controlled studies are needed to elaborate the relationship between psoriasis and COVID-19 vaccines.

Statement of Human and Animal Rights

All the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the 2008 revision of the Declaration of Helsinki of 1975.

Statement of Informed Consent

Informed consent for participation in this study was obtained from all patients.

REFERENCES

1. Niebel D, Novak N, Wilhelmi J, Ziob J, Wilsmann-Theis D, Bieber T, et al. Cutaneous adverse reactions to COVID-19 vaccines: Insights from an immuno-dermatological perspective. Vaccines. 2021;9:944.
2. Wollina U, Chiriac A, Kocic H, Koch A, Brzezinski P. Cutaneous and hypersensitivity reactions associated with COVID-19 vaccination: A narrative review. Wien Med Wochenschr. 2022;172:63-9.
3. Zitouni J, Bursztejn AC, Belloni Fortina A, Beauchet A, Di Lernia V, Lesiak A, et al; Groupe de Recherche sur le Psoriasis (GrPso) of the Société Française de Dermatologie, the Groupe de recherche de la Société Française de Dermatologie Pédiatrique (GR SFDP), the PsoProtect study group, the British Society of Paediatric Dermatology (BPSD), and the Società Italiana di Dermatologia Pediatrica (S.I.Der.P.). Children with psoriasis and COVID-19: Factors associated with an unfavourable COVID-19 course, and the impact of infection on disease progression (Chi-PsoCov registry). J Eur Acad Dermatol Venereol. 2022;36:2076-86.
4. Zitouni J, Bursztejn AC, Belloni Fortina A, Beauchet A, Di Lernia V, Lesiak A, et al; Groupe de recherche sur le psoriasis de la SFDGroupe de recherche de la Société française de dermatologie pédiatriquePsoProtect study groupBritish Society of Paediatric DermatologySocietà Italiana di Dermatologia Pediatrica COVID-19 et psoriasis de l'enfant: facteurs associés à une évolution défavorable de la COVID-19 et impact de l'infection sur le psoriasis. Registre Chi-PsoCov. Annales de Dermatologie et de Vénéréologie. 2022;8:A115-6.
5. Vasileva M, Brishkoska Boshkovski V, Majhosheva M, Vasileva S, Vasilev S, Vasilev B, et al. Quality of life in patients with psoriasis vulgaris during the COVID-19 pandemic. Our Dermatol Online. 2020;11(Supp. 2):1-5.
6. Munguía-Calzada P, Drake-Monfort M, Armesto S, Reguero-Del Cura L, López-Sundh AE, González-LópezMA. Psoriasis flare after influenza vaccination in Covid-19 era: A report of four cases from a single center. Dermatol Ther. 2021;34:e14684.
7. Gunes AT, Fetil E, Akarsu S, Ozbagcivan O, Babayeva L. Possible triggering effect of influenza vaccination on psoriasis. J Immunol Res. 2015;2015:258430.
8. Kamiya K, Kishimoto M, Sugai J, Komine M, Ohtsuki M. Risk factors for the development of psoriasis. Int J Mol Sci.

2019;20:4347.
9. Shi CR, Nambudiri VE. Widespread psoriasis flare following influenza vaccination. Vaccine. 2017;35:4785-6.
10. Shin MS, Kim SJ, Kim SH, Kwak YG, Park HJ. New onset guttate psoriasis following pandemic H1N1 influenza vaccination. Ann Dermatol. 2013;25:489-92.
11. Sotiriou E, Tsentemeidou A, Bakirtzi K, Lallas A, Ioannides D, Vakirlis E. Psoriasis exacerbation after COVID-19 vaccination: A report of 14 cases from a single centre. J Eur Acad Dermatol Venereol. 2021;35:e857-9.
12. Krajewski PK, Matusiak Ł, Szepietowski JC. Psoriasis flare-up associated with second dose of Pfizer-BioNTech BNT16B2b2 COVID-19 mRNA vaccine. J Eur Acad Dermatol Venereol. 2021;35:e632-e4.
13. Chao J-P, Tsai T-F. Psoriasis flare following ChAdOx1-S/nCoV-19 vaccination in patients with psoriasis under biologic treatment. Dermatol Sin. 2021;39:208-9.
14. Oujennane K, Hocar O, Amal S, Aboudourib M. Erythrodermic psoriasis eruption following COVID-19 vaccination. Our Dermatol Online. 2023;14:101-2.
15. McMahon DE, Amerson E, Rosenbach M, Lipoff JB, Moustafa D, Tyagi A, et al. Cutaneous reactions reported after Moderna and Pfizer COVID-19 vaccination: A registry-based study of 414 cases. J Am Acad Dermatol. 2021;85:46-55.
16. Safoura S, Yasamin K, Maryam N, Nasim T, Mahshid Sadat A, Zahra R, et al. Cutaneous manifestations following COVID-19 vaccination: A report of 25 cases. Dermatol Ther. 2022;35:e15651.
17. Huang YW, Tsai TF. Exacerbation of psoriasis following COVID-19 vaccination: Report from a single center. Front Med. 2021;8:812010.
18. Peter JH, Maria EB, David BC. The potential role of Th17 immune responses in coronavirus immunopathology and vaccine-induced immune enhancement. Microb Inf. 2020;22:165-7.
19. Li B, Huang L, Lv P, Li X, Liu G, Chen Y, et al. The role of Th17 cells in psoriasis. Immunolog Res.2020;68:296-309.
20. Xing K, Tu XY, Liu M, Liang ZW, Chen JN, Li JJ, et al. Efficacy and safety of COVID-19 vaccines: A systematic review. Zhongguo Dang Dai Er Ke Za Zhi. 2021;23:221-8.
21. Mahil SK, Dand N, Mason KJ, Yiu ZZN, Tsakok T, Meynell F, et al. Factors associated with adverse COVID-19 outcomes in patients with psoriasis: Insights from a global registry-based study. J Allergy Clin Immunol. 2021;147:60-71.

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Our Dermatology Online

Continuing Medical Education

Acne mimickers: Differential diagnosis of open comedones: A short review

Santhanakrishnaan Soundarya, Thomas Jayakar

Department of Dermatology, Chettinad Hospital and Research Institute, Kelambakkam, Tamil Nadu, India

Corresponding author: Santhanakrishnaan Soundarya, MD, E-mail: soundarya1963@gmail.com

ABSTRACT

Acne vulgaris is one of the most common disorders of the pilosebaceous unit, affecting around 9.4% of the global population. The principal or preliminary lesions of acne are comedones, which represent the follicular dilation and hypercornification secondary to androgen hypersensitivity. Although the diagnosis of acne is rarely difficult for an experienced dermatologist, we rarely come across various other dermatoses that clinically resemble comedones yet have a different pathophysiology and poorly respond to treatment. Not all disorders that have comedone-like lesions are acne. These disorders should be kept in mind when comedones occur in an unusual site, age, or pattern. This review article mainly focuses and highlights the salient features of multiple non-acne disorders that present with open comedone-like lesions along with an approach to the diagnosis and its management.

Key words: Open comedones; Acne; Keratin plugs; Black comedones

INTRODUCTION

Acne vulgaris is a disorder of the pilosebaceous unit, affecting around 9.4% of the global population, involving 90% of males and 80% of females in all ethnic groups [1]. The principal lesions are comedones, which are non-inflamed, primitive, and pathognomic lesions of acne. They represent follicular hyperkeratinization and dilatation that progress to form other lesions, such as papules, pustules, nodules, and cysts [2,3]. Various other disorders have similar presentations mimicking acne, which is briefly discussed in this article. Table 1 highlights the various types of comedones. Common disorders resembling open comedones include familial dyskeratotic comedones, nevus comedonicus, Favre–Racouchot syndrome, the dilated pore of Winer, and trichostasis spinulosa.

Familial Dyskeratotic Comedones (FDC)

Familial dyskeratotic comedones is a rare autosomal dominant disorder with no racial or sexual predisposition. It presents as asymptomatic, numerous, discrete, disseminated, symmetrical, crater-like depressions filled with keratin, resembling open comedones. When the keratin plugs are removed, they reveal a crater with minimal bleeding that heals with pock-like scars. The most common sites of predilection are the face and neck. However, these may also be generalized or diffuse. They are asymptomatic unless secondarily infected. On secondary infection, they form cysts and abscesses. The mucosa, palms, and soles are spared [4]. The three classical features of familial dyskeratotic comedones (FDC) are the presence of multiple, disseminate comedones, a family history of FDC, and histopathology showing dyskeratosis. The management of FDC is difficult as it has no tendency to regress and no response is satisfactory. However, topical and oral retinoids, CO_2 laser, and UVA may be attempted [5].

Nevus Comedonicus

This is a follicular keratotic nevus regarded as a hamartoma of the pilosebaceous unit. It is a developmental defect in which the follicle is unable to form a hair or sebaceous gland. It forms only keratin plugs. They are not true comedones.

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Table 1: The various types of comedones

No.	Comedones	Clinical features
1.	Open comedones	They are black papules, which represent dilated follicular openings < 1 mm. The black color is caused by the oxidation of melanin.
2.	Closed comedones	They are skin-colored, dome-shaped papules without a visible follicular opening, which is < 1 mm in diameter.
3.	Microcomedone	They are microscopic comedones invisible to the naked eyes. They represent the microscopic events such as follicular blockage with follicular hyperkeratosis and sebum secondary to androgen hypersensitivity.
4.	Macrocomedone	They are large comedones greater than 1 mm in diameter.
5.	Submarine comedones	These are deeper comedones, which are > 0.5 cm in diameter, better visualized when the skin is stretched. They are prone to forming inflammatory nodules and, hence, scarring. They are slightly resistant to treatment. Intralesional steroids and isotretinoin help in the management.
6.	Sandpaper comedones	Sandpaper comedones represent multiple closed comedones usually seen on the forehead and the T-area of the face. They are common in mid-childhood acne. It gives a roughed and gritty feel when touched. They are usually resistant to treatment, yet peels and oral and topical retinoids may help.
7.	Double-edged comedones	They are pseudo-comedones seen in hidradenitis suppurativa. They are dilated, keratin-filled, interconnected pores presenting as open comedones joined by a shallow tunnel.
8.	Polyporous comedones	They are comedones with multiple pores (keratin-filled), which is common in hidradenitis suppurativa.
9.	Missed comedones	They are comedones usually missed with normal examination, yet when the skin is stretched in the presence of good lighting, they become evident.
10.	Secondary comedones	They are secondary to inflammation or irritation, for instance, comedones secondary to waxing, chloracne, pomade acne.
11.	Solar comedones	They are comedones found on the cheeks and chin in elderly patients with chronic photodamage usually located on the lateral aspect of the periorbital region [Figure 1].

Figure 1: Solar comedones on the left cheek of a farmer with photoaging secondary to excessive sun exposure.

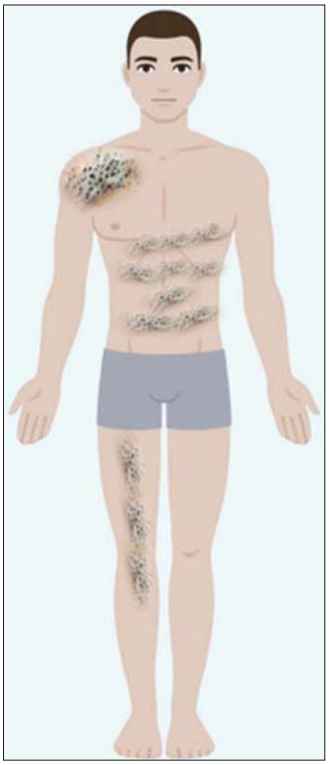


Figure 2: Types of nevus comedonicus in a) segmental, b) Blaschkoid, and c) linear distribution.

This nevus commonly occurs after less than ten years of age. The common sites of predilection are the face, neck, and trunk. They present as keratin-filled pits grouped together, resembling a honeycomb. They are mostly unilateral or segmental yet may also be bilateral, large, linear, or Blaschkoid (Fig. 2). They are asymptomatic and increase in size during puberty. In the case of secondary infection, they may form nodules or abscesses. They heal with scarring. When there is extracutaneous involvement of the spine, eyes, or CNS, it is termed *nevus comedonicus syndrome* [6].

Dermoscopic findings show multiple, dark brown areas studded with keratin plugs and numerous follicular openings [7].

The management includes the use of topical keratolytics such as tretinoin, salicylic acid, and ammonium lactate or destructive procedures such as ablative lasers and surgical excision of small lesions, yet the changes of post-procedure complications such as scarring and pigmentation are high [8].

Chloracne

Chloracne is a dioxin-induced hamartoma otherwise known as metabolizing acquired dioxin-induced skin hamartoma, abbreviated as MADISH. It is a form of occupational acne that produces secondary open comedones and cyst-like lesions due to the irritant effect. The various causative agents such as halogen, insecticides, pesticides, azobenzene, and naphthalene have been known to give rise to chloracne. The routes of transmission include direct contact, inhalation, and ingestion. Based on the quantity and duration of exposure to the chemicals, it may be classified as acute or chronic toxicity. Acute toxicity may cause GI disturbances, dizziness, pancreatitis, neuropathy, and liver disturbances. Skin manifestations are more common in chronic toxicity. Systemic effects may be associated with chronic toxicity as well [9,10]. Famous personalities, such as Ukrainian president Victor Yushchenko, were also victims of dioxin poisoning [11].

Clinically, it presents as numerous, diffuse, open comedones affecting almost all follicles, giving a slate-gray appearance. The most common sites include the face, retro-auricular region, axilla, chest, and trunk. Since these keratinous plugs are produced due to an irritant effect, the areas in which there is more chance of particle collection, such as the retro-auricular region and axilla, are involved. The T-area of the face and perioral region are spared. In severe cases, these areas may also be involved. It may also be accompanied by nodules and cysts. Multiple co-workers and family members are usually affected. It usually begins appearing within the first several weeks of one's occupation. It usually does not respond to the usual anti-acne medications, unless the cause is eliminated. Histopathological examination reveals dilated, cystic, follicular infundibula filled with keratin.

The differentiating points of chloracne vs. acne vulgaris are as follows: Chloracne is caused by an irritant effect, whereas acne vulgaris is caused by androgen hypersensitivity. There is sebaceous gland atrophy as the chemicals concentrate in the sebaceous glands and metabolize slowly, whereas there is sebaceous gland hyperactivity in acne. In chloracne, there is xerosis, as opposed to seborrhea seen in acne. In chloracne, there is a paucity of *Propionibacterium acnes*, whereas in acne vulgaris, there is a perfect anaerobic environment due to the breakdown of the free fatty acids, which facilitates the growth of *P. acnes*.

When it comes to the management of chloracne, the first and foremost step is the avoidance of occupational exposure to the causative agent. The other treatment modalities include the use of topical or oral retinoids and manual expression of the open comedone-like plugs.

Favre–Racouchot Syndrome

Favre–Racouchot syndrome is synonymous with senile comedones, solar comedones (Fig. 1), and nodular elastosis with cysts and comedones. It is characterized by multiple, large comedones, nodules, or cysts on a yellowish background on an actinically damaged face, which is more common in Caucasians and in the male sex [12]. The predisposing factors include chronic sun exposure, smoking, and aging.

The exact pathogenesis of Favre–Racouchot syndrome is unknown. However, excessive UV exposure and the harmful effects of smoke on Favre–Racouchot syndrome are well recognized.

UV Rays in Favre–Racouchot Syndrome

Elastic fiber degeneration leads to solar elastosis and excessive sebum production, leading to an increase in free fatty acids and squalene as well as squalene peroxidases, which promotes comedogenesis and dysregulated keratinization [13].

Smoking in Favre–Racouchot Syndrome

Smoking causes an increased amount of matrix metalloproteinase 1 and 3, which leads to the degeneration of collagen, reduced oxygen supply, and increased production of reactive oxygen species, which eventually leads to reduced synthesis and increased breakdown of collagen with reduced angiogenesis and poor wound healing [14].

Clinically, the patients present with large open comedones with yellowish papules or nodules on the face typically involving the periorbital region (the most common site involving the lateral and inferior aspects), forehead, temporal region, and rarely neck. They are bilaterally symmetrical, although unilateral occurrence has been described. The convexities of the face are the main targets due to UV damage. Due to chronic actinic damage, the surrounding skin shows multiple wrinkles and furrows, and the skin appears leathery [15]. Histopathological examination reveals

epidermal atrophy with actinic elastosis surrounding the cystic lesions. The dermoscopic findings include homogenous, circular areas with shades of light to dark brown with keratin plugs representing open comedones. Multiple, circular, yellowish-brown, homogenous, and structureless areas around the keratin plugs represent the closed comedones. Intervening normal skin shows a yellowish hue due to solar elastosis with arborizing vessels, which represents telangiectasia [16].

The differentiating points from acne are as follows: Acne vulgaris is not common in the elderly. The comedones in Favre–Racouchot syndrome are larger, along with cysts and nodules present on a photodamaged background, and these comedones lack inflammation associated with acne.

The management of this condition includes the elimination of risk factors, such as proper photoprotection, the liberal use of sunscreens, and the cessation of smoking. Retinoids, comedone extraction, peels, hyfrecation, or lasers may be attempted.

Dilated Pore of Winer

The dilated pore of Winer is a benign tumor of the follicular infundibulum commonly seen in middle-aged to elderly women. Clinically, it presents as a large, solitary, follicular, and crateriform depression filled with dark or black keratin, mimicking a giant open comedone (Fig. 3) with no signs of inflammation. The most common sites of predilection are the head and neck yet may occur at other sites as well.

Histopathology reveals a dilated follicular infundibulum with some amount of keratinous material with hyperplastic infundibular epithelium radiating small finger-like projections into the surrounding dermis. Histopathology resembles "a glass of red wine."

Dermoscopy shows central, bluish-black material (representing the keratin) with surrounding translucent, grayish-white margin (representing the epidermal hyperplasia of the follicular infundibulum) [17].

The differential diagnosis of the dilated pore of Winer is mainly pilar sheath acanthoma, which is almost always seen on the upper lip in the elderly. Histologically, pilar sheath acanthoma presents with a large, irregular cavity with multiple, lobulated masses extending to the surrounding dermis, in contrast to the finger-like projections seen in the dilated pore of Winer [18].

The management is only for cosmetic purposes. Surgical excision is curative. Lasers and cautery may also be attempted.

Trichostasis Spinulosa

This indicates the follicular dilation comprising multiple, trapped vellus hairs (around 5–60) presenting as asymptomatic, tiny, black, dilated pores (resembling open comedones) with spinous hair projection (Fig. 4). The most common site of predilection is in the centrofacial region and the most common site is the nose. Rarely, it may be pruritic and disseminated. This is commonly reported in middle-aged and elderly females (due to follicular dilation caused by elastolysis). Dermoscopy shows a paintbrush appearance (hence, it is also known as "pinselhaar") with a small tuft of hair emerging from the central punctum [19-21]. Treatment is mainly for cosmetic purposes, which includes topical

Figure 3: Dilated pore of Winer mimicking a large open comedone.

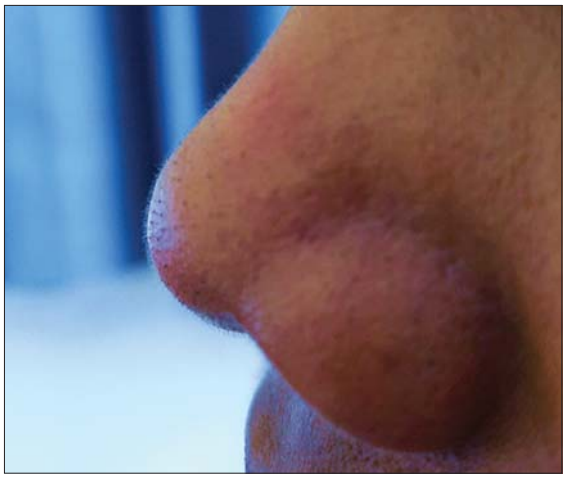
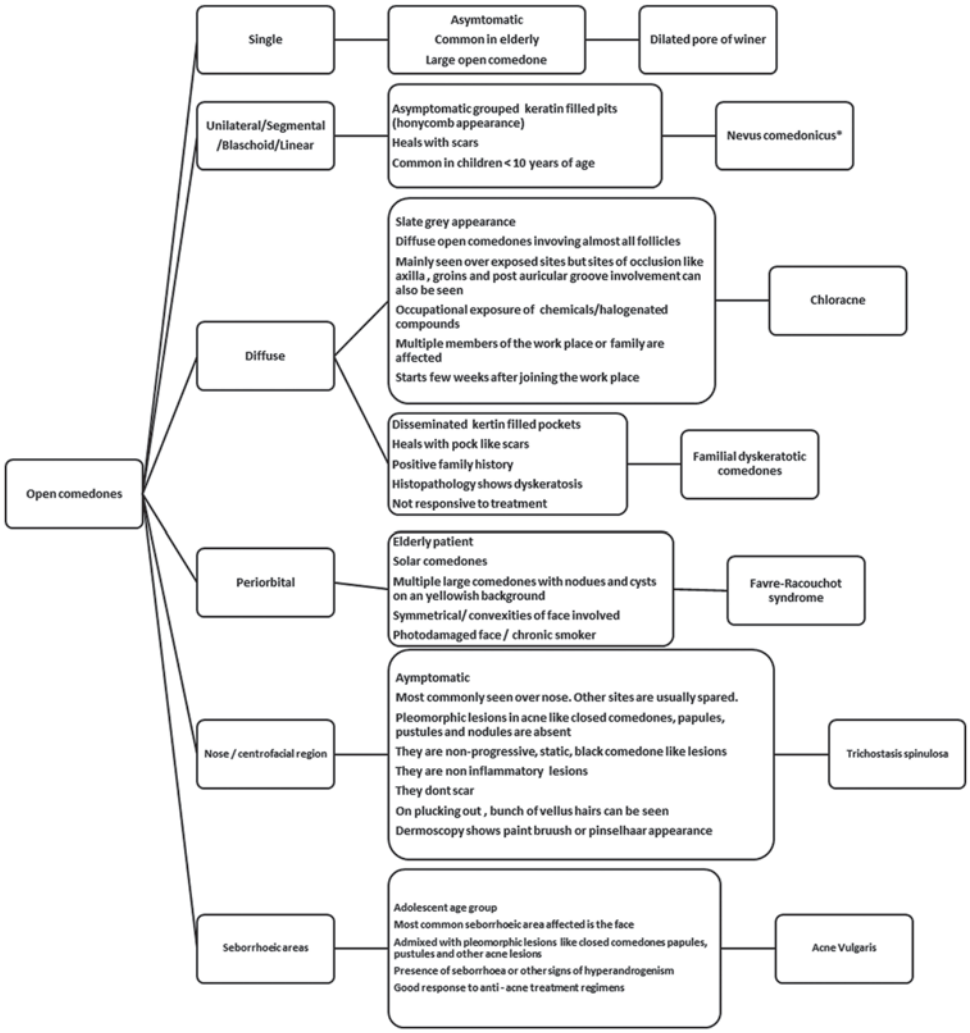


Figure 4: Trichostasis spinulosa mimicking open comedones on the nose.



Flowchart 1: The approach to the diagnosis of mimickers of open comedones. *Rule out other systemic involvement for nevus comedonicus syndrome.

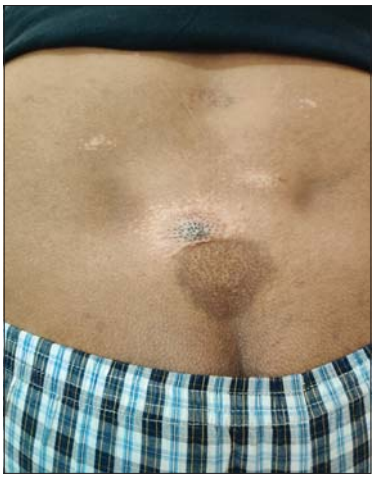


Figure 5: Lichen sclerosus et atrophicus with open comedone-like plugs.

keratolytics, manual extraction with a comedone extractor, tweezers, laser epilation, and adhesive tapes.

Table 2: Disorders with comedones at unusual sites [14]

1. Porokeratotic eccrine ostial and dermal duct nevus (PEODDN)
2. Familial dyskeratotic comedones (FDC)
3. Darier's disease
4. Acne mechanica
5. Nevus corniculatus
6. Comedo nevus
7. Neurofibromatosis
8.Follicular mycosis fungoides
9. Systemic amyloidosis
10. lichen sclerosus et atrophicus (LSEA) [Figure 4]

Table 2 shows disorders with comedones in unusual sites. Fig. 5 shows open comedones in association with lichen sclerosus et atrophicus. Flowchart 1 shows an approach to the differential diagnosis of open comedones.

CONCLUSION

Acne is one of the most common dermatological disorders encountered in our day-to-day practice.

However, when the open comedones are present in unusual sites, occurring in an unusual age group (prepubertal or elderly), not responding to treatment or presenting with a disseminated or Blaschkoid pattern, the other rarer disorders should be kept in mind while diagnosing.

REFERENCES

1. Alanazi MS, Hammad SM, Mohamed AE. Prevalence and psychological impact of acne vulgaris among female secondary school students in Arar city, Saudi Arabia, in 2018. Electronic Physic. 2018;10:7224.
2. Kouotou EA, Nguena Feungue U, Tounouga DN, Ngoune Madjoukeng AS, Nkoro GA, Sigha BO. Severity of acne and quality of life of patients treated at Cameroonian hospitals (sub-Saharan Africa). Our Dermatol Online. 2023;14:16-22.
3. Kouotou EA, Ngoune Madjoukeng AS, Nguena Feungue U, Tounouga DN, Nkoro GA, Shiga BO, et al. Level of adherence to acne treatment and associated factors in patients with acne in Yaoundé, Cameroon (sub-Saharan Africa). Our Dermatol Online. 2022;13:368-74
4. Tiwary AK, Mishra DK, Chaudhary SS. Familial dyskeratotic comedones in a female with positive family history: A rare entity. Our Dermatol Online. 2017;8:46-8.
5. Maddala RR, Ghorpade A, Polavarpu M, Adulkar SA, Das M. Familial dyskeratotic comedones: A rare entity. Indian Dermatol Online J. 2016;7:46.
6. Yadav P, Mendiratta V, Rana S, Chander R. Nevus comedonicus syndrome. Indian J Dermatol. 2015;60:421.
7. Awal G, Kaur T. Multidermatomal Nevus comedonicus: How dermoscopy aids diagnosis? Our Dermatol Online. 2018;9:164-6.
8. Fawal H, Al-Shehabi Z, Soufi L. Congenital nevus comedonicus complicated by hidradenitis suppurativa-like lesions responding to isotretinoin treatment: A case report form Syria. Our Dermatol Online. 2021;12:301-3.
9. Sharma YK, Dash K, Gupta A, Ankadawar N, Prakash N, Mahajan P. Three cases of suspected chloracne in a family from Pune. Indian J Dermatol Venereol Leprol. 2016;82:216.
10. Chessa MA, La Placa M, Patrizi A, Virdi A, Misciali C, Fedrizzi G, Filippi F, Saurat JH, Sorg O, Fontao F, Kaya G. Chloracne: A case series on cutaneous expression of CYP1A1 as diagnostic biomarker. Clin Exp Dermatol. 2021;46:896-900.
11. Sterling JB, Hanke CW. Dioxin toxicity and chloracne in the Ukraine. J Drugs Dermatol. 2005;4:148-50.
12. Paganelli A, Mandel VD, Kaleci S, Pellacani G, Rossi E. Favre–Racouchot disease: Systematic review and possible therapeutic strategies. J Eur Acad Dermatol Venereol. 2019;33:32-41.
13. Hedelund L, Wulf HC. Favre–Racouchot disease provoked by UV-A1 and UV-B exposure. Arch Dermatol. 2004;140:129-31.
14. Dyer J, Manway M, Gapp J, Greenfield M. Unilateral, perioral Favre–Racouchot syndrome associated with cigarette smoking: Case and discussion. J Am Acad Dermatol. 2016;74:76.
15. Vikram K. Mahajan, Pushpinder S. Chauhan, Karaninder S. Mehta, Vikas Sharma. Favre-Racouchot syndrome. Our Dermatol Online. 2013;4:328-9.
16. Rather S, Zeerak S, Bhat M. Favre–Racouchot disease: A clinico-dermoscopic profile. Our Dermatol Online. 2021;12:448-51.
17. Adya KA, Inamadar AC, Palit A. Dermoscopic characterization of dilated pore of Winer: Report of two cases. Clin Dermatol Rev. 2019;3:96.
18. Kushner JA, Thomas RS, Young RJ. An unusual location of a pilar sheath acanthoma. Int J Trichol. 2014;6:185.
19. Naveen KN, Shetty SR. Trichostasis spinulosa: An overlooked entity. Indian Dermatol Online J. 2014;5:S132.
20. Ramteke MN, Bhide AA. Trichostasis spinulosa at an unusual site. Int J Trichol. 2016;8:78.
21. Pozo L, Bowling J, Perrett CM, Bull R, Diaz-Cano SJ. Dermoscopy of trichostasis spinulosa. Arch Dermatol. 2008;144:1088.

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