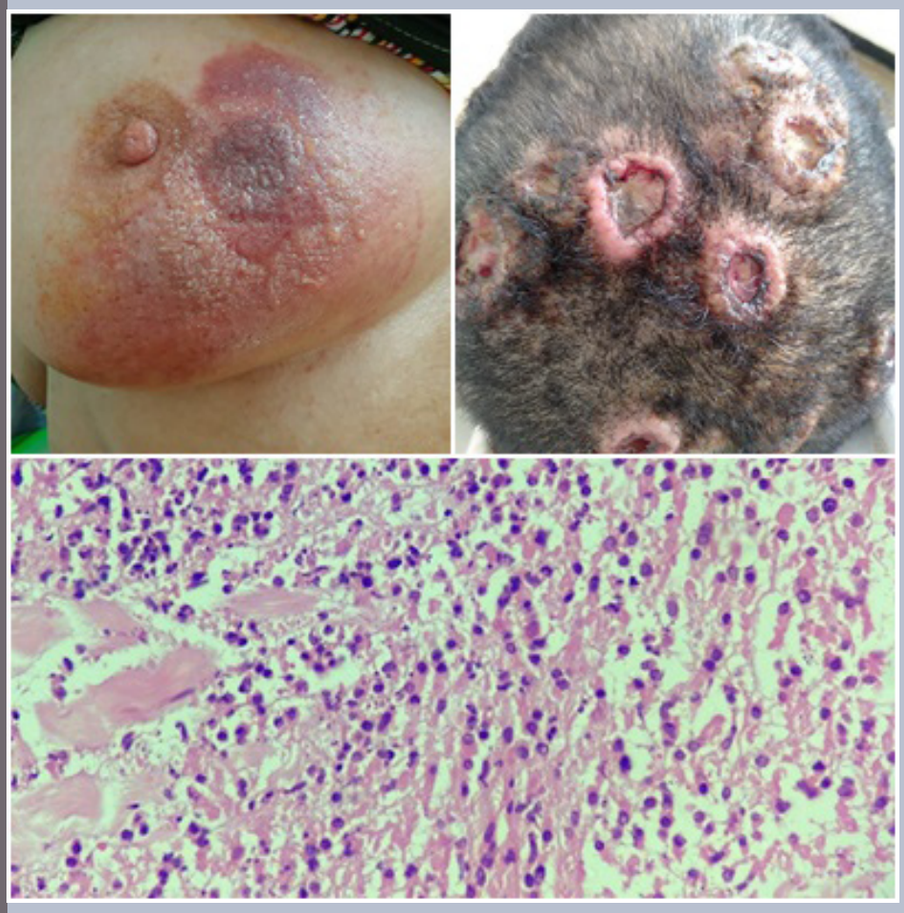
Volume 13, Number 3 July 2022
p. 240-345
Issue online since Friday July 01 2022

ISSN: 2081-9390
DOI: 10.7241/ourd

Our Dermatology Online

www.odermatol.cowm



Issue 3.2022

Editorial Pages

e-ISSN: 2081-9390
DOI: 10.7241/ourd

Quarterly
Our Dermatol Online

published since 01/06/2010 years

www.odermatol.com

Indexed in:

Universal Impact Factor for year 2012 is = 0.7319
system of opinion of scientific periodicals INDEX COPERNICUS (8,69)
(Academic Search) EBSCO
(Academic Search Premier) EBSCO
MNiSW (kbn)-Ministerstwo Nauki i Szkolnictwa Wyższego (7.00)
DOAJ (Directory of Open Acces Journals)
Geneva Foundation for Medical Education and Research (GFMER), Google Scholar, Open J-Gate, NewJour,
International Committee of Medical Journal Editors (ICMJE), Genamics JournalSeek, Hinari,
Bielefeld Academic Search Engine (BASE), WorldCat, e -journal, WorldWideScience.org, National Science Library,
LibSearch, Sciencegate, Virtual Science Library (VSL), Wanfang Data, COnnecting REpositories (CORE),
CAB Abstracts, Global Health, Journal Indexed in Directory of Research Journals Indexing,
OAIster: The Open Access Initiative, OAJSE - Open Access Journals Search Engine, Scirus

Previous website:	issue 1.2010	www.ndermatol.like.pl
	since issue 2.2010 to issue 3.2011	www.odermatol.like.pl
	since issue 4.2011	www.odermatol.com
Previous shortcut:	since issue 1.2010 to issue 3.2011	N Dermatol Online
	since issue 4.2011	Our Dermatol Online

Editorial Board

Contents

Contents

Contents

Our Dermatology Online

Original Article

Clinical assessment on the efficacy of a combined treatment targeting subjects with acne-prone skin

Federica Carlomagno[1], Chiara Pesciaroli, Enza Cestone[2], Ileana De Ponti[2], Angela Michelotti[2], Francesco Tursi[2]

[1]R&D Department, Roelmi HPC, Origgio (VA), 21040, Italia, [2] Complife Italia Srl, Garbagnate Milanese (MI), 20024 Italia

Corresponding author: Francesco Tursi, MD, E-mail: francesco.tursi@complifegroup.com

ABSTRACT

Background: Acne is a multifactorial inflammatory skin disease affecting the quality of life of acne prone subjects. Several therapeutic approaches are currently used to counteract this condition, mostly having side effects. As acne development has been recently linked to skin and gut dysbiosis, acting on both aspects could represent an alternative and promising approach to ameliorate the acne clinical signs. **Material and Methods:** A cosmetic product, containing Ectoin, and a food supplement, containing probiotics, were formulated as a combined treatment to target both gut and skin microbiota and evaluated for the improvement of skin appearance on acne prone adult subjects. Eighty male and female subjects, showing acne clinical signs, were assigned to 4 groups to receive the following products: the cosmetic product containing Ectoin + a placebo food supplement, the combined treatment, a cosmetic reference product, specifically formulated for counteracting acne, + a placebo food supplement, the cosmetic reference product + the food supplement with probiotics. Acne lesions, skin sebum content, pH and moisturization were monitored. **Results:** Clinical evaluations of active acne lesions and comedones, skin complexion evenness and skin inflammatory status were carried out. The combined treatment resulted as effective as the cosmetic reference product in ameliorating the instrumental parameters, and more effective in the dermatological assessment of skin complexion evenness and inflammatory status. **Conclusion:** The combined treatment proposed, formulated to target both gut and skin microbiota, resulted effective in ameliorating acne clinical signs and could represent a valid alternative to conventional acne management.

Key words: acne vulgaris, dysbiosis, ectoin, microbiota, probiotics

INTRODUCTION

Skin constitutes the major organ of the body, with a main role of protection from the external environment, representing a composite ecosystem since it harbours a number of microbial communities including bacteria, fungi and viruses living in distinct niches [1]. The role of the skin microbiota is of paramount importance since it is involved in multiple host functions such as defence against pathogens, toxin degradation and host immune system maturation [2]. It seems essential, for a good functionality of such features and to maintain skin homeostasis, that communities inhabiting the skin remain in equilibrium. Indeed, it is well known that a number of skin inflammatory diseases are associated with shifts in the resident microbiota from a "healthy" to an "altered" state [3]. For example, when a stress occurs, either endogenous or exogenous, the skin ecosystem loses its equilibrium, creating conditions that directly influence the balance of skin microbiota in terms of microorganisms number and their taxonomical composition [4]. This change represents a signal for skin immunity, which reacts activating an inflammatory response. If unbalanced conditions remain for a long time and the dysbiosis persists, chronical inflammatory episodes can occur. This condition can be associated with many skin pathologies such as dandruff, acne, psoriasis and atopic dermatitis [5].

How to cite this article: Carlomagno F, Pesciaroli C, Cestone E, De Ponti I, Michelotti A, Tursi F. Clinical assessment on the efficacy of a combined treatment targeting subjects with acne-prone skin. Our Dermatol Online. 2022;13(3):240-247.

Submission: 10.03.2022; **Acceptance:** 29.04.2022

DOI: 10.7241/ourd.20223.1

Acne is a chronic inflammatory skin disease characterized by sebum production, follicular hyperkeratinisation and inflammation, that can cause seborrhoea, inflammatory and non-inflammatory lesions and, in some cases, scarring. Although pathogenesis of this disorder is multifactorial, it is well known the important role in its onset of skin dybiosis, that may turn commensal microbiota into harmful communities [6]. In recent years, acne has also been linked to gut microbiota imbalance since an intestinal dysbiotic status can influence gut absorption by increasing its permeability, allowing toxins or inflammatory agents to reach the blood stream, leading to the development of autoimmune and inflammatory responses even in distant body districts [7].

The correlation between skin and intestine – the so-called gut–skin axis – relies on the concept that gut unbalances can affect skin by inducing systemic inflammation. Likewise, intestinal disorders are often reported in patients with skin conditions. Actually, subjects with acne prone skin result more likely to experience gastrointestinal symptoms such as constipation, abdominal bloating and gastric reflux [8]. Moreover, increased intestinal permeability causes an increment of lipopolysaccharide (LPS) endotoxins level in the blood, condition that has been observed in acne patients, triggering the activation of pro-inflammatory cytokines in sebocytes [9].

So far, common interventions to treat acne involved the topical use of retinoids, antimicrobial compounds, antibiotics and hormonal therapy. However, all these treatments can cause several reactions, from local irritation, skin drying, headache and nausea to systemic or teratogenic side effects; furthermore, the use of antibiotics can lead to the development of bacterial resistance [10]. Consequently, non-pharmacological therapies represent a viable alternative to conventional acne management. Among the new approaches investigated, restoring a healthy microbial community, by promoting the growth of symbiotic bacteria rather than only inhibiting pathogens, could be promising. Moreover, since multiple factors can be responsible for acne development, possible therapies should involve combined targets, focusing on both skin and gut microbiota [11].

In recent years, a large number of studies have explored the potential efficacy of probiotics food supplements in the prevention or treatment of dermatological disorders, due to their ability to induce positive changes into microbial population resident both in the intestinal tract and on the skin [12]. Some of these studies focused on the efficacy of oral probiotics in acne treatment, reporting their ability to reduce inflammation, by decreasing the release of inflammatory cytokines and activating regulatory T cells, and to decrease systemic levels of IGF-1, that play a role in the pathogenesis of acne [13].

Cosmetic ingredients, by contributing to maintain skin microbiota equilibrium, could represent a valid adjuvant treatment to prevent cutaneous conditions. One example is Ectoin, an amino acid derivative, firstly isolated from the bacterium *Ectothiorhodospira halochloris*. Its main function is to balance the salt concentration in the extracellular environment, as a protection from exogenous stress [14]. Ectoin is known for its skin osmoprotectant properties and, due to such features, is currently used for the treatment of atopic dermatitis [15]. It is also known to be effective in the treatment of inflammatory bowel disease, a condition that, amongst other factors, is characterised by dysbiosis of the intestine, by counteracting the inflammation in intestinal tissues [16]. Due to these features, this compound could act as a balancer for the skin environment, preventing microbiota dysbiosis and consequently skin inflammatory diseases, or restoring skin microbiota equilibrium when already disturbed.

Aim of the present study was to assess the effectiveness in the improvement of acne clinical signs of a novel In&Out combined acne treatment, composed by a cosmetic product containing Ectoin and a food supplement containing selected probiotic strains (*L. plantarum* PBS067, *L. reuteri* PBS072 and *L. rhamnosus* LRH020). In particular, the combined treatment (In&Out) was investigated for its skin improvement effect on adult subjects affected by acne through the reduction of the number and appearance of acne lesions (inflammatory and non-inflammatory acne). Evaluation of sebum level normalization and the effect on skin moisturizing and skin pH were also carried out. The effect of the In&Out treatment was compared to the effect achieved by a cosmetic reference product, targeted for acne treatment, administered with the active or placebo food supplement.

MATERIALS AND METHODS

Study Subjects

Eighty caucasian adult subjects, of both sexes, aged between 18 and 50 years old, were enrolled by a

dermatologist according the following inclusion criteria: an acne severity from 1 to 3 according to IGA (Investigator's Global Assessment) severity scale, phototype I to IV. Exclusion criteria are reported in Table 1. Written informed consent was obtained from participants before the study, including the use of non-identifiable photographs (part of the face) for publication. Regulations concerning privacy (GDPR) were observed.

Table 1: Exclusion criteria

- Subjects who do not meet the inclusion criteria
- Pregnant/breastfeeding female or who have planned a pregnancy during the study period
- Positive history for atopy or hypersensitive skin
- Subjects under systemically pharmacological treatment
- Subjects under locally pharmacological treatment on the skin area monitored during the test
- Subjects with congenital or acquired immunodeficiency
- Subjects under treatment with food supplements which could interfere with the functionality of the product under study
- Subjects which show other skin alterations on the monitored area except for acne lesions
- Subjects considered as not adeguate to partecipate to the study by the investigator
- Subjects with known or suspected sensitization to one or more test formulation ingredients

Products

The investigated cosmetic product was a basic cream containing 1% of Ectoin, as active ingredient; the reference cosmetic formula was a finished product available on the market, specifically formulated for acne treatment.

The active food supplement (AFS) was a mixture of probiotics, in form of capsules, with the following composition: $1x10^9$ cfu/ml of *Lactiplantibacillus plantarum* subsp. *plantarum* (formerly *Lactobacillus plantarum*) PBS067; $1x10^9$ cfu/ml of *Lacticaseibacillus rhamnosus* (formerly *Lactobacillus rhamnosus*) LRH020; $1x10^9$ cfu/ml of *Limosilactobacillus reuteri* (formerly *Lactobacillus reuteri*) PBS072 and common excipients (Maltodextrin, Magnesium stearate, Silicon dioxide, D-Biotin). The placebo food supplement (PFS) was in form of capsules and contained only excipients.

Subjects were instructed to apply a nutshell of the cosmetic/reference product in the morning on clean face and to take one capsule a day of food supplement/placebo with a glass of non-sparkling water, away from meals. No specific change in the daily habits or diet were suggested.

Study Design

A double-blind randomized placebo/reference product-controlled clinical study was carried out from May 2019 to August 2019 at Complife Italia Srl facilities in compliance with the Helsinki Declaration (1964) and its amendment. Study protocol and informed consent form were approved by the "Independent Ethical Committee for Non-Pharmacological Clinical studies" Genova, Italy (Rif. 2019/04). Study protocol was registered in the ISRCTN registry (ISRCTN18390621). Subjects were randomly assigned to 4 groups according to a randomization list previously generated by the study director using an appropriate statistic algorithm ("Wey's urn"). The 4 groups were provided with different combinations of products as follows:

- Group 1 (G1): cosmetic product containing Ectoin + PFS
- Group 2 (G2): cosmetic product containing Ectoin + AFS (In&Out combined treatment)
- Group 3 (G3): cosmetic reference product + PFS
- Group 4 (G4): cosmetic reference product + AFS

Clinical visits were planned at baseline (T0) and after 28 (T28) and 56 (T56) days of products use.

Skin Clinical Parameters

Instrumental evaluations of the skin parameters were carried out at baseline (T0), after 28 days (T28) and 56 days (T56) of products use. Sebum level was measured by the Sebumeter® method (Sebumeter 815, Courage+Khazaka GmbH) and expressed as µg sebum/cm^2 of the skin. Skin moisturization was measured by the Corneometer® method (Corneometer® CM 825 (Courage+Khazaka, electronic GmbH). Skin pH was measured by SKIN pH-METER 905® (Courage + Khazaka GmbH). Dermatological assessment was carried out by a dermatologist by counting acne lesions in terms of number of papules, pustoles, open comedones (blackheads) and closed comedones (whiteheads). Clinical classification of skin complexion evenness was carried out at baseline, after 28 and 56 days of treatment by assigning a variation score with respect to the basal classification. Criteria used are reported in Table 2.

Digital pictures of the subjects face were acquired at each experimental time using a reflex digital camera (NIKON D300 digital camera) equipped with macro-objective (AF-S Micro NIKKOR 60mm f/2.8G ED), a flash system (Kit R1C1) and cross-/parallel-polarized filters, all from Nikon Corporation Tokyo, Japan.

Statistical Analysis

Instrumental data were submitted to ANOVA test followed by Tukey-Kramer post-test (intra-group analysis); the inter-group statistical analysis was performed on the data variations versus T0 by means of Bilateral Student's Test t for unpaired data. Clinical data were analysed using Mann-Whitney U/Wilcoxon Rank-Sum Test (Two Samples). Statistical analysis was performed using NCSS 10 statistical software (NCSS, LLC. Kaysville, Utah, USA) running on Windows Server 2008 R2 Standard (Microsoft, USA).

RESULTS

All subjects (17 males and 63 females, with an average age of 28.0±9.0) completed the study; treatments were well tolerated and no adverse events were reported.

All 4 groups showed statistically significant improvements in almost all the parameters studied compared to T0. Sebum basal levels did not show any significant intergroup difference, supporting the homogeneity of the groups (Fig. 1a). A significant decrease of this parameter, with respect to T0, was recorded in all the 4 groups already at T28 ($p<0.05$ for G3 and G4, $p<0.01$ for G1 and G2). Reduction resulted even more evident at T56 ($p<0.001$ for all the groups) with the highest level achieved by G2 (-22%) and G4 (-20.7%). No intergroup significant differences were observed. The homogeneity of the panel was also confirmed for the skin pH (Fig. 1b), that showed a statistically significant diminution with respect to the basal level in G2 at T56 ($p<0.05$) and in G4 at T28 and at T56 ($p<0.05$ for both). Furthermore, significant intergroup differences were also observed. As shown in Fig. 1c, basal levels of hydration did not differ in the four groups. All treatments induced an increment of such parameter, which achieved, at T56, a significant increase ($p<0.05$), with respect to baseline, for G2 (+3,9%) and G4 (+4,7%). No intergroup significant differences were observed.

Table 2: Clinical and product effect classification

Clinical classification of skin complexion evenness at T0 (basal evaluation)	Score	Product effect classification	Score
Uneven	1	No variation	1
Skin complexion is slightly uneven, imperfections are present in some areas	2	Slight variation	2
Skin complexion is quite uniform	3	Moderate variation	3
Skin complexion is uniform	4	Evident variation	4

Evaluation was carried out by assigning a score at T0 and evaluating the product effect after 28 and 56 days of treatment, by assigning a variation score. Improvement of the skin inflammatory status of the area showing acne lesions was evaluated by comparing digital pictures acquired in standard conditions with cross-polarized filters at day 28 and day 56 in respect to day 0, and by assigning the following scores: 1= No variation; 2= Slight variation; 3= Moderate variation; 4= Evident variation

Basal number of inflammatory acneic lesions were almost the same in all the groups (Fig. 2a). All treatments achieved a reduction with respect to the beginning of the study, that resulted statistically significant already at T28 ($p<0.05$ for G1, G2 and G3; $p<0.001$ for G4) and further improved at T56 ($p<0.01$ for G1; $p<0.001$ for all the other groups). The highest levels of percentage reduction were observed in G2 (-4,4%) and G4 (-4.0%). No intergroup significant differences were observed. As for the number of comedones (Fig. 2b), all the tested treatments achieved a progressive diminution that resulted statistically significant at T56 with respect to baseline for all the groups ($p<0.01$ for G3; $p<0.001$ for the other groups).

Dermatological assessment showed statistically significant improvements by the In&Out treatment

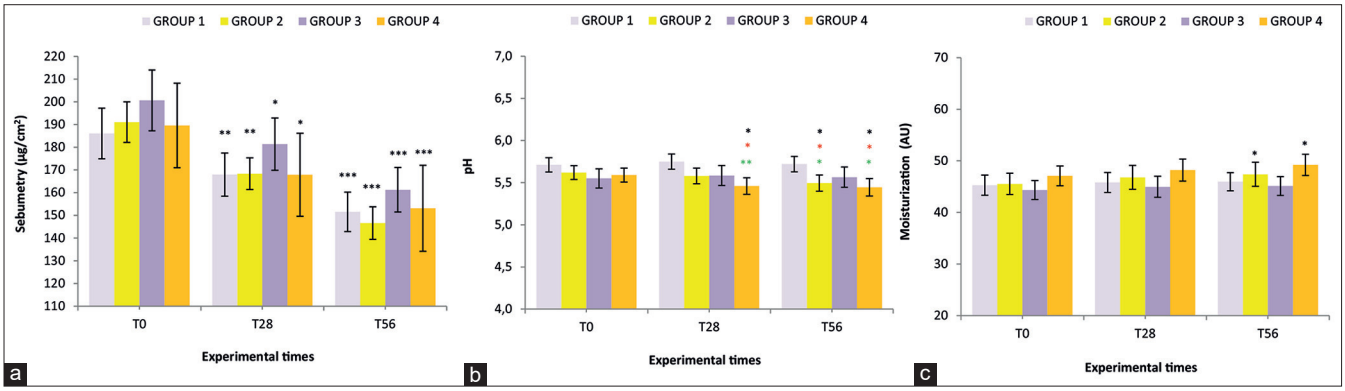


Figure 1: Analysis of skin parameters values recorded on skin of each group of subjects at the three time points (T0, T28, T56). a) Sebum level variation expressed as µg/cm² of sebum. b) Skin pH variation expressed as pH values. c) Skin moisturization variation expressed as arbitrary units (AU). Data are reported as mean ± SEM. Legend: Intragroup analysis: * $p<0.001$ vs T0; ** $p<0.01$ vs T0; * $p<0.05$ vs T0 (RM-ANOVA and Tukey -Kramer post hoc test). Intergroup analysis: * $p<0.05$ vs. G1; *$p<0.05$ vs. G3; **$p<0.01$ vs. G3 (Bilateral Student's Test t for unpaired data).

compared to the cosmetic treatment alone. An improvement of the skin complexion evenness was recorded in all groups. The intragroup differences resulted more relevant after 56 days as G2 and G4 showed an amelioration of the initial scores by 75% and 60% respectively (Fig. 3a). Also for the skin inflammatory status of the area showing acne lesions, a remarkable improvement was recorded in all groups; the intragroup difference resulted more relevant in G2 and G4 that, after 56 days of treatments, showed an amelioration of the initial scores by 70% and 60% respectively (Fig. 3b). Figs. 4 and 5 are a set of representative digital pictures

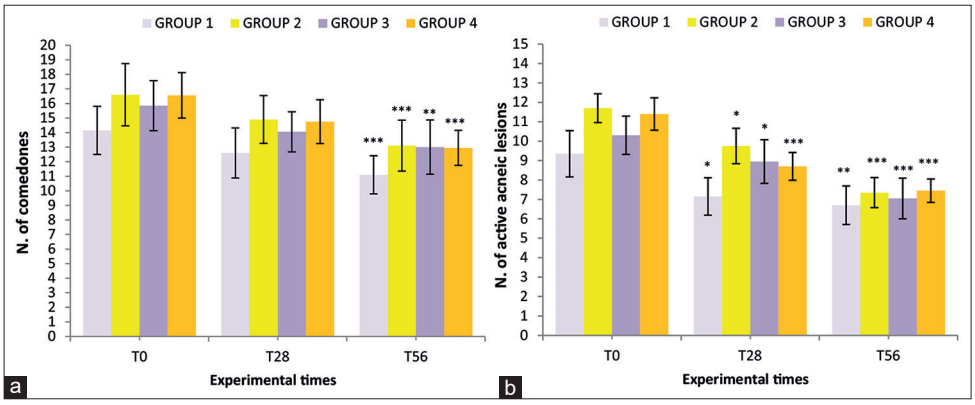


Figure 2: Analysis of acne blemishes recorded on skin of each group of subjects at the three time points (T0, T28, T56). a) Variation of number of active acneic lesions. b) Variation of the number of comedones. Data are reported as mean ± SEM. Legend: * p<0.05 vs T0; ** p<0.01 vs T0; *** p<0.001 vs T0 (Mann-Withney U/Wilcoxon Rank-Sum Test).

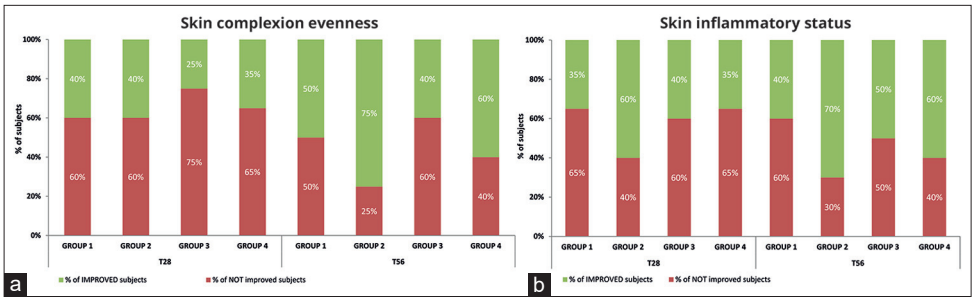


Figure 3: Dermatological assessment reported as percentage of subject showing/not showing improvement. a) Skin complexion evenness evaluation. b) Skin inflammatory status.

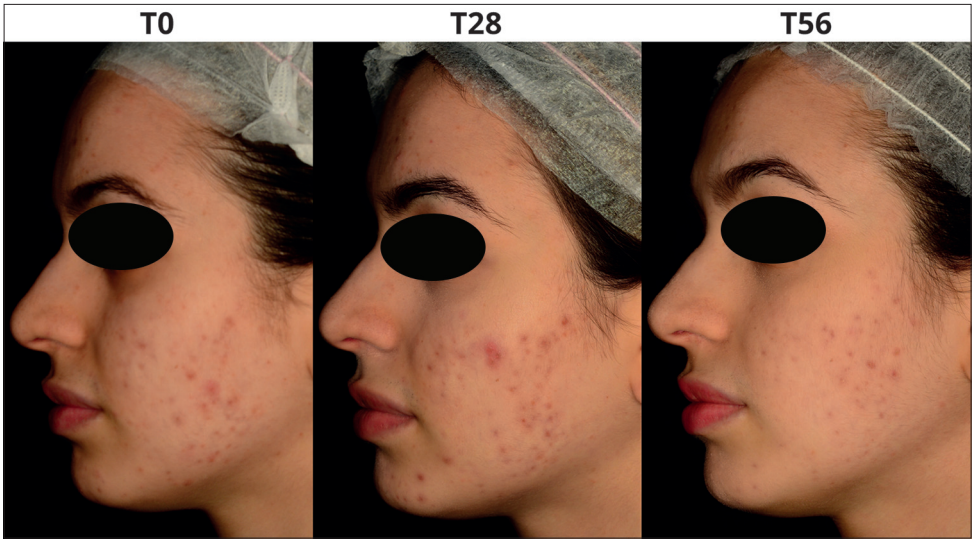


Figure 4: Representative macrophotographs showing the efficacy of the treatment used by group 2 (G2) in ameliorating acne signs at the three time points (T0, T28, T56).

Figure 5: Representative macrophotographs showing the efficacy of the treatment used by group 4 (G4) in ameliorating acne signs at the three time points (T0, T28, T56).

showing the progressive improvement achieved in G2 and G4 groups throughout the study.

DISCUSSION

Acne is a multifactorial skin disease and its complex pathophysiology has been recently linked to skin and gut dysbiosis [6,7]. Indeed, there is growing awareness that maintaining a balanced skin environment and counteracting skin dysbiosis, is the first step for the health of skin microbial communities and, consequently, to avoid the onset of cutaneous diseases [17]. It has also been reported that the functional integrity of intestinal tract microbial residents may play a mediating role in skin inflammation [18]. Therefore, acting on the equilibrium of both the intestinal and the cutaneous microbiota represents an interesting approach to be implemented in the daily routine with respect to the known most aggressive treatments for acute phase.

This double-blind randomized placebo/reference product-controlled clinical study evaluated the efficacy, in adult subjects affected by active acne, of a novel approach based on a combined cosmetic and nutraceutical treatment (In&Out): a cosmetic product containing Ectoin as active ingredient and a food supplement containing selected probiotics. Both cosmetic and nutraceutical ingredients were chosen according results obtained in other studies. As for the Ectoin, in-vitro tests, carried out on human skin keratinocytes, highlighted its capability to maintain cell homeostasis (cell viability and cell metabolism) after osmostress induction and to enhance surface expression of β-Defensin 1 in cells treated with LPS, resulting in a protective effect on skin. Furthermore, a clinical placebo-controlled trial on women exposed to adverse environmental conditions (high level of pollution) showed a remarkable effect of Ectoin on skin moisturization, elasticity, general skin profilometry and, according to metagenomic analysis, in maintaining a more balanced skin microbiome compared to placebo [19]. The probiotic strains showed significant in-vitro ability in the modulation of inflammatory status and antimicrobial activity against skin pathogens such as *C. acnes*, *S. epidermidis* (data not shown) and *S. aureus* [20]. Furthermore, the same probiotic formulation resulted effective in a randomized double-blind placebo-controlled clinical trial on adult subjects showing mild to severe atopic dermatitis, ameliorating skin clinical parameters (smoothness, moisturization and SCORAD index) and decreasing levels of skin inflammatory markers [21].

Results obtained in this study were highly promising considering that the combined approach was assayed also with a dermocosmetic benchmark already on the market and specifically formulated for acne, thus containing targeted active dermatological ingredients (alpha-hydroxy acids esters, citric and salicylic acids, zinc etc.) reported to be effective on abnormal keratinization, inflammation and to have antimicrobial activity [22].

All 4 groups showed significant improvements of sebum levels compared to T0 after 28 and 56 days and also a significant acneic lesion reduction by the end of the treatment, suggesting a direct effect on acne. G2 (In&Out) and G4 (benchmark+probiotics), showed better results compared to G1 and G3, i.e. treatments

without the probiotics, as well as a statistically significant improvement of both skin pH and skin hydration after 56 days, supporting the hypothesis that a combined treatment could be an innovative approach to investigate in order to achieve acne amelioration.

Interestingly, G2 always showed a similar efficacy in all the instrumental parameters tested compared to G3, that represents the conventional dermocosmetic approach to acne, moreover the improvement achieved by G2 at the end of the study period were higher than the benchmark product alone (G3) both in the clinical assessment of skin complexion evenness (75% vs. 40%, respectively) and in the skin inflammatory status of the area interested by acne lesions (70% vs. 50%, respectively). Altogether, such results suggest that the probiotic intake can have a role in the gut-skin axis, helping in the restore of skin barrier in a more efficient way than the cosmetic alone. Indeed, the effectiveness of the probiotic formulation was confirmed by the improvement of acne symptoms achieved in the G4 group with respect to the benchmark alone. It is worth noting that the cosmetic containing Ectoin was specifically formulated to restore an unbalanced skin microbiota and not focused on acne treatment: on this basis the fact that results obtained were almost similar to the benchmark is significant and innovative.

The main objective of this clinical trial was to assess the efficacy of a treatment based on the restoring of the microbiota equilibrium both at skin and gut level since the disruption of the delicate balance between the host and the resident microorganisms is nowadays considered responsible for many skin distresses [5]. For example, the increasing growth of *Cutibacterium acnes*, a common member of the skin microbiota, has been linked to the pro-inflammatory response in the follicle and in the adjacent dermis, leading to acne onset [6]. Conventional treatments against its proliferation involve the use of antibiotics and/or compounds that have significant concomitant reactions. Indeed, commonly used therapies for inflammation caused by acne include strong anti-inflammatory systemic drugs that can generate dry skin, erythema, desquamation etc. In this context, a cosmetic ingredient such as Ectoin, that helps to maintain skin equilibrium without side effects, could be a valuable option. Likewise, probiotics have been demonstrated to help reducing the inflammatory cytokines cascade by several mechanisms such as upregulation of Treg cells and modulation of Th1 and Th2 response, and represent a therapeutic option without potential adverse events typical of chronic antibiotic use. The strains used in the food supplement have previously shown to reduce not only skin inflammation markers but also those related to the systemic inflammation [21,23]. Furthermore, they have been reported to successfully colonize the GI tract, showing long term performance in the reduction of skin condition symptoms [21,24]. This is particularly interesting considering the cross talk between the gut and the skin, where probiotics are responsible both for the production of beneficial metabolites that can reach the skin and for their antimicrobial activity through the release of bacteriocins, as reported for the strain *L. plantarum* PBS067 [25].

CONCLUSIONS

The combined treatment proposed ameliorates clinical acneic signs with a good tolerability, demonstrating that targeting both the gut and the skin microbiota could be a valid adjuvant therapy for the management of acne, and suggesting that such approach could represent a promising alternative to the current pharmacological therapy of chronic skin conditions.

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, including the use of non-identifiable photographs (part of the face), was obtained from all patients.

REFERENCES

1. Grice EA, Segre JA. The skin microbiome. Nat Rev Microbiol. 2011;9:244-53.
2. Zheng D, Liwinski T, Elinav E. Interaction between microbiota and immunity in health and disease. Cell Res. 2020;30:492–506.
3. Balato A, Cacciapuoti S, Di Caprio R, Marasca C, Masarà A, Raimondo A, et al. Human microbiome: composition and role in inflammatory skin diseases. Arch Immunol Ther Exp. 2019;67:1-18.
4. Morvan PY, Vallee R. Evaluation of the effects of stressful life on human skin microbiota. Appli Microbiol Open Access. 2018;4:2.
5. Chen P, He G, Qian J, Zhan Y, Xiao R. Potential role of the skin microbiota in inflammatory skin diseases. J Cosmet Dermatol. 2021;;20:400-9.
6. Ramasamy S, Barnard E, Dawson TL Jr, Li H. The role of the skin microbiota in acne pathophysiology. Br J Dermatol. 2019;181:691-9.
7. Yan HM, Zhao HJ, Guo DY, Zhu PQ, Zhang CL, Jiang W. Gut microbiota alterations in moderate to severe acne vulgaris patients. J Dermatol. 2018;45:1166-71.

8. Bowe W, Patel NB, Logan AC. Acne vulgaris, probiotics and the gut-brain-skin axis: from anecdote to translational medicine. Benef Microbes. 2014;5:185-99.
9. Dréno B, Dagnelie MA, Khammari A, Corvec S. The skin microbiome: a new actor in inflammatory acne. Am J Clin Dermatol. 2020;Sep;21(Suppl 1):18-24.
10. Walocko FM, Eber AE, Keri JE, Al-harbi MA, Nouri K. The role of nicotinamide in acne treatment. Dermatol Ther. 2017;Sep;30(5).
11. Lee YB, Byun EJ, Kim HS. Potential Role of the Microbiome in Acne: A Comprehensive Review. J Clin Med. 2019;8:987.
12. Szántó M, Dózsa A, Antal D, Szabó K, Kemény L, Bai P. Targeting the gut-skin axis -Probiotics as new tools for skin disorder management? Exp Dermatol. 2019;28:1210-8.
13. Kober MM, Bowe WP. The effect of probiotics on immune regulation, acne, and photoaging. Int J Womens Dermatol. 2015;1:85-9.
14. Galinski EA, Pfeiffer HP, Trüper, HG. 1,4,5,6-Tetrahydro-2-methyl-4-pyrimidinecarboxylic acid: A novel cyclic amino acid from halophilic phototrophic bacteria of the genus Ectothiorhodospira. Eur J Biochem. 1985;149:135-9.
15. Marini A, Reinelt K, Krutmann J, Bilstein A. Ectoine-containing cream in the treatment of mild to moderate atopic dermatitis: a randomised, comparator-controlled, intra-individual double-blind, multi-center trial. Skin Pharmacol Physiol. 2014;27:57-65.
16. Abdel-Aziz H, Wadie W, Abdallah DM, Lentzen G, Khayyal MT. Novel effects of ectoine, a bacteria-derived natural tetrahydropyrimidine, in experimental colitis. Phytomedicine. 2013;20:585-91.
17. Prescott SL, Larcombe DL, Logan AC, West C, Burks W, Caraballo L, et al. The skin microbiome: impact of modern environments on skin ecology, barrier integrity, and systemic immune programming. World Allergy Organ J. 2017;10:29.
18. Bowe WP, Logan AC. Acne vulgaris, probiotics and the gut-brain-skin axis - back to the future? Gut Pathog. 2011;3:1.
19. Carlomagno F, Zanzottera S. Empowering the Micro-World of the Skin Microbiota: Approaches to Maintain Nature's Ideal Homeostasis. Eurocosmetics. 2019;6.
20. Presti I, D'Orazio G, Labra M, La Ferla B, Mezzasalma V, Bizzaro G, et al. Evaluation of the probiotic properties of new Lactobacillus and Bifidobacterium strains and their in vitro effect. Appl Microbiol Biotechnol. 2015;99:5613-26.
21. Michelotti A, Cestone E, De Ponti I, Giardina S, Pisati M, Spartà E, et al. Efficacy of a probiotic supplement in patients with atopic dermatitis: a randomized, double-blind, placebo-controlled clinical trial. Eur J Dermatol. 2021;31:225-32.
22. Araviiskaia E, Dréno B. The role of topical dermocosmetics in acne vulgaris. J Eur Acad Dermatol Venereol. 2016;30:926-35.
23. Cicero AFG, Fogacci F, Bove M, Giovannini M, Borghi C. Impact of a short-term synbiotic supplementation on metabolic syndrome and systemic inflammation in elderly patients: a randomized placebo-controlled clinical trial. Eur J Nutr. 2021;60:655-63.
24. Mezzasalma V, Manfrini E, Ferri E, Sandionigi A, La Ferla B, Schiano I, et al. A Randomized, Double-Blind, Placebo-Controlled Trial: The Efficacy of Multispecies Probiotic Supplementation in Alleviating Symptoms of Irritable Bowel Syndrome Associated with Constipation. Biomed Res Int. 2016;2016:4740907.
25. De Giani A, Bovio F, Forcella M, Fusi P, Sello G, Di Gennaro P. Identification of a bacteriocin-like compound from *Lactobacillus plantarum* with antimicrobial activity and effects on normal and cancerogenic human intestinal cells. AMB Express. 2019;17;9:88.

Source of Support: This study was realized in the frame of SCIDA project (Study and development of new pro- and prebiotic products for prevention and treatment of inflammatory diseases such as irritable bowel syndrome and Atopic dermatitis) funded by Lombardy Region [2014IT16RFOP012-POR FESR 2014-2020-Project ID226149].

Conflict of Interest: None declared.

Our Dermatology Online

Original Article

Cardiovascular comorbidities in patients with a severe form of psoriasis: A case-controlled study assessing clinical, biochemical, and radiological parameters

Samagani Akshay, Yadalla Kumar Harikishan

Department of Dermatology, Venereology and Leprosy, Raja Rajeswari Medical College & Hospital, Bangalore, India

Corresponding author: Samagani Akshay, MD, E-mail: dr.samagani@gmail.com

ABSTRACT

Background: Psoriasis is a common, chronic, inflammatory, and proliferative disorder of the skin, and is associated with elevated lipid levels and exaggerated inflammatory status, which may lead to cardiovascular morbidities and mortalities. **Aims:** The aim was to estimate the cardiovascular risk profile among psoriatic patients when compared to controls. **Settings and Design:** This was a case-controlled study performed at a tertiary-care hospital. **Methods and Material:** One hundred patients with severe psoriasis were evaluated for clinical, biochemical, electrocardiographic, and radiological signs of cardiovascular comorbidities and were compared with one hundred age- and sex-matched controls. **Statistical Analysis:** IBM Corp. Released 2015. IBM SPSS Statistics for Windows, version 23.0. Armonk, NY: IBM Corp. **Results:** Males predominated (1.27:1), with the most common age group being 31 to 40 years old. Smoking and alcohol consumption were common among the psoriatic patients (odds ratio = 4.14 and 2.38, respectively). The mean PASI score among the cases was 26.19 ± 10.8, with an extreme effect on their quality of life. The psoriatic patients presented with independent cardiovascular risk factors, including systolic hypertension (148.67 ± 10.91 mm of Hg), elevated fasting blood sugars (129.46 ± 35.64 mg/dL), hypercholesterolemia (152.34 ± 44.56 mg/dL), and hypertriglyceridemia (186.29 ± 29.45 mg/dL), with metabolic syndrome among 41% of the cases. On the electrocardiogram, the P wave was elevated (22%) and the QTc interval was prolonged (20%) among the cases. On high-resolution ultrasonography, the intima–media of the carotid arteries were thickened (0.944 ± 0.132 mm), indicating subclinical atherosclerosis in the psoriatic patients. **Conclusions:** Early detection and periodic screening for cardiovascular risk factors among psoriatic patients and aggressive therapeutic management are recommended to reduce the disease burden and improve their quality of life.

Key words: Cardiovascular comorbidities; Carotid-artery intima–media thickness; Electrocardiogram; Major adverse cardiovascular events; Psoriasis

INTRODUCTION

Psoriasis is a genetically predisposed, environmentally triggered, chronic, inflammatory, and proliferative dermatosis affecting the skin and beyond [1]. Globally, more than 125 million individuals are affected, among which one third presents with moderate to severe forms of the disease [2]. Approx. 25 million individuals are affected by psoriasis in India, accounting for 20% of the global disease burden, with the prevalence varying from 0.8–5.6% [3]. Psoriasis is associated with systemic manifestations such as psoriatic arthritis, Crohn's disease, ulcerative colitis, depression, hypertension, diabetes, dyslipidemia, metabolic syndrome, and cardiovascular diseases, such as coronary artery calcification and myocardial infarction [4]. An increased risk of peripheral vascular disease, atrial fibrillation, and venous thromboembolism has been demonstrated [5].

Psoriasis, being a Th1/17-dependent inflammatory skin disease, has been associated with both cutaneous and

How to cite this article: Akshay S, Harikishan YK. Cardiovascular comorbidities in patients with a severe form of psoriasis: A case-controlled study assessing clinical, biochemical, and radiological parameters. Our Dermatol Online. 2022;13(3):248-253.

Submission: 30.11.2021; **Acceptance:** 16.02.2022

DOI: 10.7241/ourd.20223.2

systemic manifestations and shares a common pathway of systemic inflammation with a deranged lipid profile and cardiovascular diseases [6,7]. Emotional stress, alcohol use, smoking, a high-calorie diet, and obesity produce deleterious effects on inflammatory conditions such as psoriasis and major adverse cardiovascular events (MACEs) [8]. The severe form of psoriasis and its associated comorbid conditions have a negative impact on the overall quality of life for psoriatic patients. The mortality rate is higher in patients with moderate-to-severe psoriasis when compared to healthy controls [9,10]. The life expectancy of patients is decreased by approx. five years, mainly due to cardiovascular comorbidities [11]. Furthermore, the association of cardiovascular comorbidities among patients with psoriasis has a significant impact on the healthcare system [12,13].

Our objective was to compare the cardiovascular risk profile of patients with severe psoriasis to controls without psoriasis.

MATERIALS AND METHODS

The present study was a hospital-based, case-controlled study conducted at a tertiary-care center in a semi-urban region of south India.

One hundred clinically diagnosed psoriatic patients with a severe form of the disease, aged eighteen years and above, belonging to both sexes, and consenting for the study, were evaluated for cardiovascular risk factors. They were compared against normal controls of a similar age group and sex, and selected by a systemic sampling method. Patients with mild and moderate forms of psoriasis or the severe disease on active therapeutic management within the last four weeks, a known case of cardiovascular disease and/or any other systemic illness, psychiatric patients, and pregnant women were excluded from the study.

Cases were evaluated by obtaining a detailed history (smoking, alcohol use, etc.) and a thorough clinical examination. To assess the severity of the disease, the Psoriasis Area Severity Index (PASI), a worksheet by the British Association of Dermatologists, was employed, with scores ranging from 0 to 72 and with the severe form of the disease qualified by a score ≥ 10 [14]. The disease effect on the quality of life (severity score > 10) was assessed by the Dermatology Life Quality Index (DLQI). A self-assessment sheet formulated by Cardiff University, was employed after obtaining the necessary permissions [15]. Clinical parameters, including systolic (SBP) and diastolic blood pressures (DBP), height, weight, and waist circumference, were measured. The body mass index (BMI) was calculated as per criteria by the National Cholesterol Education Program, Adult Treatment Panel III.

Blood tests, including the erythrocyte sedimentation rate (ESR), fasting blood sugars (FBS), and a lipid profile, were performed and compared with controls. Serum total cholesterol (TC) and triglycerides (TG) were determined by the enzymatic method. Serum high-density lipoproteins (HDL) were estimated by the phosphotungstate method. The serum level of very-low-density lipoproteins (VLDL) was calculated by the formula VLDL = TG/5. The serum level of low-density lipoproteins (LDL) was calculated by the Friedewald equation, or by the direct enzymatic method if the values were above 400 mg/dL.

The metabolic syndrome was diagnosed on the basis of criteria by the National Cholesterol Education Program, Adult Treatment Panel III (Table 1).

A twelve-lead electrocardiogram (ECG) was obtained by an ultra-light, single-channel ECG machine (Cardiart 6108T, BPL). The carotid artery intima–media thickness (CIMT) was measured by the high-resolution ultrasonography method with Samsung RS80A, a linear probe (LA3-16A), and a frequency of 12 Mhz.

Statistical Analysis

All demographic parameters and categorical and numerical data were tabulated on an Excel sheet. Statistical analysis was performed with SPSS Statistics for Windows, version 23.0 (Armonk, NY: IBM Corp.). Results on the continuous measurements were presented as means ± standard deviations, and results on the categorical measurements were presented as numbers or percentages. The analysis of variance (ANOVA) was employed to find the significance of the

Table 1: Risk factors for metabolic syndrome (NCEP-ATP III)

Risk Factor	Cutoff Values
Large waist circumference	> 102 cm in men, > 88 cm in women
Hypertriglyceridemia	> 150 mg/dL
Low HDL cholesterol levels	< 40 mg/dL in men, < 50 mg/dL in women
High blood pressure	Systolic blood pressure of > 130 mm of Hg or diastolic blood pressure of > 85 mm of Hg
High fasting blood glucose levels	> 100 mg/dL

study parameters between the groups of patients. The Fisher's exact test and odds ratios (OR) were used to find the significance of the study parameters on the categorical scale between two or more groups, with a confidence interval of 95% and a p value below 0.05 considered significant.

Ethics Statement

The approval of the institutional ethics committee was obtained for our study (IEC registration no.: XXMCH-IEC/70/2018-19).

RESULTS

The cases and controls were the residents of a semiurban region in south India, with a majority belonging to low socioeconomic status. The study variables with respect to cases and controls and the association of risk factors to psoriasis are discussed in Tables 2 and 3.

The mean age of the cases and controls was 39.65 ± 10.74 and 41.97 ± 10.04 years, respectively ($p = 0.8341$), and were all age- and sex-matched. The most common age group affected was 31 to 40 years old (36%), with a male preponderance (1.27: 1). The duration of psoriasis in our patients ranged from 8 months to 22 years (average: 14 years). The behavioral risk factors such as smoking and alcohol consumption had an association with the severe form of the disease (OR = 4.14 and 2.087, $p < 0.001$ and $p < 0.05$, respectively).

The mean PASI score was 26.19 ± 10.8, ranging from 10 to 60.8. The quality of life was moderately affected in 17% of the psoriatic patients, strongly in 15%, and extremely in 68%.

In our study, the incidence of hypertension was high in the psoriatic cases when compared with the controls (68% vs. 54%), with an OR of 1.81. The systolic blood pressure (148.67 ± 10.91 mm of Hg) was an important indicator of disease severity ($p < 0.001$).

The prevalence of obesity (BMI) was similar among the cases and controls (36% vs. 39%, $p > 0.05$, OR < 1) and was statistically insignificant. Both groups (88% vs. 83%) presented with an abnormal weight, ranging from overweight to obese (≥ 23 to ≥ 30 kg/m^2).

The ESR was higher in the psoriatic patients (42%) when compared to the controls (36%), with an OR of 1.28 ($p = 0.04187$). Elevated fasting blood sugar levels were as high as 68%, with a significant value ($p = 0.027$) and a high OR (11.15) among the cases, and only 16% of the controls were affected.

Total serum cholesterol levels among the cases were higher than in the controls (69% vs. 36%): 152.34 ± 44.56 mg/dL and 95.56 ± 19.80 mg/dL, respectively (OR = 3.95). Serum triglycerides and VLDL were higher in the cases than in the controls and were statistically significant. The HDL and LDL levels were raised in the cases when compared to the controls, yet were statistically insignificant.

Metabolic syndrome was diagnosed in 41% of the patients with psoriasis and 9% in the healthy controls.

Table 2: Mean of study variables with respect to cases and controls

Study Variable	Cases		Controls		*p* value
	Mean	± SD	Mean	± SD	
Age (yrs.)	39.65	10.74	41.97	10.04	0.8341
SBP (mm of Hg)	148.67	10.91	119.09	10.65	0.0237*
DBP (mm of Hg)	86.44	8.22	83.07	4.01	0.2531
Height (m)	1.58	0.14	1.55	0.15	0.12876
Weight (kg)	71.2	10.31	67.9	9.69	0.11876
BMI (kg/m^2)	29.01	5.76	28.96	6.4	0.15638
Waist circumference (cm)	116.78	8.93	78.40	6.02	0.1877
ESR (mm @ 1 hr.)	33.62	9.26	14.20	7.98	0.04187*
FBS (mg/dL)	129.46	35.64	102.49	6.96	0.0271*
HDL (mg/dL)	79.48	7.98	73.65	9.72	0.1348
LDL (mg/dL)	120.34	26.11	112.36	16.76	0.1749
TC (mg/dL)	152.34	44.56	95.56	19.80	0.00001**
VLDL (mg/dL)	37.26	8.91	30.47	5.89	0.04189*
TG (mg/dL)	186.29	29.45	119.46	49.80	0.0165*
Rt CIMT (mm)	0.987	0.107	0.7866	0.179	0.0056*
LT CIMT (mm)	0.901	0.157	0.7811	0.112	0.0032*
Avg CIMT (mm)	0.944	0.132	0.7838	0.145	0.004*

$p < 0.05$: significant (*); $p < 0.001$: highly significant (**).

Table 3: Odds ratios of factors affecting psoriasis

Factor	Odds Ratio	Range @ 95% CI	*p* value
Behavioral risk factors			
Smoking	4.1481	2.2964 to 7.4932	p < 0.0001**
Alcohol	2.087	1.1839 to 3.6789	p = 0.0110
Comorbidities			
Hypertension	1.8102	1.0181 to 3.2185	p = 0.0433*
Obesity	0.8798	0.4961 to 1.5603	p = 0.6613
Systemic inflammation	1.2874	0.7283 to 2.2755	p = 0.3848
Diabetes	11.1563	5.6520 to 22.0207	p < 0.0001**
Hypercholesterolemia	3.957	2.1968 to 7.1277	p < 0.0001**
Hypertriglyceridemia	3.807	2.1141 to 6.8555	p < 0.0001**
Metabolic syndrome	6.2542	2.9095 to 13.4441	p < 0.0001**
Electro-cardiac activity and CIMT findings			
Atrial conduction defect	3.7473	1.5202 to 9.2371	p = 0.0041*
Ventricular conduction defect	3.9167	1.4999 to 10.2272	p = 0.0053*
Subclinical atherosclerosis	2.7045	1.5194 to 4.8140	p = 0.0007**

$p < 0.05$: significant (*); $p < 0.001$: highly significant (**).

This difference revealed a high statistical significance ($p < 0.001$) and an OR of 6.25.

A electrocardiographic study revealed an elevated P wave (22% vs. 7%, OR = 3.74) and a prolonged QTc interval (20% vs. 6%, OR = 3.91) among the cases and controls, respectively, which was statistically significant ($p = 0.0041$ and $p = 0.0053$, respectively). There were no ST-segment or T-wave variations or any other changes on the ECG.

A carotid-artery intima–medial assessment by high-resolution ultrasonography revealed an increased thickness among the cases (56%) (0.944 ± 0.132 mm) when compared to the controls (32%) (0.7838 ± 0.145 mm), which was statistically significant ($p = 0.004$) with an OR of 2.70. Thickened intima–media among the cases showed a statistically significant association with the severity of the disease ($p < 0.001$).

DISCUSSION

The severe form of psoriasis increases the risk of major adverse cardiovascular events, such as a myocardial infarction, stroke, metabolic syndrome, and peripheral vascular disease, hence termed "two plaques for one syndrome" [16].

Psoriasis is associated with an increased prevalence of cardiovascular diseases [17]. The molecular mechanisms that have been proposed include shared genetic factors, common inflammatory pathways, the secretion of adipokines, insulin resistance, lipoprotein composition and function, angiogenesis, oxidative stress, dyslipidemia, and hypercoagulability [18]. The Th1 and Th17 (IL-17, IL-6, and IL-8) cytokine pathways may mediate a vascular inflammatory cascade and the development of atherosclerosis and cardiovascular complications such as a myocardial infarction or stroke [19]. IL-17 plays both proatherogenic and atheroprotective roles [20].

In our study, the patients with severe psoriasis presented mostly in the third decade of their life and showed a male preponderance. A majority (69%) were found to have a PASI of below 30. Severe psoriasis was shown to produce a considerable effect on the quality of life, impacting daily activities and social life and causing a significant economic burden to the patients, similarly to the findings by Leon et al. and Wade et al. [21,22].

Smoking and alcohol consumption are common behavioral risk factors for psoriasis and cardiovascular diseases. In our study, these had a four-fold and two-fold association with the psoriatic patients when compared to the controls, which was comparable to the findings by Mehta et al. [10].

Obesity and being overweight characterized by excess visceral fat are thought to release proinflammatory cytokines such as IL-6 and tumor necrosis factor (TNF)-α, playing a role in both conditions [23]. In our study, both groups were equally affected, indicating an overall drift in the lifestyle and a change in food habits.

The active systemic inflammation in the body indicated by the ESR, contributed to by both psoriatic skin lesions and visceral fat due to obesity, was raised among the cases, which is similar to the findings by Lakshmi et al. [4].

Diabetes and hypercholesterolemia had a large impact on the severity of psoriasis, with a high OR, and were independent risk factors for cardiovascular diseases in our study. There was no correlation between derangements in the lipid profile and the presence of diabetes among the cases ($p = 0.1726$). Therefore, diabetes could not have been an underlying factor leading to derangement in the lipid profile (diabetic dyslipidemia) of the psoriatic patients in our study. Hypertriglyceridemia with elevated VLDL among the psoriasis patients was significant.

An electro-cardiac study revealed atrial (elevated P wave) and ventricular (prolonged QTc interval) conduction abnormalities among the psoriatic patients, which was similar to the findings by Bacaksiz et al. and Simsek et al. [24,25].

The highest CIMT value reported among the Indian population is 0.70 mm. CIMT values above 1.0 mm are considered clinical atherosclerosis and values between 0.7 and 1.0 are considered subclinical atherosclerosis [26,27]. In our study, the psoriatic patients were found to have subclinical atherosclerosis and the cases showed a minimal increase in thickness.

Different Indian and international studies estimating cardiovascular risk factors with psoriasis, such as hypertension, diabetes, metabolic syndrome, subclinical atherosclerosis, etc., are tabulated and compared with our study [27-30] (Table 4). Our results are supported by the majority of the published studies. The psoriatic patients with a severe form of

Table 4: Different studies estimating the risk of cardiovascular disease risk factors in psoriasis as compared to the present study

Authors	Kothiwala et al. [27]	Karoli et al. [28]	Votrubova et al. [29]	Lin et al. [30]	Present Study
Study design	cross-sectional	case-control	case-control	cross-sectional	case-control
Sample size	30:30 (n = 140)	96:100	189:378	145:198 (n = 343)	100:100
Clinical comorbidities	Metabolic syndrome, hypertension, abdominal obesity, and diabetes	Hypertension, hypertriglyceridemia, diabetes mellitus, and metabolic syndrome	Hypertension, hyperlipidemia, elevated CRP, and centripetal obesity	Hypertension, high levels of CRP, and metabolic syndrome	Hypertension, diabetes mellitus, dyslipidemia, metabolic syndrome, ECG changes
Increased carotid intima–media thickness	+	+	-	+	+

Table 5: American Heart Association recommendations for risk factor screening

Measurement	Recommendation
Blood pressure	Evaluated at least every 2 years. Target < 120/80 mm of Hg.
BMI	Evaluated at least every 2 years. Target < 25 kg/m^2.
Waist circumference	Evaluated least every 2 years. Target: < 35 for women, < 40 for men.
Pulse rate	Evaluated at least every 2 years.
Fasting serum lipoprotein or total and HDL cholesterol	Evaluated at least every 5 years or every 2 years if risk factors such as a positive family history, the presence of diabetes, or smoking habits are present. Total cholesterol: ≤ 200 mg/dL. HDL: ≥ 50 mg/dL. LDL: optimal: < 100 mg/dL; near optimal/above optimal: 100–129 mg/dL; borderline high: 130–159 mg/dL; high: 160–189 mg/dL; very high: ≥ 190 mg/dL.
Fasting blood glucose	Evaluated at least every 5 years if risk factors are present. Target: < 100 mg/dL.

the disease presented with high-risk factors, such as hypertension, diabetes, deranged lipid levels, metabolic syndrome, altered electrical activity, and subclinical atherosclerosis. Molecular-based targeted therapies were found to be helpful in treating both psoriasis and its cardiovascular comorbidities [31].

Based on our findings, we believe that the preliminary assessment of comorbidities with routine dermatological investigations in psoriatic patients is essential to prevent possible cardiovascular mortalities. The recommended guidelines for the screening of cardiovascular comorbidities in psoriatic patients is provided by the National Psoriasis Foundation and the American Heart Association [32] (Table 5).

Limitations

The prevalence and the clinical patterns of cardiovascular disease associated with psoriasis were not assessed. Echocardiographic studies and the quantitative assessment of ECG were not possible. Studies on larger populations are required to assess the overall disease burden in the Indian population.

CONCLUSION

With the increasing prevalence and awareness of psoriasis and its association with various comorbidities, early detection and periodic screening for cardiovascular risk factors among psoriatic patients and aggressive therapeutic management are recommended to reduce adverse cardiovascular events.

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. Burden AD, Kirby B. Psoriasis and Related disorders. Griffiths CE, Barker J, Bleiker T et al. Rook's Textbook of Dermatology 9th edition. Wiley Blackwell, 2016. Vol. 2; Pg 35.1-35.44.
2. Parisi R, Symmons DP, Griffiths CE, Ashcroft DM. Global epidemiology of psoriasis: A systematic review of incidence and prevalence. J Invest Dermatol. 201;133:377-85.
3. Sharon C, Jiquan S. Association of NLRP1 and NLRP3 gene polymorphism with psoriasis. Our Dermatol Online. 2020;11:275-83.
4. Lakshmi S, Nath AK, Udayashankar C. Metabolic syndrome in patients with psoriasis: A comparative study. Indian Dermatol Online J. 2014;5:132-7.
5. Szentpetery A, Haroon M, FitzGerald O. Cardiovascular comorbidities in psoriatic disease. Rheumatol Ther 2020; 7:5-17.
6. Ganzetti G, Campanati A, Molinelli E, Offidani A. Psoriasis, nonalcoholic fatty liver disease, and cardiovascular disease: Three different diseases on a unique background. World J Cardiol. 2016;8: 120-31.
7. Mehta N, Gelfand J. High density lipoprotein cholesterol function improves after successful treatment of psoriasis: a step forward in the right direction. J Invest Dermatol. 2014;134:592-5.
8. Bissonnette R, Kerdel F, Naldi L, Papp K, Galindo C, Langholff W, et al. Evaluation of risk of major adverse cardiovascular events with biologic therapy in patients with psoriasis. J Drugs Dermatol. 2017;16:1002-13.
9. Masson W, Rossi E, Galimberti ML, Krauss J, Navarro Estrada J, Galimberti R, et al. Mortality in patients with psoriasis.

A retrospective cohort study. Med Clin (Barc). 2017;148:483-8.
10. Alsamarai AM, Alobaidi AHA. Psoriasis is a systemic disease: A proposed approach for inflammation scale calculation. Our Dermatol Online. 2021;12:381-6.
11. Siegel D, Devaraj S, Mitra A, Raychaudhuri SP, Raychaudhuri SK, Jialal I. Inflammation, atherosclerosis, and psoriasis. Clin Rev Allergy Immunol. 2013;44:194-204.
12. Augustin M, Vietri J, Tian H, Gilloteau I. Incremental burden of cardiovascular comorbidity and psoriatic arthritis among adults with moderate-to-severe psoriasis in five European countries. J Eur Acad Dermatol Venereol. 2017;31:1316-23.
13. Feldman SR, Tian H, Gilloteau I, Mollon P, Shu M. Economic burden of comorbidities in psoriasis patients in the United States: Results from a retrospective U.S. database. BMC Health Serv Res. 2017;17:337.
14. Strober B, Ryan C, van de Kerkhof P, van der Walt J, Kimball AB, Barker J, et al. International Psoriasis Council Board Members and Councilors. Recategorization of psoriasis severity: Delphi consensus from the International Psoriasis Council. J Am Acad Dermatol. 2020;82:117-22.
15. Sof K, Aouali S, Bensalem S, Zizi N, Dikhaye S. Dermatoses in the hospital and their impact on quality of life. Our Dermatol Online. 2021;12:462-3.
16. Bukhari I, Ismail M, Hasan M, Alzahrani A. Perspectives in psoriasis, psoriatic arthritis, non-alcoholic fatty liver disease and atherosclerosis in psoriasis. Our Dermatol Online. 2018;9:447-52.
17. Coumbe AG, Pritzker MR, Duprez DA. Cardiovascular risk and psoriasis: Beyond the traditional risk factors. Am J Med. 2014;127:12-8.
18. Hu SC, Lan CE. Psoriasis and Cardiovascular Comorbidities: Focusing on severe vascular events, cardiovascular risk factors and implications for treatment. Int J Mol Sci. 2017;18:2211.
19. Furuhashi T, Saito C, Torii K, Nishida E, Yamazaki S, Morita A. Photo(chemo)therapy reduces circulating Th17 cells and restores circulating regulatory T cells in psoriasis. PLoS One. 2013;8:e54895.
20. Owczarczyk-Saczonek A, Placek W. Interleukin-17 as a factor linking the pathogenesis of psoriasis with metabolic disorders. Int J Dermatol. 2017;56:260-8.
21. Leon A, Beroukhim K, Danesh M, Nguyen C, Lee K, Farahnik B, et al. The correlation between the Dermatology Life Quality Index and the Psoriasis Area Severity Index. J Psoriasis Psoriatic Arthritis. 2015;1:26-30.
22. Wade AG, Crawford GM, Young D, Leman J, Pumford N. Severity and management of psoriasis within primary care. BMC Fam Pract. 2016;17:145.
23. Wheatley R, Brooks J, Stumpf B, Boh E. Obesity, diet, and inflammation in psoriasis. J Psor Psor Arthritis. 2017;2:97-101.
24. Bacaksiz A, Erdogan E, Tasal A, Vatankulu MA, Kul S, Sevgili E, et al. Electrocardiographic P-wave characteristics in patients with psoriasis vulgaris. Ups J Med Sci. 2013;118:35-41.
25. Simsek H, Sahin M, Akyol A, Akdag S, Ozkol HU, Gumrukcuoglu HA, et al. Increased risk of atrial and ventricular arrhythmia in long-lasting psoriasis patients. Scien World J. 2013:9:012-5.
26. Kasliwal RR, Bansal M, Desai D, Sharma M. Carotid intima-media thickness: Current evidence, practices, and Indian experience. Indian J Endocr Metab. 2014;18:13-22.
27. Kothiwala SK, Khanna N, Tandon N, Naik N, Sharma VK, Sharma S, et al. Prevalence of metabolic syndrome and cardiovascular changes in patients with chronic plaque psoriasis and their correlation with disease severity: A hospital-based cross-sectional study. Indian J Dermatol Venereol Leprol. 2016;82:510-8.
28. Karoli R, Fatima J, Shukla V, Dhillon KS, Khanduri S, Maini S, et al. A study of cardio-metabolic risk profile in patients with psoriasis. JAssoc Physicians India. 2013;61:798-803.
29. Votrubova J, Juzlova K, Dzambova M, Hercogova J, Gopfertova D. Cardiovascular comorbidities in patients with psoriasis: Risk profile including carotide ultrasonography assessed in hospital-based case control study. Acta Dermatovenerol Croat. 2016;24:187-92.
30. Lin YC, Dalal D, Churton S, Brennan DM, Korman NJ, Kim ES, et al. Relationship between metabolic syndrome and carotid intima-media thickness: Cross-sectional comparison between psoriasis and psoriatic arthritis. Arthritis Care Res (Hoboken). 2014;66:97-103.
31. Curtis JR, Danila MI, Chen L, Chan B, Ehst B, Xie F, et al. Risk of Cardiovascular outcomes among psoriasis patients treated with biologics and other systemic agents. J Psoriasis Psoriatic Arthritis. 2016;1:128-37.
32. Cai J, Cui L, Wang Y, Li Y, Zhang X, Shi Y. Cardiometabolic comorbidities in patients with psoriasis: Focusing on risk, biological therapy, and pathogenesis. Front Pharmacol. 2021;12:774808.

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

Our Dermatology Online

Original Article

Delusional parasitosis as a tactile hallucination handled by dermatologists

Khalifa Ebeid Sharquie, Maha Sulaiman Younis

[1]Department of Dermatology, College of Medicine, University of Baghdad. Center of Dermatology, Medical City Teaching Hospital, Baghdad, Iraq, [2]Department of Psychiatry, College of Medicine, University of Baghdad, Iraq

Corresponding author: Maha Sulaiman Younis, MD, F.I.M.S.P, C.A.B.M.P, E-mail: Maha.younis@gmail.com

ABSTRACT

Background: Delusional parasitosis (DP) is a false, unshakable belief that pathogens have infested one's own skin or body. **Objective:** The objective was to record all patients with DP, a rare presentation of monosymptomatic delusion, in Iraq. **Patients and Methods:** This was a descriptive study of 21 cases diagnosed with DP in Medical City Teaching Hospital in Baghdad, Iraq, between 2013 and 2021. A detailed history and clinical examination were conducted to exclude actual organic disease. **Results:** All patients were females with a mean age of 65 years. They believed strongly to have pathogens in their skin or scalp, carrying containers with samples of skin debris, fibers, dead insects, hair waste, and small stones as proofs of their infestation. Careful psychiatric assessment ruled out schizophrenia, substance use disorders, and dementia, and proved the psychiatric diagnosis of monosymptomatic delusion. The patients described their symptoms as something crawling, stinging, and biting sensations. On examination, we often saw shaved scalp hair with injured skin in the form of excoriations, ulcerations, scarring, and pyogenic infections in a localized area. **Conclusion:** DP is a single symptom-sign complex manifestation in a person with a well-preserved personality apart from a single tactile hallucination of some sort of pathogens infesting their skin. It is commonly a disease of the scalp of elderly females that run a chronic course and rarely remits in a short time. Proper liaison between dermatologists and psychiatrists assisted by laboratory facilities is required for diagnosis and follow-up. Empathetic rapport, psychiatric referral, and early treatment by atypical anti-psychotics significantly improve such conditions.

Key words: parasites; delusion; tactile hallucination; dermatologists

INTRODUCTION

Delusion is a false, fixed belief strongly held by a person in contradiction to a logical conversation. It may be bizarre or rational and primary or secondary to numerous physical and mental disorders or substance abuse. Delusions presented solely or associated with perceptual disorders of any sensory modality are hallucinations, which may be presented without delusions in functional and organic psychosis and substance abuse. Auditory hallucinations are the most common type of functional psychotic disorders, particularly schizophrenia, while others, visual, gustatory, olfactory, and tactile, are often associated with organic disorders, including substance intake [1]. Singular types of delusions are not commonly encountered in psychiatric consultation clinics; however, eliciting these is a pivotal step for proper management, being chronic with medical and psychiatric complications. Among those is delusion of parasitosis (DP) or delusion of infestation (DI), wherein patients have a fixed belief of harboring inmates, namely, insects, worms, larvae, mites, bugs, lice, flea, or parasitic organisms on or beneath their skin or infesting muscles, joints, or internal organs [2]. The tactile hallucinatory experience of crawling, itching, and biting reinforces the patient's belief, leading to skin lesions by scratching and/or excoriation in desperate trials to eradicate them. Such patients seek dermatologists for medical help and unusually refrain from psychiatric consultation when advised to do so [3]. The current psychiatric classificatory systems (ICD-

How to cite this article: Sharquie KE, Younis MS. Delusional parasitosis as a tactile hallucination handled by dermatologists. Our Dermatol Online. 2022;13(3):254-258.

Submission: 28.07.2021; **Acceptance:** 19.11.2021

DOI: 10.7241/ourd.20223.3

10 and DSM-IV) conceptualize DP as a delusional disorder [4].

Historical background

It has been four centuries since Thomas Browne first described a case of psycho-cutaneous dermatosis, naming it Morgellons disease [5]. Later, A French dermatologist, Thibierge, introduced the term *acarophobie* into modern psychiatric terminology by describing a delusional skin infestation in 1894 [6]. In 1938, Karl Axel Ekbom described the principal features of DP under the German term of *Praseniler Dermatozoenwahn*. In 1970, *Ekbom syndrome* was coined as an idiom for DP and sometimes to refer to restless leg syndrome [3,6]. Wilson and Miler used the term *delusion of parasitosis* [7], while Munro considered DP a presentation of monosymptomatic hypochondriacal psychosis [6]. Delusion of infestation (DI) was employed by Hopkinson as a synonym for DP [2].

Clinical Features

DP is an uncommon primary psychiatric disorder characterized by the presence of an unshakable belief of being infested by pathogens, usually associated with congruent tactile hallucination leading to induced skin lesions. Tactile hallucinations of variable presentations may be secondary to some neurological and medical conditions such as neurosyphilis, encephalitis, senile dementia, cerebrovascular disease, particularly stroke involving the right temporoparietal cortex, encephalopathy caused by uremia, hepatic failure, severe vitamin B_{12} deficiency, and coronary bypass surgery [8]. The sensation of small animals crawling over or under the skin and sometimes internal organs, so-called *formication*, may occur without concomitant delusion as a manifestation of acute withdrawal symptoms in alcohol dependence delirium tremens and some illicit drug consumption, specifically cocaine, *cocaine bugs* [7]. The unaccompanied presentation of formication, occasionally called *invisible bugs*, runs a chronic course and is consolidated into delusion as the primary pathology. Additional facultative psychotic and non-psychotic such as visual illusions and hallucinations may be present [9]. DP is also present in mood disorders or schizophrenia, especially in young patients as an early manifestation of a major psychotic disorder. Many authors prefer the term *delusion of infestation* (DI). Both terms, however, are synonymous. The management of DP, primary types in particular, is challenging for the treating dermatologist because of the patient's negative attitudes toward psychiatric consultation, leading to an inadequate treatment strategy and a poor outcome. DP becomes intractable with or without treatment and becomes fortified against further measures. Some authors categorized DP and DI within the delusions of hypochondriasis or paranoid hypochondriasis based on the somatic description, yet such terminology has not been employed in dermatologic and psychiatric practice [1,9]. The ambiguous nosology was clarified and agreed upon by the ICD-10 and DSM-IV classification manuals, declaring that DP and DI are considered a monosymptomatic delusion [4,9]. A multidisciplinary approach between dermatologists, psychiatrists, laboratory workers, and infectious medicine specialists to oversee the related medical aspects of DP is needed. Building efficient rapport with patients with DP is an important step in psychiatric and psychosomatic therapy to improve the outcome. To diagnose DP with certainty, actual skin diseases such as scabies and body lice should be excluded first by history taking, physical examination, and relevant investigations. The triad of skin lesions, the unshakable belief of being infested, and the classic "specimen" should be watched carefully in the absence of any kind of cognitive impairment. Most patients with DP bring different samples of bits of dried skin, textile fibers, hair, scabs, specks, dried blood, and occasionally living ants or flies as evidence for their alleged parasites; these should be submitted for microbiological laboratory examination. This has been referred to as the matchbox sign or the specimen sign; such specimens indicate the classical presentation, but its absence does not exclude the diagnosis of DP [10]. With persistent cleansing and disinfecting, patients with DP induce further damages to their existing skin lesions, leading to serious dermatological complications. Moreover, they may destroy clothing and furniture or even change their residency once the delusion extends to their surroundings. DP is most often seen in middle-aged females (with an age ranging from 45 to 55 years), with a female-to-male ratio falling between 2:1 and 3:1 in those aged over 50 and a ratio of 1:1 in those aged under 50. It has an insidious onset and runs a chronic course of continuous symptoms or in-between periods of remissions. Most often, there is a time delay before the patient's first presentation to the dermatologist but not to a psychiatrist. The patient's reluctance to psychiatric referral is the leading cause of inadequate treatment or, sometimes, quitting the treatment procedure altogether. Such behavior is predicted by healthcare workers worldwide and may predispose

them to significant dermatological and psychiatric consequences [8,9]. Dermatologists are entitled to establish liaisons with psychiatrists, preferably in the form of a multidisciplinary clinic. If psychiatric services are unavailable, dermatologists should be familiar with the relevant psychopharmacology, keeping in mind the importance of empathetic patient rapport and skilled communication [8,9]. Systematic studies on DP and DI are scarce and lack either dermatological or psychiatric details and laboratory analysis of the alleged pathogens. The dearth of large-scale field research and epidemiological studies created a data gap about its prevalence and morbidity, as in case reports, small case series, or review articles. In Iraq, no elaborate study on DP is available apart from one study by Sharquie et al. [11] a study on a patient's psycho-cutaneous referral to a psychiatry clinic [12].

MATERIALS AND METHODS

This was a case-series, descriptive study in which all patients with delusion of parasites were recorded from 2013 through 2021. Full demographic information was registered and history taking and clinical examination were conducted. A dermatological examination regarding the presence of parasites such as pediculosis, insects, or larva was performed. Also, a careful examination of rash was performed. Psychiatric assessments, including indicative investigations, were done to exclude any actual psychiatric problem or organic disease. Laboratory testing for the presence of insects or other microbes was done for the patient specimens. Written consent was obtained from each patient after carefully explaining the study. Permission for photographing was received and shown to assure anonymity. The patients were reluctant to abide by the psychiatric referral suggested by the consultant dermatologist (first author) and refused the possibility of having a mental illness. To overcome this obstacle, the consultant psychiatrist (second author) attended the dermatological setting and tactfully conducted the psychiatric assessment for each patient in the form of a small multi-disciplinary team.

Ethics Statement

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.

RESULTS

Twenty-one female patients were seen with delusion of parasites, with their age ranging from 50 to 88 years, with a mean of 65 years. All patients had only one complaint, as they believed strongly to have pathogens in their skin, most commonly in the scalp hair. Otherwise, they had an intact personality as confirmed by psychological evaluation, with no other features of psychiatric diseases such as schizophrenia or dementia. All patients resisted any argument against their strong conviction of being infested by parasites; consequently, they refused any referral to the psychiatrist. The patients were often carrying containers with samples of skin, hair, waste, skin debris, mixed up with dried blood, dust, stones, and insects. The patients described their symptoms as something crawling and stinging and biting sensations. A significant number of the patients had a long history of insect-like bites of the scalp hair and other parts of the body before they had an actual skin rash, especially of the scalp region. Some patients tried to remove these insects with different antiseptics or even insecticides, and these measures had induced chemical skin irritation and, consequently, more complaints and more itching or burning. One patient was carrying microscope slides filling them with debris and asking the doctor to examine it under a microscope. On examination, we often saw shaved scalp hair with damaged skin in the form of excoriations and erosions, ulcerations, scarring, thickened skin, and even pyogenic infections in some patients; and this rash was usually observed in a localized area (Figs. 1–3).

DISCUSSION

Many types of parasitic and helminthic infestations are endemic in Iraq, especially in rural areas and crowded settings with poor hygiene: prisons, residences of incumbents, dormitories, and military and refugee camps. Such patients are distributed among health care settings of different medical specialties, primarily dermatology, or they may seek traditional healers for herb remedies [13]. Among all the attendees of the dermatology and venerology outpatient clinic, twenty middle-aged female patients were diagnosed with DP during the last eight years and another case at the

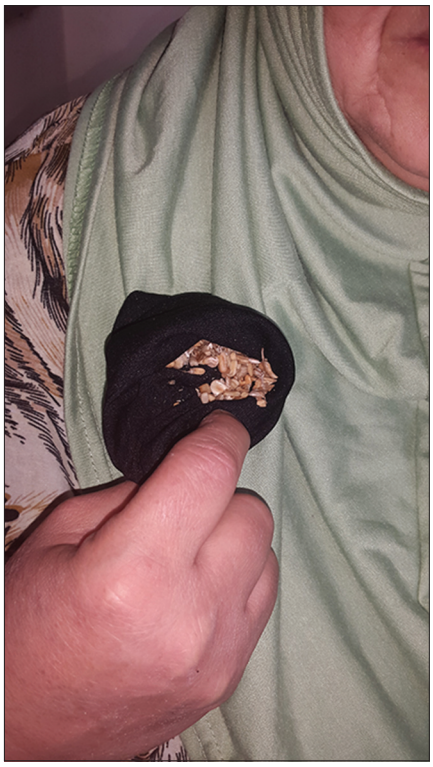


Figure 1: A 57-year-old female with DP carrying the assumed insects.

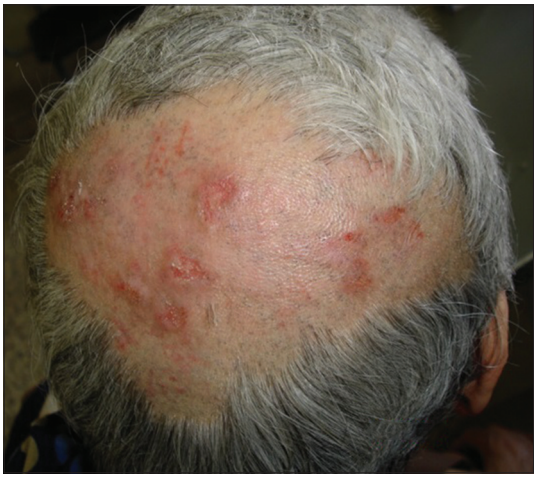


Figure 2: A 58-year-old female with DP showing shaved scalp with multiple excoriated, ulcerative areas.

psychiatric clinic. They complied with the diagnostic criteria of DP and DI according to a semi-structured DSM-IV interview [4]. Each patient was examined by the consultant dermatologist and psychiatrist (first and second author). Some of the patients studied offered recorded photographs on their mobile phones as evidence of their infestation resembling the old "specimens sign." Dementia, hypochondriasis, and schizophrenia were excluded by a psychiatric assessment. Numerous common concepts are found in our case series to the ones available in the literature: age, gender,

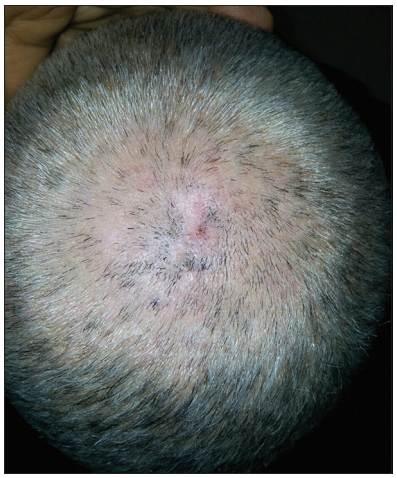


Figure 3: A 60-year-old female with DP showing excoriation of the scalp.

irreducible beliefs against logical persuasion, their descriptions of the alleged pathogens, and reluctance to psychiatric management. [2,8,9,10,14]. It seems that DP has the same matching psychopathology as the core symptom, despite sociocultural differences [15]. Our patients' common description of pathogens and beliefs in traditional remedies may be considered cultural variations of Western studies. Moreover, some patients with DP attribute their infestation to the act of black magic or evil eyes, following their cultural beliefs. Consequently, they may develop a secondary paranoid delusion against the presumed enemy or it may evoke an intractable mixture of paranoid and hypochondriacal delusions [15,16]. Also, they may attribute their infestation to the possession of Jinn (invisible beings) from the Tenets of Islam or, sometimes, the "work" of an evil spirit. [17]. On the other hand, some mentally ill patients are liable to be infested by variable types of pathogens, most commonly scabies and pediculosis as reported by Atiyah et al., observing that 13.46% out of 1300 inpatients in an Al-Rashad long-stay mental hospital in Baghdad had a parasitic infestation, among which scabies affected 7.67%; others had human pediculosis, and the authors could not confirm the presence of DP among these patients [18]. Our findings are consistent with what Freudenmann et al. found in their retrospective study on 148 patients with suspected DP, in which was no evidence of a genuine infestation; 48% presented with the specimen sign, among which only 35% believed themselves to be infested by parasites; the majority reported other living or inanimate pathogens, inconsistently with our patients' complains, hence they preferred the term *delusional infestation* [19]. The perplexity of diagnosing and treating DP and DI lies in convincing the

patient that their condition is psychiatric [12,14,16]. Therefore, starting with a doctor–patient rapport is essential to facilitate the patient's motivation for follow-up and compliance with psychiatric and psychosomatic therapy, as important as watching for secondary or induced skin lesions: cellulitis, bruising, neurodermatitis, and scarring. Decades ago, pimozide (first-generation antipsychotic) was the treatment of choice, and proved its efficacy in 90% of cases as other monosymptomatic delusional disorders, but was substituted by risperidone, olanzapine, and aripiprazole (second-generation antipsychotics). Nowadays, because of its cardiac toxicity, a professional and empathetic approach should be employed in the treatment strategy to encourage follow-up and drug adherence [20,21].

CONCLUSION

DP is a rare psychocutaneous disease usually encountered in dermatological settings, classified within the monosymptomatic delusional disorders. Its primary type commonly affects middle-aged and elderly females. The secondary type follows numerous physical, mental, or substance-use disorders. This case series on DP is the first detailed report on DP in Iraq. It is vital to bring the awareness of dermatologists and psychiatrists to elicit and treat such cases at the first onset. DP is annoying to the patient and their family and, if untreated, may lead to dermatological and psychiatric complications. A multi-disciplinary team with a good doctor–patient rapport is the most effective way of management. This paper calls for further case reports and epidemiological studies to confirm these findings and cover the data gaps.

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. Casey P, Kelly B. Fish's clinical psychopathology: Signs and symptoms in psychiatry. Cambridge University Press. 2019;24-5.
2. Barone Y, Niolu C, Zanasi M, Siracusano A. Ekbom syndrome treated with olanzapine: A case report. Journal of Psychopathology. 2014;20:66-8.
3. Hinkle NC. Ekbom syndrome: A delusional condition of "bugs in the skin." Curr Psychiatry Rep. 2011;13:178-86.
4. American Psychiatric Association (APA)1994. DSM-IV: Diagnostic and statistical manual of mental disorders.
5. Middelveen MJ, Fesler MC, Stricker RB. History of Morgellons disease: From delusion to definition. Clin Cosmet Investig Dermatol. 2018;11:71-90.
6. Foster AA, Hylwa SA, Bury JE, Davis MD, Pittelkow MR, Bostwick JM. Delusional infestation: Clinical presentation in 147 patients seen at Mayo Clinic. J Am Acad Dermatol. 2012;67:673-e1.
7. Al-Imam AM. A systematic literature review on delusional parasitosis. J Dermatol Surg. 2016;20:5-14.
8. Al-Imam A, Al-Shalchi A. Ekbom's delusional parasitosis: A systematic review. Egypt J Dermatol Venerol. 2019;39:5.
9. Campbell EH, Elston DM, Hawthorne JD, Beckert DR. Diagnosis and management of delusional parasitosis. J Am Acad Dermatol. 2019;80:1428-34.
10. Garcia-Mingo A, Dawood N, Watson J, Chiodini PL. Samples from cases of delusional parasitosis as seen in the UK parasitology reference laboratory (2014–2015). In Open forum infectious diseases 2019; 6, 10, p. ofz440). US: Oxford University Press.
11. Sharquie KE, Noaimi AA, Younis MS, Al-Sultani BS. The major psychocutaneous disorders in Iraqi Patients. J Cosmet Dermatol Sci Applications. 2015;20:53.
12. Husni L, Kassim S. The effect of rapport on psychocutaneous patients' referral to psychiatry department. Asian Journal of Research in Dermatological Science. 2020;2:1-10.
13. Saheb E J. The prevalence of parasitic protozoan diseases in Iraq, Karbala. International Journal of Modern Science. 2018;4:21-5.
14. Ahmed A, Bewley A. Delusional infestation and patient adherence to treatment: An observational study. Br J Dermatol. 2013;3:607-10.
15. Pechey R, Halligan P. Prevalence and correlates of anomalous experiences in a large non-clinical sample. Psychol Psychother. 2012;85:150-62.
16. Srivastava M, ShareefIndian N. Varied presentation of delusion of parasitosis (DOP): A case series study. J Clin Exp Dermatol. 2017;3:197-202.
17. Mullick MS, Khalifa N, Nahar JS, Walker DM. Beliefs about jinn, black magic and evil eye in Bangladesh: The effects of gender and level of education. Mental Health, Religion & Culture. 2013;16:719-29.
18. Atiyah A, Almosawi H, Al-Ani DA. Epidemiological study of phthiriasis among patients with psychiatric disorders at Al- Rashad Mental hospital. Conference proceeding: The 3rd International Scientific Conference of Medical and Health Specialties, Baghdad, Iraq, 2016.
19. Freudenmann RW, Lepping P, Huber M, Dieckmann S, Bauer-Dubau K, Ignatius R, et al. Delusional infestation and the specimen sign: A European multicentre study in 148 consecutive cases. Br J Dermatol. 2012;167:247-51.
20. Lutfi AM. Ekbom syndrome: An evidence-based review of literature. Asian Journal of Medical Sciences. 2016;7:1-8.
21. Moriarty N, Alam M, Kalus A, O'Connor K. Current understanding and approach to delusional infestation. Am J Med. 2019;132:1401-9.

Source of Support: Nil, No funding was used for this study,

Conflict of Interest: None declared. There is no conflict of interest.

Our Dermatology Online

Original Article

Necrotizing fasciitis in sub-Saharan Africa: A study of 224 cases

Bayaki Saka[1], Thierno Mamadou Tounkara[2], Ahy Boubacar Diatta[3], Ousmane Faye[4], Pascal Niamba[5], Abas Mouhari-Toure[6], Fatimata Ly[3], Mohamed Maciré Soumah[2], Nina Some-Korsaga[5], Abla Séfako Akakpo[1], Boh Fanta Diané[2], Mohamed Cissé[2], Suzane Niang[3], Adama Traore[5], Palokinam Pitché[1]

[1]Department of Dermatology, CHU Sylvanus Olympio, Université de Lomé, Lomé, Togo, [2]Department of Dermatology-MST, CHU Donka, Conakry, Université de Conakry, Guinée, [3]Department of Dermatology, CHU Le Dantec, Dakar, Université Cheik Anta Diop, Dakar, Sénégal, [4]Department of Dermatology, CNAM, Bamako, Université de Bamako, Mali, [5]Department of Dermatology, CHU Yaldago Ouédraogo, Ouagadougou, Université de Ouagadougou, Burkina Faso, [6]Department of Dermatology, CHU Kara, Université de Kara; Kara, Togo

Corresponding author: Abla Séfako Akakpo, MD, E-mail: sefasyl@yahoo.fr

ABSTRACT

Background: The aim of this study was to describe the epidemiological, clinical aspects, and outcome of necrotizing fasciitis (NF) in sub-Saharan Africa. **Patients and Method:** We conducted a descriptive study in hospital dermatology departments in five sub-Saharan African countries over a two-year period (April 2017 to July 2019). Patients over fifteen years of age received for NF were included. **Results:** During the study period, 224 patients with NF were included. Their mean age was 51.9 ± 18.3 years and their sex ratio (M/F) was 1.3. NF was present in the lower limbs in 88.8% (n = 199) of the patients. The main local signs of NF were cutaneous necrosis (83.9%; n = 188) and spontaneous intense pain (75.9%; n = 170). NSAIDs (32.6%; n = 73), obesity (16.5%; n = 65), the use of decoctions/poultices (21.4%; n = 48), diabetes (16.5%; n = 37), nicotine addiction (11.6%; n = 26), alcoholism (8%; n = 18), voluntary cosmetic depigmentation (6.7%; n = 15), and HIV infection (3.8%; n = 8) were the main comorbidities. We recorded 14.7% (n = 33) of deaths. **Conclusion:** This study shows that NF of the lower extremities is the most often observed clinical form in sub-Saharan Africa. Some factors or comorbidities (diabetes, obesity, alcoholism, nicotine addiction) seem to be relatively frequent.

Key words: Necrotizing fasciitis; Sub-Saharan Africa

INTRODUCTION

Necrotizing fasciitis (NF) is a fast-progressing infectious process that evolves with superficial and even deep muscle fascia necrosis of the subcutaneous tissue, dermis, and epidermis, and may lead to death in up to 40% of cases [1,2]. The annual incidence of NF ranges from 0.3 to 15.5 cases per 100,000 of the worldwide population [3-6]. NF is a surgical diagnosis characterized by friability of the superficial fascia, dishwater-gray exudate, and a notable absence of pus. This and other necrotizing soft-tissue infections have multiple causes, risk factors, anatomical locations, and pathogenic mechanisms, yet all such infections result in widespread tissue destruction, which may extend from the epidermis to the deep musculature [7]. In sub-Saharan Africa, some studies have described the epidemio-clinical profile of NF [8-10], yet none was multicenter. It appeared opportune to us to conduct this multicenter study in order to extrapolate the results at a sub-Saharan Africa scale. The purpose of the study was to describe the epidemio-clinical profile and outcome of NF in sub-Saharan Africa.

How to cite this article: Saka B, Tounkara TM, Diatta AB, Faye O, Niamba P, Mouhari-Toure A, Ly F, Soumah MM, Some-Korsaga N, Akakpo AS, Diané BF, Cissé M, Niang S, Traore A, Pitché P. Necrotizing fasciitis in sub-Saharan Africa: A study of 224 cases. Our Dermatol Online. 2022;13(3):259-263.

Submission: 01.02.2022; **Acceptance:** 05.04.2022

DOI: 10.7241/ourd.20223.4

METHODS

It was a multicenter, descriptive, transversal study conducted over a two-year period (April 2017 to June 2019) in hospitals of some dermatology services in five African countries in the south of Sahara (Togo, Burkina Faso, Mali, Senegal, Guinea-Conakry).

Inclusion Criteria

The study included patients over fifteen years of age received in the dermatology service for NF. In each center, the diagnosis of NF was based on criteria essentially clinical and validated by a senior dermatologist and/or a surgical minute after scouring. Clinical symptoms were local (big legs with a dark tint integument, bubbles or hemorrhagic blisters, foul leakages, necrotic wounds, hypoesthesia/anesthesia or, on the contrary, intense pains, induration hitting the spot, cold legs, and sometimes perceptions of snowy crackles) associated with serious general symptoms (high fever or hyperthermia, agitation, obnubilation, disorientation, and even shock symptoms). The final diagnosis of NF in all cases was established by explorative/therapeutic surgery [7].

Collected Data

The survey was conducted thanks to a preset questionnaire validated during a pre-survey in a center participating in the study. The questionnaire used for the cases was on behavioral habits (alcoholism, smoking, the use of cosmetic depigmentation products with specific questions helping to determine whether the cosmetic products used did or did not have a depigmentation effect while taking into account the reputation of the "whitening aspect" of the products), the search for a case history (diabetes, arterial hypertension, HIV infection, heart disease), and the notion of NSAIDs at the beginning of symptomatology. Each case was subject to a clinical examination and paraclinical examinations in the search of variables as follows:

- Locally, the existence of an entrance door (neglected traumatic wound, intertrigo inter-toe, excoriated dermatosis, leg ulcers), local symptoms (pain, foul smell, indurated edema, bubbles, purpura, skin necrosis, hypoesthesia, the presence of snowy crackles).
- The existence of symptoms of voluntary cosmetic depigmentation (skin atrophy, stretch marks, leukomelanodermia, etc.).
- Generally, the search for obesity (weight, height, and the calculation of the body mass index (BMI); obesity being defined as a BMI above or equal to 30 kg/m^2), arterial pressure measurement, the search for skeptic shock symptoms (agitation, prostration, hypotension, hypothermia, or disorientation), the measurement of blood glucose (considered hyperglycemia with blood glucose above 110 mg/dL), the realization of HIV serology, and a complete blood count.

Ethics Statement

Ethical clearance was obtained from the Ethics Committee Board of the universities of five countries participating in this study. The participants signed an informed consent form, after a verbal explanation. For underage participants, we asked for the consent of the parents or the legal guardian. The survey was anonymous and confidential.

RESULTS

During the study period, we recruited 224 NF patients (an average of 2.4 patients per month and per country). The mean age of the patients was 51.9 ± 18.3 years and the sex ratio (M/F) was 1.3. In half of the cases (n = 112), the patients consulted one or two weeks after the onset of the symptoms. The existence of a point of entry was found in 77.2% (n = 173) of the patients overwhelmed with neglected trauma (46.9%; n = 105). The main comorbidities noted were the use of NSAIDs at the onset of the symptoms (32.6%; n = 73), obesity (29%; n = 29), the use of brew/cataplasms (21.4%; n = 48), and voluntary cosmetic depigmentation (6.7%; n = 15). The lower limbs were the location of NF (88.8%). The general, functional, and local symptoms were dominated by hyperthermia (50.9%), spontaneously increasing pain (75.9%), and skin necrosis (83.9%), respectively (Table 1).

On the para-clinical ground, the stocktaking was especially blood numeration, which helped to determine hyperleukocytosis in 159 patients, thrombocytosis in 68 patients, and an average rate of hemoglobin at 10.5 ± 8.7 g/dL. Only two patients benefitted from a bacteriological sampling, which enabled the isolation of some strep, whereas five patients benefitted from blood culture, which was positive in all the cases. The germs found were *Escherichia coli* in three cases and *Pseudomonas aeruginosa* in two cases.

Table 1: Comorbidities, seat, and general and local signs of necrotizing fasciitis.

	Number (n = 224)	%
Comorbidities		
Use of NSAIDs	73	32.6
Obesity (BMI ≥ 30 kg/m²)	65	29
Use of decoctions/poultices	48	21.4
Hypertension	48	21.4
Diabetes	37	16.5
Nicotine addiction	26	11.6
Chronic alcohol intake	18	8
Cardiopathy	18	8
Voluntary cosmetic depigmentation	15	6.7
HIV infection	8	3.6
Seat of necrotizing fasciitis		
Lower limbs	199	88.8
Upper limbs	16	7.1
Perineum	8	3.6
Thoracoabdominal	1	0.5
General signs		
Hyperthermia	114	50.9
General state deterioration	75	33.5
Tachycardia	42	18.8
Agitation	11	4.9
Hypothermia	5	2.2
Confusion	4	1.8
Local signs		
Skin necrosis	188	83.9
Increasing pain	170	75.9
Hard edema	88	39.3
Bubbles/blisters	82	36.6
Foul odor	59	26.3
Hypoesthesia	56	25
Purpura	16	7.1
Crackles	11	4.9

Therapeutically, all patients were on antibiotic treatment and benefitted from surgery (wound scouring and only a case of amputation). We recorded three cases of ulcer post-debridement and recorded 14.7% (n = 33) of deaths.

DISCUSSION

The multicenter aspect of our study helped to extrapolate the results at the scale of sub-Saharan Africa, wherein the population has, globally and quite comparably, the same sanitary level and social practices. Over a two-year period, we recruited 224 patients with NF equal to an average of 2.4 patients per month and per country. In the studies conducted in Cameroon [11] and Uganda [10], monthly frequencies of 5.5 and 8.8 patients, respectively, were noticed. This difference could be explained by the non-inclusion of patients less than fifteen years of age affected by NF in our study, yet confirms the frequency of such a disease in tropical Africa, while it is more and more seldom in Europe [3]. The mean age of our patients was 51.88 years, with the male dominance the same as that found in African and European series [10-12]. It weighted the burden of this portion of the population, in which there were already comorbidities, such as arterial hypertension, diabetes, and venous insufficiency [13].

In our study and that by Magala et al. [10], the privileged center of NF was the lower limbs in 88.8% and 49% of cases, respectively. Bingöl-Kologlu et al. [13] rather found the abdomen as the principal localization, yet their study was conducted in children. The perineum was affected in 3.6% of the cases in our study vs. 23% in Uganda [10]. We found no NF cases of the cephalic pole (cervical, craniofacial), which was contrariwise described by van Niekerk et al. [14]. The absence of this localization in our series could be explained by the fact that fasciitis in the cephalic regions is growing rapidly and, therefore, deadly with low socio-economic level, difficult geographic access to sanitary facilities, and delays in consultations [10,15].

Local symptoms, such as skin necrosis (83.9%), increasing pain (75.9%), indurated edema (39.3%), bubbles or blisters (36.6%), foul smell (26.3%), hypoesthesia (25%), found in our study had no particularities compared to what is already described in the literature [13,16].

More than 80% of the patients had one or several NF classic comorbidities [17]. Comorbidities such as obesity and diabetes were largely documented [11,12,18,19]. The increase in their rate in Africa could partially explain the increasing incidence of NF in our vicinities [20]. Brews/cataplasms and voluntary cosmetic depigmentation were also identified as associated with NF in Guinea [9] and as risk factors of leg erysipelas in Togo [8]. Depigmentation products cause skin atrophy, which concludes to a high level of susceptibility to penetration and colonization by NF pathogens [21]. Finally, in our study, 32.6% of the patients took NSAIDs at the onset of their symptoms. These drugs could have suppressed the deleting functions of the neutrophils and augmented the production of TNF-alpha, which intervenes in skeptic shocks [22]. Some authors suggest that NSAIDs could cover the serious bacterial dermohypodermitis symptoms and, then, delay the diagnosis and treatment [17,23,24].

Morbidity associated with NF is high and mortality varies from 30% to 100% [22]. In our study, we recorded

14.7% of deaths. In Nepal [25] and Taiwan [26], mortality was 26.2% and 20.9%, respectively. In France [12], the factors associated independently with high NF mortality were advanced age, the female sex, and admissions to intensive care. Those with inferior mortality had been for admission to public teaching hospital handling more than three NF cases per year. Indeed, early diagnosis is difficult for less experienced doctors, leading to suboptimal treatment. Rapid acknowledgment and surgical care coupled with the use of appropriate antibiotics is the pillar of NF treatment. Despite that, mortality remains high, generally because of sepsis, diabetic complications, and hemodynamic collapse [10].

CONCLUSION

This study shows that NF of the lower extremities is the most often observed clinical form in sub-Saharan Africa. Some factors or comorbidities (diabetes, obesity, alcoholism, nicotine addiction) seem to be relatively frequent. The adequate management of these comorbidities will reduce the relatively high death rate in these conditions in sub-Saharan Africa.

ACKNOWLEDGMENTS

We would like to thank the dermatological services that participated in this study.

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. Sarani B, Strong M, Pascual J, Schwab CW. Necrotizing fasciitis: Current concepts and review of the literature. J Am Coll Surg. 2009;208:279-88.
2. Dapunt U, Klingmann A, Schmidmaier G, Moghaddam A. Necrotising fasciitis. BMJ Case Rep. 2013;2013:bcr2013201906.
3. Khamnuan P, Chongruksut W, Jearwattanakanok K, Patumanond J, Tantraworasin A. Necrotizing fasciitis: Epidemiology and clinical predictors for amputation. Int J Gen Med. 2015;8:195202.
4. Naseer U, Steinbakk M, Blystad H, Caugant DA. Epidemiology of invasive group A streptococcal infections in Norway 2010-2014: A retrospective cohort study. Eur J Clin Microbiol Infect Dis. 2016;35:1639-48.
5. Bocking N, Matsumoto CL, Loewen K, Teatero S, Marchand-Austin N, Gordon J, et al. High incidence of invasive group A streptococcal infections in remote indigenous communities in northwestern Ontario, Canada. Open Forum Infect Dis. 2016;4:ofw243.
6. Bodansky DMS, Begaj I, Evison F, Webber M, Woodman CB, Tucker ON. A 16-year longitudinal cohort study of incidence and bacteriology of necrotising fasciitis in England. World J Surg. 2020;44:2580-91.
7. Stevens DL, Bryant AE. Necrotizing soft-tissue infections. N Engl J Med. 201;377:2253-65.
8. Saka B, Kombaté K, Mouhari-Toure A, Akakpo S, Boukari T, Pitché P, et al. Bacterial dermohypodermitis and necrotizing fascitis: 104-case series from Togo. Med Trop. 2011;71:162-4.
9. Cissé M, Kéita M, Toure A, Camara A, Machet L, Lorette G. Bacterial dermohypodermitis: A retrospective single-center study of 244 cases in Guinea. Ann Dermatol Venereol. 2007;134:748-51.
10. Magala J, Makobore P, Makumbi T, Kaggwa S, Kalanzi E, Galukande M. The clinical presentation and early outcomes of necrotizing fasciitis in a Ugandan Tertiary Hospital: A prospective study. BMC Res Notes. 2014;7:476.
11. Njim T, Aminde LN, Agbor VN, Toukam LD, Kashaf SS, Ohum EO. Risk factors of lower limb cellulitis in a level-two healthcare facility in Cameroon: A case-control study. BMC Infect Dis. 2017;17:418.
12. Audureau E, Hua C, de Prost N, Hemery F, Decousser JW, Bosc R, et al. Mortality of necrotizing fasciitis: Relative influence of individual and hospital-level factors, a nationwide multilevel study, France. Br J Dermatol. 2017;177:1575-82.
13. Bingöl-Koloğlu M, Yildiz RV, Alper B, Yağmurlu A, Ciftçi E, Gökçora IH, et al. Necrotizing fasciitis in children: Diagnostic and therapeutic aspects. J Pediatr Surg. 2007;42:1892-7.
14. van Niekerk C, Khammissa RA, Altini M, Lemmer J, Feller L. Noma and cervicofacial necrotizing fasciitis: Clinicopathological differentiation and an illustrative case report of noma. AIDS Res Hum Retr. 2014;30:213-6.
15. Singh RK, Bhandary S. Cervical necrotizing fasciitis in an uncontrolled type II diabetic patient. Kathmandu Univ Med J. 2006;4:105-8.
16. Carbonetti F, Carusi V, Guidi M, David V. Necrotizing Fasciitis: A comprehensive review. Clin Ter. 2015;166:e132-9.
17. Das DK, Baker MG, Venugopal K. Risk factors, microbiological findings and outcomes of necrotizing fasciitis in New Zealand: A retrospective chart review. BMC Infect Dis. 2012;12:348.
18. Chen PC, Tsai SH, Wang JC, Tzeng YS, Wang YC, Chu CM, et al. An elevated glycemic gap predicts adverse outcomes in diabetic patients with necrotizing fasciitis. PLoS One. 2019;14:e0223126.
19. Kumar D, Baker G, Venugopal K. Risk factors, microbiological findings and Outcomes of necrotizing fasciitis in New Zealand: A retrospective chart review. BMC Infect Dis. 2012;12:348.
20. Kerekou Hode A, Docovo M, Houinato SD, Amoussou Guenou D, Djrolo F. Prevalence of risk factors for chronic non-communicable diseases to the national teaching hospital "HKM" of Cotonou. J Diabetes Metab Disord Control. 2015;2:135-41.
21. Tianyi FL, Mbanga CM, Danwang C, Agbor VN. Risk factors and complications of lower limb cellulitis in Africa: A systematic review. BMJ Open. 2018;8:e021175.
22. Stevens DL. Could nonsteroidal antiinflammatory drugs (NSAIDs) enhance the progression of bacterial infections to toxic shock syndrome? Clin Infect Dis. 1995;21:977-80.
23. Dubos F, Hue V, Grandbastien B, Catteau B, Martinot A. Bacterial skin infections in children hospitalized with varicella: A possible negative impact of non-steroidal anti-inflammatory drugs? Acta Derm Venereol. 2008;88:26-30.
24. Mikaeloff Y, Kezouh A, Suissa S. Nonsteroidal anti-inflammatory drug use and the risk of severe skin and soft tissue complications in patients with varicella or zoster disease. Br J Clin Pharmacol.

2008;65:203-9.
25. Gupta Y, Chhetry M, Pathak KR, Jha RK, Ghimire N, Mishra BN et *al*. Risk factors for necrotizing fasciitis and its outcome at a tertiary care centre. J Ayub Med Coll Abbottabad. 2016;28:680-82.
26. Wang JM, Lim HK. Necrotizing fasciitis: Eight-year experience and literature review. Braz J Infect Dis. 2014;18:137-43.

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

Our Dermatology Online

Original Article

Correlation between trichoscopic findings and disease severity in female-pattern hair loss

Muddennavar Snehal, Prasad Sandhaya, Narasappa Raghavendra

Department of Dermatology, MVJ Medical College and Research Hospital, Bangalore, India

Corresponding author: Muddennavar Snehal, MD, E-mail: snehal22sm@gmail.com

ABSTRACT

Background: Female-pattern hair loss (FPHL) is a common form of hair loss in women and is referred to as androgenetic alopecia. It is characterized by diffuse reduction in hair density on the crown and frontal scalp with retention of the frontal hairline. **Objective:** This study aimed to examine the trichoscopic findings of FPHL and to correlate their relationship with disease severity in our tertiary care hospital. **Materials and Methods:** This was a prospective, observational study in which a total of thirty female patients of the age group between 18 and 45 years were included at the outpatient dermatology department within six months. The diagnosis of FPHL was based on clinical grounds. Trichoscopic evaluation was performed under the dermatoscope. Statistical significance in the difference in the outcome variables between the stages was assessed by the Fisher's exact test. The statistical test was considered statistically significant at $P < 0.05$. **Results:** A positive correlation between clinical and trichoscopic findings with respect to disease severity was seen. HSTH > 10% was seen in all grades of FPHL. BPPS and the multi-hair follicular unit were seen in early grades of FPHL ($P < 0.01$); WPPS, focal atrichia, and scalp honeycomb pigmentation were seen in later grades of FPHL ($P < 0.01$). **Conclusion:** Our study showed the significance of trichoscopy in patients with FPHL. As trichoscopy may reveal early changes in hair follicle diameter before hair loss becomes clinically visible. Regular clinical and trichoscopic follow-ups are highly important to monitor disease activity and treatment tolerance.

Key words: FPHL; Dermatoscopy; Trichoscopy

INTRODUCTION

Female-pattern hair loss (FPHL) is a common form of hair loss in women and is referred to as androgenetic alopecia. It is characterized by diffuse reduction in hair density on the crown and frontal scalp with retention of the frontal hairline [1].

In AGA, genetically-predisposed individuals [2] are exposed to androgen-responsive hair follicles that shorten the anagen phase, resulting in vellus hair. The result is a progressive decline in visible scalp hair density [3].

FPHL severity has been graded with the Ludwig scale, which classifies the severity of hair density reduction on the crown into three grades.

Standard methods employed to diagnose hair disorders are a history of events, clinical inspection, a pattern of hair loss, the pull test, a trichogram, a biopsy, and screening blood tests [4]. These vary in sensitivity and invasiveness.

Recent studies have accumulated evidence that the use of trichoscopy in the clinical evaluation of hair disorders improves diagnostic capability more than simple clinical evaluation [5]. Trichoscopy of the scalp is a novel, non-invasive technique employed to diagnose hair and scalp disorders with a manual or video dermatoscope with lenses ranging in magnification from 20× to 1000×. The usual working magnification is 10× to 100× [6].

The objective of this study was to evaluate the correlation between trichoscopy and the clinical

How to cite this article: Snehal M, Sandhaya P, Raghavendra N. Correlation between trichoscopic findings and disease severity in female-pattern hair loss. Our Dermatol Online. 2022;13(3):264-267.

Submission: 07.11.2021; **Acceptance:** 11.03.2022

DOI: 10.7241/ourd.20223.5

grading of the disease for the diagnosis of hair loss in women.

MATERIALS AND METHODS

Each female patient in the age group between 18 and 45 years underwent a detailed general, physical, systemic, and dermatological examination. The diagnosis of FPHL was reached based on the Ludwig stages clinically. The type of hair loss in each patient was recorded.

Study Design

This was a prospective, observational study at the outpatient dermatology department of MVJ Medical College and Research Hospital lasting six months.

Sample Size

A total of thirty patients clinically diagnosed with FPHL were included in the study after receiving appropriate informed consent.

Exclusion Criteria

The exclusion criteria were as follows: pregnancy, lactating mothers, patients on hormonal replacement therapy, alopecia areata, telogen effluvium, and other scalp disorders (psoriasis, seborrheic dermatitis, tinea capitis).

The trichoscopic evaluation was performed on every patient. Trichoscopic patterns of the disease were recorded and the necessary pictures were saved. Trichoscopy image capturing was performed by a single person to avoid diversification. The selection of the trichoscopic variables included in the evaluation process was based on the available literature data and expertise.

Fields Examined on Trichoscopy

The frontal, crown areas and the occipital area were observed. Images were captured for analysis.

Parameters for Trichoscopic Examination

Hair shaft thickness heterogeneity (HSTH) (Fig. 1a): > 10% in female-pattern hair loss, which corresponds to vellus hair transformation, is the feature of AGA.

The brown peripilar sign (BPPS) (Fig. 1b) is a brown halo around the emergent hair shaft.

The white peripilar sign (WPPS) (Fig. 1c) is a larger, white halo at the follicular ostium.

The yellow dots are round or polycyclic, best seen under polarized light, reflect an empty hair follicle.

The focal atrichia are areas of total hair loss on the scalp, usually in a size of a pencil eraser.

Scalp honeycomb pigmentation (SHCP) (Fig. 1d) corresponds to melanotic rete ridges.

The multi-hair follicular unit is 2–3 hairs per follicular unit [7].

Ethics Statement

All 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.

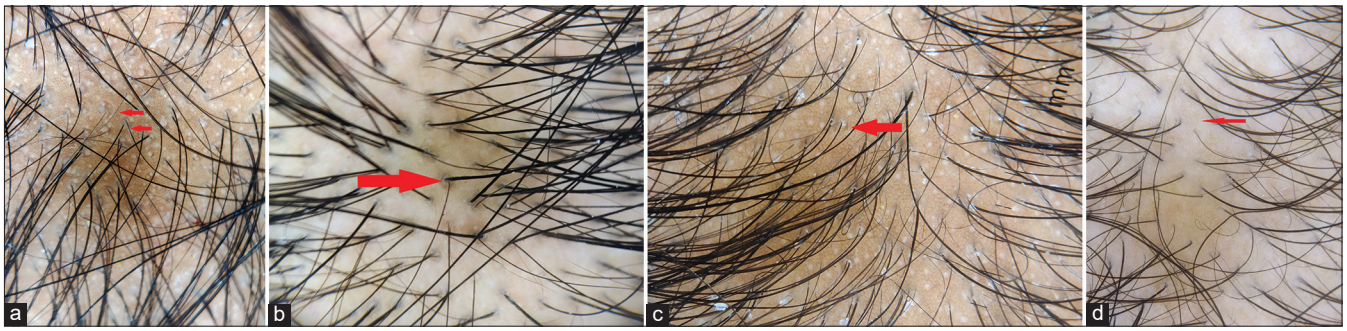


Figure 1: (a) Hair shaft thickness heterogeneity (HSTH). (b) Brown peripilar sign (BPPS). (c) White peripilar sign (WPPS). (d) Scalp honeycomb pigmentation (SHCP).

RESULTS

Patients with FPHL have HSTH as the most common feature in all grades. BPPS and the multi-hair follicular unit are seen in early grades of AGA ($P < 0.05$) (Table 1 and 2).

WPPS, scalp honeycomb pigmentation, and focal atrichia are seen in later grades of AGA ($P < 0.05$).

DISCUSSION

In our study, the age of onset was 21–40 years (75.4%). The mean age of the patients studied was 30.77 ± 8.45 years. A majority (43.3%) of the patients presented hair loss between 6 and 12 months of the duration of onset.

The pattern of hair loss was graded according to Ludwig's classification, Out of the thirty cases, 11 (36.66%) and 11 (36.66%) cases were Ludwig stage I and grade III, respectively, which was the highest in our study.

The mean age of the patients in our study was 30.77 ± 8.45 years and the age group was similar to the study conducted by Mahira et al. [7]. Their age ranged from 19 to 45 years, with a mean of 27.8 ± 7.9 years. In a study conducted by Okram et al. [8] and Zhang et al. [9], the mean age of onset of hair loss among the patients was 28.03 ± 8.05 years, with 60% of the patients having the onset of hair loss within thirty years.

Hairs Shaft Thickness Heterogenicity

With HSTH previously reported to be considered a hallmark of AGA [10], we found in our study that patients with FPHL had HSTH as the most common feature. Similar results were reported by Hu et al. [11], Ozlem Karadag et al. [12], Kibar et al. [13], stating that HSTH was the most common finding in their studies. A study done on 89 patients with FPHL by Galliker and Trüeb [14] revealed that HSTH was seen in 72% of early and 100% of advanced FAGA.

Table 1: Number of cases in each grade of the Ludwig's scale

Ludwig's Grade	Grade I	Grade II	Grade III
No. of Cases (*n*)	11	8	11

Table 2: Trichoscopic variables in each of the grades

Trichoscopic Variable	Grade I *n* = 11	Grade II *n* = 8	Grade III *n* = 11	*p* value
HSTH > 10%	11 (100%)	8 (100%)	11 (100%)	1
BPPS	7 (63.6%)	2 (25%)	1 (9%)	0.02*
WPPS	2 (18%)	1 (9%)	7 (63.6%)	0.02*
Yellow dots	2 (18%)	3 (37.5%)	4 (36.3%)	0.5
Focal atrichia	0	0	4 (36.3%)	0.01*
Scalp honeycomb pigmentation	2 (18%)	4 (50%)	9 (81.8%)	0.01*
Multi-hair follicular unit	10 (90.9%)	6 (75%)	3 (37.5%)	0.006*

Brown Perilar Sign

BPPS was seen in 63.6% of cases of FPHL in its early stages, with $P < 0.05$, in our study. A similar result was reported by Ozlem Karadag et al. [12], with BPPS seen in 59.3% of FPHL cases. A study reported by Kibar et al. observed the same findings in the early stages [13].

White Peripilar Sign

WPPS was seen in 63.6% of females with Ludwig stage III in our study. In a study done by Zhang et al. [9], it was observed in 26.7% of FAGA patients in advanced stages. We suppose that this sign was related to perifollicular fibrosis in the late stage of AGA.

Yellow Dots

In our study, yellow dots were found in 36.3% of cases in the late stages of FPHL. Similarly, Hu et al. [11] and Zhang et al. [9] reported that yellow dots were positively related to the severity of the disease. Emina et al. reported 55 (52.88%) of patients with yellow dots seen in both early and advanced stages of the disease [15].

Focal Atrichia (Focal Loss of Hair)

In our study, 36.3% of cases showed a positive correlation with disease severity, similarly to the study by Hu et al. [11], who observed it in 56.5% of FAGA patients in late stages, and in a study by Zhang et al. [9], who observed 56.7% (34/60) of FAGA patients, which correlated with the advancing stage of AGA. In a study reported by Olsen et al., 67% of cases showed focal atrichia in the severe grade of FPHL [16].

Scalp Honeycomb Pigmentation

In our study, it was found in 81.8% in Ludwig's grade III FPHL, whereas in a Chinese study by Hu et al., SHCP was seen in 30.5% of female patients [11] in the late stages of AGA, and a study by Zhang et al. [9] observed it in 61.7% of FAGA patients in late stages.

Multi-hair Follicular Unit

In our study, the multi-hair follicular unit was seen in 10 (90.9%) of cases of grade I, and it decreased with the severity of the disease. Similarly, Emina et al. [15] and Kibar [13] reported the multi-hair follicular unit to decrease with the severity of the disease.

CONCLUSION

Our study has shown the significance of trichoscopy in patients with FPHL as trichoscopy may reveal early changes in hair follicle diameter before hair loss becomes clinically visible. Regular clinical and trichoscopic follow-ups are highly important to monitor disease activity and treatment tolerance.

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. El Sayed MH, Abdallah MA, Aly DG, Khater NH. Association of metabolic syndrome with female pattern hair loss in women: A case-control study. Int J Dermatol. 2016;55:1131-7.
2. Shah KB, Shah AN, Solanki RB, Raval RC. A comparative study of microneedling with platelet-rich plasma plus topical minoxidil (5%) and topical minoxidil (5%) alone in androgenetic alopecia. Int J Trichology. 2017;9:14-8.
3. Quinn M, Shinkai K, Pasch L, Kuzmich L, Cedars M, Huddleston H. Prevalence of androgenic alopecia in patients with polycystic ovary syndrome and characterization of associated clinical and biochemical features. Fertil Steril. 2014;101:1129-34.
4. Galliker NA, Trüeb RM. Value of trichoscopy versus trichogram for diagnosis of female androgenetic alopecia. Int J Trichology. 2012;4:19-22.
5. Singal A, Sonthalia S, Verma P. Female pattern hair loss. Indian J Dermatol Venereol Leprol. 2013;79:626-40.
6. Ross EK, Vincenzi C, Tosti A. Videodermoscopy in the evaluation of hair and scalp disorders. J Am Acad Dermatol. 2006;55:799-806.
7. Ummiti A, Priya PS, Chandravathi PL, Kumar CS. Correlation of trichoscopic findings in androgenetic alopecia and the disease severity. Int J Trichology. 2019;11:118-22.
8. Okram S, Basavaraj HB, Sathyanarayana BD, Swaroop MR, Sudhir Kumar N, Manas SN. Clinicoepidemiological study of female pattern hair loss. Int J Adv Res. 2015;3:762-7.
9. Zhang X, Caulloo S, Zhao Y, Zhang B, Cai Z, Yang J. Female pattern hair loss: Clinico-laboratory findings and trichoscopy depending on disease severity. Int J Trichology. 2012;4:23.
10. Miteva M, Tosti A. Hair and scalp dermatoscopy. J Am Acad Dermatol. 2012;67:1040-8.
11. Hu R, Xu F, Han Y, Sheng Y, Qi S, Miao Y, et al. Trichoscopic findings of androgenetic alopecia and their association with disease severity. J Dermatol. 2015;42:602-7.
12. Köse ÖK, Güleç AT. Clinical evaluation of alopecias using a handheld dermatoscope. J Am Acad Dermatol. 2012;67:206-14.
13. Kibar M, Aktan Ş, Bilgin M. Scalp dermatoscopic findings in androgenetic alopecia and their relations with disease severity. Ann. Dermatol. 2014;26:478-84.
14. Galliker NA, Trüeb RM. Value of trichoscopy versus trichogram for diagnosis of female androgenetic alopecia. Int J Trichology. 2012;4:19-22.
15. Kasumagic-Halilovic E. Trichoscopic findings in androgenetic alopecia. Med Arch. 2021;75:109-11.
16. Olsen EA, Whiting DA. Focal atrichia: A diagnostic clue in female pattern hair loss. J Am Acad Dermatol. 2019;80:1538-43.

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

Our Dermatology Online

Original Article

Vitiligo and quality of life: On fifty cases in Ouagadougou, Burkina Faso

Nomtondo Amina Ouédraogo[1,2], Muriel Sidnoma Ouédraogo[1,2], Gilbert Patrice Tapsoba[1,2], Fagnima Traoré[3], Patricia Félicité Tamalgo[1], Léopold Ilboudo[4], Nadia Kaboret[4], Joelle Zabsonré/ Tiendrébeogo[2,5], Marcellin Bonkoungou[5], Salamata Lallogo[6], Séraphine Zeba[7], Nessiné Nina Korsaga[2,7], Pascal Niamba[1,2,8], Adama Traoré[1,2], Fatou Barro[2,9]

[1]Department of Dermatology-Venereology of Yalgado Ouédraogo University Hospital (YO UH), Ouagadougou, Burkina Faso, [2]Health Science Training and Research Unit, Joseph Ki-Zerbo University, Ouagadougou, Burkina Faso, [3]Department of Dermatology, Regional University Hospital of Ouahigouya, Burkina Faso, [4]Raoul Follereau Center of Ouagadougou, Burkina Faso, [5]Rheumatology Department of Bogodogo University Hospital, Ouagadougou, Burkina Faso, [6]Dermatology Unit of Saint Camille Hospital in Ouagadougou, Ouagadougou, Burkina Faso, [7]Dermatology Unit of Boulmiougou District Hospital, Ouagadougou, Burkina Faso, [8]Dermatology Unit of Camp General Sangoulé Lamizana Medical Center, Ouagadougou, Burkina Faso, [9]Department of Dermatology of Tingandogo University Hospital, Ouagadougou, Burkina Faso

Corresponding author: Nomtondo Amina Ouédraogo, MD, E-mail: nomtondo2000@yahoo.fr

ABSTRACT

Background: Healthy skin with integrity is essential for maintaining one's physical, mental, and social wellbeing. Vitiligo, a chronic autoimmune dermatosis characterized by asymptomatic, achromic macules, affects the integrity of the skin. **Methodology:** This was a descriptive, cross-sectional study conducted from March to June 2019 in six public hospitals in the city of Ouagadougou, Burkina Faso. The patients included in the study were followed in the dermatology departments of these structures for vitiligo, aged at least eighteen years and consenting. The Dermatology Life Quality Index (DLQI) and the vitiligo-specific health-related quality of life scale (VitiQoL) were employed to measure QoL (quality of life). **Results:** A total of fifty patients agreed to participate in the study. The mean age was 40.56 years, ranging from 18 to 79 years. There were as many females as males (25), and 23 married patients out of the fifty. The majority of the patients (43/50) resided in urban areas. Twenty-six patients had at least secondary education and eighteen patients worked in the informal sector. The average duration of vitiligo progression was 10.56 years, ranging from three months to 49 years. The evolution of vitiligo was stationary for 17/50 patients. The lesions were mainly located on the head and neck. The average body surface area (BSA) affected was 12.04%, ranging from 1% to 82%. The treatment was mainly local and general corticosteroid therapy. The evaluation of the patients' quality of life (QoL) by the DLQI (Dermatology Life Quality Index) yielded a mean score of 5.44/30. Vitiligo had a small effect on the QoL of eighteen patients and a moderate effect on sixteen patients. VitiQoL assessment yielded a mean total score of 32.32/96 and stigma had the highest score of 18.04/36. The patients' QoL was influenced by age and body surface area affected by vitiligo. Restriction of participation in activities and changes in the patient's behavior were significantly correlated with the duration of vitiligo progression, followed by stigma, which was related to vitiligo progression. **Conclusion**: The alteration of the QoL of the patients with vitiligo was low to moderate. This alteration was related to the stigmatization by one's environment.

Key words: Vitiligo; Quality of Life; Stigma

How to cite this article: Ouédraogo NA, Ouédraogo MS, Tapsoba GP, Traoré F, Tamalgo PF, Ilboudo L, Kaboret N, Zabsonré/Tiendrébeogo J, Bonkoungou M, Lallogo S, Zeba S, Korsaga NN, Niamba P, Traoré A, Barro F. Vitiligo and quality of life: On fifty cases in Ouagadougou, Burkina Faso. Our Dermatol Online. 2022;13(3):268-272.

Submission: 02.12.2021; **Acceptance:** 22.02.2022

DOI: 10.7241/ourd.20223.6

INTRODUCTION

Healthy skin with integrity is essential for maintaining one's physical, mental, and social wellbeing [1,2]. Vitiligo, a chronic autoimmune dermatosis characterized by asymptomatic, achromic macules, affects the integrity of the skin [3,4]. It affects 0.5% to 2% of the world's population, regardless of race and sex [5]. It is highly conspicuous, especially on black skin, and may produce significant psychological and socioeconomic repercussions on the life of the affected individual [6-8], hence the interest of our study, with the objective to evaluate the impact of the disease on the quality of life of patients suffering from vitiligo followed in the dermatology and venereology departments of the public health structures of the city of Ouagadougou, Burkina Faso.

PATIENTS AND METHODS

We conducted a descriptive, cross-sectional study from March 1 to June 28, 2019, in six public hospitals of the city of Ouagadougou: Yalgado OUEDRAOGO University Hospital, Tingandogo University Hospital, Bogodogo University Hospital, Saint Camille Hospital of Ouagadougou, Raoul Follereau Center RFC, and Medical Center of General Sangoulé Lamizana Camp. The patients included in the study were followed in the dermatology departments of these structures for vitiligo, aged at least eighteen years and consenting. The Wallace rule of nines was employed to calculate the body surface area (BSA). The vitiligo-specific health-related quality of life scale (VitiQoL) was employed to measure quality of life [9-11]. It was the Brazilian Portuguese version (VitiQoL-PB) translated into French to which we added a seventeenth question: "Do you feel rejected by some people when you are in a group?" The Dermatology Life Quality Index (DLQI) was also used [12-14]. The Kruskal–Wallis test was employed for the comparison of two variables and the ANOVA test for the comparison of more than two variables. p (probability) was significant if below 0.05. The relationship between the different variables was searched by the Pearson correlation coefficient and the probability was significant if p □ 0.01. The study respected the rules of ethics by the informed consent of the patients and confidentiality in the processing and analysis of data.

RESULTS

Sociodemographic Aspects

In all departments involved in the study, out of 229 cases of vitiligo identified in four years, fifty patients agreed to participate in the study. The majority of the patients (33/50) were followed at the Yalgado Ouédraogo University Hospital, RFC, and the Boulmiougou District Hospital.

The mean age of the patients was 40.56 years, ranging from 18 to 79 years. There were as many females as males (25), and 23 married patients out of the fifty. The majority (43/50) resided in urban areas. Twenty-six patients had at least secondary education and eighteen patients worked in the informal sector. The average monthly income was €170, ranging from €30 to €2286.

The average duration of vitiligo progression was 10.56 years, ranging from three months to 49 years. The evolution of vitiligo was stationary for seventeen out of the fifty patients. The lesions were mainly located on the head and neck. The average body surface area (BSA) affected was 12.04%, ranging from 1% to 82%. The treatment was mainly local and general corticosteroid therapy.

Quality of Life

The evaluation of the patients' QoL by the DLQI yielded a mean score of 5.44/30. Vitiligo had a small effect on QoL for eighteen patients and a moderate effect for sixteen (Table 1). VitiQoL assessment yielded a mean total score of 32.32/96 and stigma showed the highest score of 18.04/36 (Table 2).

The patients' QoL was influenced by age and body surface area affected by vitiligo. Restriction of participation in activities and changes in the patient's behavior were significantly correlated with the duration of vitiligo progression, followed by stigma, which was related to vitiligo progression (Table 3).

Cross-tabulating the questions related to treatment for the DLQI and VitiQoL scores revealed that there was no impact of treatment on the QoL of patients with vitiligo (Table 4). There was also a strong and significant correlation between the two quality of life scales DLQI and VitiQoL ($r = 0.852$; $p = 0.000$). This means that the two tools reflected the same perspective on quality of life assessment.

Correlation between QoL and professional relationships: Among the fifty patients with vitiligo, twelve were gainfully employed. The correlation between QoL and decreased productivity was significant ($r = 0.704$; $p = 0.011$).

DISCUSSION

Our sample included as many females as males and the average age was 40.56 years. Morales-Sanchez in Mexico in 2017 found, with a larger sample size, 103 females vs. 47 males with vitiligo, and then a mean age of 38 years [6]. In our study, the most represented age range was 18 to 29 years for patients with vitiligo, reflecting the importance of vitiligo in the young population [15,16].

Those with at least high school education were 26/50 vitiligo patients. Boza in Brazil in 2017 also found patients with high school education (61/93) [16].

For our patients, the mean duration of the evolution of vitiligo was 10.56 years. Boza found a similar duration (13.9 years) [16]. Kiprono in Tanzania in 2013 found a shorter disease course (8.34 years) [17].

The average body surface area (BSA) affected was 12.04% and treatment was mainly corticosteroid therapy. This is due to the inaccessibility of certain molecules in our country, notably tacrolimus, which produces good results on vitiligo [18].

Table 1: Assessment of quality of life by the DLQI

DLQI Score	Effect on QoL	No. of Patients
0–1	No effect	10
2–5	Low effect	18
6–10	Moderate effect	16
11–20	Strong effect	5
21–30	Extremely strong effect	1

Table 2: Mean VitiQoL scores in vitiligo

Category	Number	Average Score	SD
Total VitiQoL	50	32.32/96	19.14
Restriction of participation in activities	38	7.02/42	7.51
Stigma	49	18.04/36	10.68
Change in behavior	34	3.88/18	4.09
Severity according to the patient	45	3.36/6	1.88

Quality of Life

Impaired QoL was not influenced by sex ($p = 0.18$) of the vitiligo patients according to VitiQoL. However,

Table 3: Relationship between the QoL of vitiligo patients and sociodemographic and clinical characteristics

Associated Factors	Restriction of Participation in Activities	*p* value	Stigmatization	*p* value	Behavior Change	*p* value	Severity of the Disease According to the Patient	*p* value
Age (yrs.)								
15–29	7,22		19,00		2,77		3,44	
30–44	4,91	0,00	16,91	0,00	3,91	0,00	3,25	0,00
45–59	7,80		17,53		4,66		3,33	
60–74	10,00		13,00		5,25		2,75	
75–86	5,00		18,00		6,00		6,00	
Sex								
Male	5,48	0,24	16,60	0,36	2,96	0,06	3,24	0,60
Female	8,56		19,48		4,80		3,48	
Educational level								
Not in school	9,11	0,84	2,22	0,63	4,88	0,70	4,33	0,38
Primary	6,66		17,06		4,00		3,33	
Secondary	6,66		17,66		4,00		3,06	
High	6,27		16,45		2,72		3,00	
Evolution length (yrs.)								
≤ 1	1,60	0,01	13,40	0,42	1,50	0,04	2,00	0,06
2–5	6,00		18,31		3,26		3,57	
6–10	8,50		17,50		4,25		3,25	
≥ 10	11,00		20,58		5,88		3,94	
BSA (%)								
< 5	3,04	0,00	13,90	0,01	2,36	0,01	3,18	0,77
5–9	5,50		1,25		3,58		3,33	
≥ 10	13,62		23,56		6,18		3,62	
Type of evolution								
Amelioration	5,60	0,26	17,30	0,01	4,00	0,54	2,70	0,17
Slow extension	9,61		24,23		3,76		4,00	
Rapid extension	8,90		20,20		5,40		4,00	
Stationary	4,76		1247		3,00		2,88	

The relationship was significant if $P < 0.05$.

Table 4: Correlation between the DLQI, VitiQoL, and treatment

	Treatment	DLQI	VitiQoL
DLQI			
Pearson correlation	0.120	1	0.852
p value	0.407	-	0.000
VitiQoL			
Pearson correlation	0.110	0.852	1
p value	0.447	0.000	-

females were more affected than males with higher scores. Other authors reported the same findings [6,10,16,19].

Stigmatization was the most reported concern with the highest score (18.04), reflecting a significant psychosocial impact on patients, especially young people aged 18 to 29 years and those with extensive lesions (BSA ≥ 10). This was also reported by Boza, who noted a score of 16.75 for stigmatization [16]. Rahimi in Afghanistan also noted that these patients suffered from stigma [19]. This could be explained by the fact that it was at this age that young people began to work and be confronted with professional and family responsibilities. Therefore, they had difficulty accepting their illness. In addition, the feeling of shame was experienced more frequently by young people than by older.

The mean DLQI was 5.44, indicating a low alteration in vitiligo patients' QoL. This result was comparable to those by Turkish, Mexican, Brazilian, and Tanzanian authors, ranging from 3 to 7.2 [6,13,16,17].

The mean VitiQoL score was 32.32/90, corresponding to a low alteration in the patients' QoL. This result was comparable to those reported by Iranian (30.5) and Brazilian (37) authors [10,16].

The assessment of QoL by the VitiQoL dimensions yielded mean scores of 7.02, 18.04, 3.88, and 3.36, respectively, for the dimensions: restriction of participation in activities, stigmatization, behavior changes, and severity, according to the patient. We noted, then, that stigma contributed the most to the alteration in the patient's QoL. Boza made the same finding in their study cited above (14.23; 16.75; 9.15; and 3.6) [12]. Rahimi also mentioned the same [19].

The significant stigmatization of patients by their environment would be linked to the ignorance of the disease, hence the fear of contamination. This stigmatization, as well as the fact that the disease is displayed overtly, is the reason for the change in the patient's behavior, with the restriction of their participation in social activities. This leads to isolation also mentioned in other skin diseases [20-23].

There was a strong correlation between the DLQI and VitiQoL ($r = 0.852$; $p = 0.000$). This means that the two tools reflected the same view on quality of life assessment, a finding also reported by Boza and Morales-Sanchez [6,16].

CONCLUSION

The alteration in the quality of life of our patients with vitiligo was low to moderate. This alteration was related to the stigmatization of the environment. Young people with extensive lesions (BSA ≥ 10) and aged between 15 and 29 years were the most stigmatized.

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. Pärna E, Aluoja A, Kingo K. Quality of life and emotional state in chronic skin disease. Acta Derm Venereol. 2015;95:312-6.
2. Cella D. Quality of life: Concepts and definition. J Pain Symptom Manag 1994;9:186-92.
3. Migayron L, Boniface K, Seneschal J. Vitiligo, from physiopathology to emerging treatments: a review. Dermatol Ther, 2020;;6:1185-98.
4. Halder MR, Chappell JL. Vitiligo update. Seminars in cutaneous medicine and surgery. WB Saunders, 2009. p. 86-92.
5. Rodrigues M, Ezzedine K, Hamzavi I, Pandya AG, Harris JE. New discoveries in the pathogenesis and classification of vitiligo. J Am Acad Dermatol. 2017;77:1-13.
6. Morales-Sánchez MA, Vargas-Salinas M, Peralta-Pedrero ML, Olguín-García MG, Jurado-Santa Cruz F. Impact of vitiligo on quality of life. Actas Dermo-Sifiliográf. 2017;108:637-42.
7. Lai YC, Yew YW, Kennedy C, Schwartz RA. Vitiligo and depression: A systematic review and meta-analysis of observational studies. Br J Dermatol. 2017;177:708-18.
8. Amer AAA, Gao XH. Quality of life in patients with vitiligo: An analysis of the dermatology life quality index outcome over the past two decades. Int J Dermatol. 2016;55:608-14.
9. Lilly E, Lu PD, Borovicka JH, Victorson D, Kwasny MJ, West DP, et al. Development and validation of a vitiligo-specific quality-of-life instrument (VitiQoL). J Am Acad Dermatol. 2013;69:11-8.
10. Hedayat K, Karbakhsh M, Ghiasi M, Goodarzi A, Fakour Y, Akbari Z, et al. Quality of life in patients with vitiligo: A cross-

sectional study based on Vitiligo Quality of Life index (VitiQoL). Health Quality Life Outcom. 2016;14:86-94.
11. Essa N, Awad S, Nashaat M. Validation of an Egyptian Arabic version of Skindex-16 and quality of life measurement in Egyptian patients with skin disease. Int J Behav Med. 2018;25:243-51.
12. Henseler T, Schmitt-Rau K. A comparison between BSA, PASI, PLASI and SAPASI as measures of disease severity and improvement by therapy in patients with psoriasis. Int J Dermatol. 2008;47:1019-23.
13. Finlay AY, Khan GK. Dermatology Life Quality Index (DLQI): A simple practical measure for routine clinical use. Clin Exp Dermatol. 1994;19:210-6.
14. Arora CJ, Rafiq M, Shumack S, Gupta M. The efficacy and safety of tacrolimus as mono-and adjunctive therapy for vitiligo: A systematic review of randomised clinical trials. Australas J Dermatol. 2020;61:e1-e9.
15. Sof K, Aouali S, Bensalem S, Zizi N, Dikhaye S. Dermatoses in the hospital and their impact on quality of life. Our Dermatol Online. 2021;12:462-3.
16. Boza JC, Giongo N, MacHado P, Horn R, Fabbrin A, Cestari T, et al. Quality of Life Impairment in Children and Adults with Vitiligo: A cross-sectional study based on dermatology-specific and disease-specific quality of life instruments. Dermatology. 2017;232:619-25.
17. Kiprono S, Chaula B, Makwaya C, Naafs B, Masenga J. Quality of life of patients with vitiligo attending the Regional Dermatology Training Center in Northern Tanzania. Int J Dermatol. 2013;52:191-4.
18. Carlier L. Utilisation hors AMM du tacrolimus dans le traitement du vitiligo. Thèse de doctorat en pharmacie. Université de Bordeaux; 2015, 105 p.
19. Rahimi BA, Farooqi K, Fazli N. Clinical patterns and associated comorbidities of vitiligo in Kandahar, Afghanistan. A case-control study. Our Dermatol Online. 2020;11:6-12.
20. Salman A, Kurt E, Topcuoglu V, Demircay Z. Social anxiety and quality of life in vitiligo and acne patients with facial involvement: A cross-sectional controlled study. Am J Clin Dermatol. 2016;17:305-11.
21. Nguyen CM, Beroukhim K, Danesh MJ, Babikian A, Koo J, Leon A. The psychosocial impact of acne, vitiligo, and psoriasis: A review. Clin Cosm Invest Dermatol. 2016;9:383-92.
22. Ghajarzadeh M, Ghiasi M, Kheirkhah S. Associations between skin diseases and quality of life: A comparison of psoriasis, vitiligo, and alopecia areata. Acta Medica Iranica. 2012;50:511-5.
23. Kawshar T, Rajesh J. Sociodemographic factors and their association to prevalence of skin diseases among adolescents. Our Dermatol Online. 2013;4:281-86.

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

Our Dermatology Online

Original Article

Children's knowledge and behavior towards the sun and photo protection (Survey of 391 children in the region of Fez, Morocco)

Jihad Kassel[1], Sara Elloudi[1], Moncef Maiouak[2], Chaymae Jroundi[1], Zakia Douhi[1], Hanane Baybay[1], Samira El Fakir[2], Fatima Zahra Mernissi[2]

[1]Department of Dermatology, University Hospital Hassan II, Fez, Morocco, [2]Laboratory of Epidemiology, Clinical Research and Community Health- Faculty of Medicine and Pharmacy of Fez, Fez, Morocco

Corresponding author: Jihad Kassel, MD, E-mail: kassel.jihad@gmail.com

ABSTRACT

Background: Currently, the sun-cancer relationship is well established and it is clearly demonstrated that sun exposure during childhood increases the risk of skin cancer in later life. The main objective of our study was to evaluate the behavior and knowledge of children towards the sun, its dangers, particularly skin cancer, and the different means of photo protection. **Material and methods**: We conducted a descriptive cross-sectional survey using a questionnaire among students (primary and secondary) in the region of Fez (urban and rural). **Results**: Three hundred and eighty-one children delivered a completed and usable questionnaire. The average age was 13 years, the sex ratio M/F =1,16. 71,9% of the children were from public schools and 66% had moderately pigmented skin. Among the 97% of children who practice outdoor activities during the vacations, 30.5% like to tan, and almost half spend more than 30 minutes a day under the sun. 69.6% of the children declared that they take with them during the vacations at least one sun protection product (sun cream, hat, sunglasses...) Concerning the application of sunscreen,72.2% of children used sunscreen during their vacations, 27.7% reapply it every two hours and 82.4% apply it only in summer. At school, 72.6% of the students said they look for shade during recess and only 10% apply sun cream. 55, 8% of the children think that the sun can be dangerous, 44.2% know that there is a relationship between the sun and skin cancer, 52% think that the sun can cause burns and 37% skin aging. 71% said they have already been told by a parent that they should protect themselves from the sun,41.5% were advised by their teachers and only 31% by a doctor.43% of our children had heard of skin cancer and almost half of these children know that it can be caused by the sun. In general, the assessment of children's knowledge was average in about half of the cases, we noted that children are better protected during the summer vacations than at school. We also focused on the role of parents, schools, doctors and media in raising children's awareness, which was not sufficient. **Conclusion:** The prevention of children's sun exposure could decrease the incidence of skin cancer in the future.

Key words: Children; Photoprotection; School; Prevention

INTRODUCTION

Sunlight is essential for human life, not only as a source of energy and nourishment, but also because it is involved in certain biochemical and metabolic processes, regulates biological rhythms and contributes to psychological well-being [1]. However, excessive exposure to the sun can lead to a series of skin disorders, such as sunburn, blemishes, skin aging and skin cancers [2]. Currently, the sun-cancer relationship is well established and it is clearly demonstrated that sun exposure during childhood increases the risk of skin cancer in later life, in fact, sun exposure and sunburns during the first 10 to 15 years of life have proven to play an important role in the etiology of all skin cancer types [3]. Several recent studies indicate that their

How to cite this article: Kassel J, Elloudi S, Maiouak M, Jroundi C, Douhi Z, Baybay H, El Fakir S, Mernissi FZ. Children's knowledge and behavior towards the sun and photo protection (Survey of 391 children in the region of Fez, Morocco). Our Dermatol Online. 2022;13(3):273-279.

Submission: 15.11.2021; **Acceptance:** 04.04.2022

DOI: 10.7241/ourd.20223.7

incidence has increased significantly in recent years in many countries in the world [4,5]. All this justifies the setting up of prevention and information campaigns to try to modify the erroneous behaviors of the individuals with regard to the solar exposure and in particular those of the children [1]. In this work we will be interested in the knowledge, attitudes and practices of children in the region of Fez towards sun exposure in order to draw the necessary conclusions to rehabilitate information on the risks of photo exposure in our school programs.

MATERIALS AND METHODS

Study Design

This was a cross-sectional study, spread over a period of month, on may 2019, in the city of Fez in Morocco.

Sampling

The target population consisted of 400 students from primary and secondary schools in the Fez region. The 10 schools that participated in the study were chosen in order to have a significant sample representing the different students of the region of Fez taking into consideration the environment (urban/rural) as well as the sector (private/public) that we selected in the database of schools at the level of the regional academy of education, school map office. One to two classes were randomly selected from each school to participate in the study. We included in the study all the elementary school and private and public colleges located in the region of Fez (urban and rural) We excluded: CE 1 and CE 2 levels (elementary school) by what we judged that the children can not understand the questions and give adapted answers, High schools, Primary and secondary schools located in the Fez-Meknes region, outside the prefecture of Fez,schools for people with disabilities. The authorizations to access the schools were taken from the school health unit, regional delegation of education of the city of Fez.

Data Collection

The data was collected through an anonymous self-questionnaire filled out by the students in the different selected schools, they were distributed to the classes and completed during a regular lesson under the supervision of the class teacher. we were present in the classrooms for the necessary explanations.

Collection Tool: The Questionnaire

After bibliographical research on the subject, we established a questionnaire composed of four parts responding to the different objectives we had fixed ourselves. This questionnaire was validated in a multidisciplinary meeting, including experts in Dermatology, Clinical epidemiology and scientific research.

The questions were then tested and validated on a sample of children before the survey was conducted, we established a simple and easy to answer questionnaire for the children composed of three parts:

The first part concerned General information, includes questions such as age (year), sex (male/female), parents' occupation, school level, environment (urban/rural), sector (public/private), phototype, history of sunburn.

The second part concerned the evaluation of the children's behavior In this part, we analyzed Children's behavior towards the sun during the vacations: (The desire to tan, Schedule of outdoor activities, The application of sun cream, Wearing clothes, hats and sunglasses) and also The behavior of children during a sports session at school, (Looking for shade, The application of sunscreen, hats, covered clothes).

The third part concerned the evaluation of the children's knowledge about the sun and the means of photo protection, In this part we analyzed through 21 questions: Children's knowledge about the dangers of the sun, the sources of information of the children on the sun and the means of photo protection, Role of parents, teachers and doctors, Children's knowledge about skin cancer,The different means of photo protection (chemical, clothing, schedule).

For self-assessment of skin type, the questionnaires contained a table with sample color images of the 6 Fitzpatrick skin types and corresponding descriptions of skin, hair, and eye color and tanning ability.

Parental education level was assessed only by asking children about their parents' occupations, three categories were distinguished: Level 1=occupations requiring a university degree/Level 2 = occupations requiring a degree other than university/Level 3=occupations requiring no degree. The educational level of the parents for each child was considered to be the highest between the two parents.

Concerned The question about the three most important things kids takes with them on vacation asked whether kids think about taking sunscreen products. And to facilitate statistical analysis, we divided the responses into two categories: Category 1: the presence of at least one sunscreen product. Category 2: no sunscreen products.

At the end, we wanted to correlate our results with the many variables studied in our survey. To do this, we developed a knowledge level in collaboration with the medical epidemiology staff., We identified 3 levels of children's knowledge about the dangers of the sun, skin cancer and the different means of photo protection. These three levels were identified according to the number of correct answers to the different questions. good level of knowledge: > 8 correct answers/average level of knowledge: between 7 and 5 correct answers/low level of knowledge: < or = 4 correct answes.

Statistical Analysis

A descriptive, multivariate analysis using the SPSS 21 software were performed. In the descriptive analysis, quantitative variables were expressed by means ± standard deviation and qualitative variables by percentages. The "Chi-square" test was used to compare percentages in order to determine the factors associated with the practice and the knowledge level. A p value less than 0.05 was considered statistically significant.

Training Material

We prepared to inform the students about the dangers of the sun and the different means of photo protection a 10 min power point projection presentation that was illustrated and explained in each class after completing the questionnaire. The presentation was made in Arabic, in an interactive way with the students.

This presentation contains: General definitions about the solar system, The sun, ultraviolet rays (UVA, UVB, UVC) and their degree of penetration in the skin layers, The benefits of the sun, Harmful effects of the sun (burns, skin cancers, other sun-related dermatoses),The different means of photo protection: Natural; Chemical: sun protection products with a video showing the correct way to apply sun cream Schedule, Clothing (with illustrations and animations).

Ethics Statement

Ethical approval was obtained from the ethics committees at Hospital Center University Hassan II in Fez, Morocco.

RESULTS

At the end of this survey, we were able to collect 391 completed and usable questionnaires.

Socio-Demographic Characteristics

The mean of age of the children was 13 ± 5 years (08 -18 years), The most frequent age range of our children were those older than 14 years. Male children represented 51.7%, a sex ratio of 1,16. 320 (81.8%) of the children interviewed were from the urban area, In general 246 (62.9%) children were in elementary school and 145 (37.1%) in middle school. 281 (71.9%) of the children contacted public sector schools. Children with moderately pigmented skin were the most represented in our study with a percentage of 66%. More than half (58.1%) of the parents of the children in our study have a low level of education. Of the 58.5% of children who reported sunburn, 32.1% had more than 2 sunburns in the previous year and only 20% visited a doctor for the sunburn (Table 1).

Table 1: Socio-demographic characteristics of the children in our study

Characteristics	Absolute number (%)
Age (years)	
8-10	84 (22%)
11-13	162 (41%)
≥14	145 (37%)
Sexe	
Female	181 (46,3%)
Male	210 (53,7%)
Area	
Urban	320 (81,8%)
Rural	71 (18,2%)
Scholarship level	
Primary	246 (62,9%)
Collège	145 (37,1%)
Sector	
Private	281 (28,1%)
Public	110 (71,9%)
Phototype	
Light skin	125 (32%)
Medium pigmented skin	258 (66%)
Dark skin	8 (2%)
Parents' educational level	
Level 1	38 (9,7%)
Level 2	126 (32,3%)
Level 3	277 (58,1%)
History of sunburn	
0	43 (16,5%)
1-2	135 (51,5)
>2	84 (32,1)

Assessment of Children's Behavior

On vacation

Among the 97% of children who declared to practice outdoor activities during the vacations, 30.5% like to tan, and almost half spend more than 30 minutes a day under the sun. Only 16.4% of the children said they prefer a a tanned skin and thinks that it makes them more beautiful. 69.6% or (272) of the children declared that they take at least one sun protection product with them during the vacations (sun cream, hat, sunglasses...) 72.2% of children reported using sunscreen during vacations, while only 27.7% reapply sunscreen every two hours. On the regularity of sunscreen application, 17% of the students apply it regularly (throughout the year) while most (82.4%) apply it only during the summer. 35% of children often wear a T-shirt at the beach. Of the 44% who reported often wearing a hat, 82.2% wear caps versus 17.8% who wear a wide-brimmed hat. 36.3% often wear sunglasses. 40% of children do outdoor activities between 10 am and 4 pm compared to 43.4% between 8 am and 10 am and 15% between 4 pm and 8 pm (Table 2).

At school

72.6% of students reported seeking shade during recess. 31% wear a hat during school sports, only 10% apply sunscreen and 14.6% wear covered clothing.

Table 2: distribution of children according to the application of the different methods of photo protection

answers concerning the application of the different methods of photoprotection	Absolute number (%)
Application of sun cream during your vacations	
Yes	282 (72,2%)
No	109 (27,8%)
Frequency of reapplication of sunscreen	
Never, one application is enough	192 (64,9%)
Every 2 hours	81 (27,4%)
Others	23 (7,2%)
Type of sunscreen application	
Regular (all year round)	54 (17,6%)
Seasonal (summer only)	253 (82,4%)
wearing of clothes and accessories	
T-shirt	137 (35%)
Hat	170 (43,7%)
Sunglasses	142 (36,3%)
Schedule of outdoor activities during the vacations	
8 H and 10 H	169 (43,4%)
10 H and 16 H	158 (40,6%)
16 H and 20 H	62 (15,9%)

Table 3: distribution of children according to the global knowledge score

Global knowledge score	Absolute number (%)
Good	80 (20,5%)
Average	203 (51,9%)
Low	108 (27,6%)

Assessment of Children's Knowledge

More than half of our children had an average level of knowledge, 27.6% were low level while only 20% had a high level of knowledge (Table 3).

Among the effects of the sun, 55, 8% of children think it can be dangerous, 44.2% know that there is a relationship between the sun and skin cancer, and 52% think that the sun can cause burning and 37% skin aging. While 93% ticked that the sun is good for morale and 65% the intake of vitamin D as a benefit of the sun. The main sources of children's information on sun and photo protection were the family in 65% of cases, the school in 46.4% of cases, followed by the media in 27.4%. Parents, teachers and doctors play a major role in educating our children. To assess this role regarding the dangers of the sun and photo protection, we asked children if they had ever been informed by their parents, teachers or doctors that they should protect themselves from the sun. Concerning the parents, 276 children (71%) declared that they had already been informed by one of the parents that they should protect themselves from the sun; 41.5% were advised by their teachers and only 31% by a doctor. Regarding their knowledge about skin cancer, only 43% of our children had ever heard of skin cancer and almost half of these children know that it can be caused by the sun, while 34% checked off tobacco as the cause of skin cancer about their knowledge of the different means of photoprotection, 266 children (68.2%) stated that sunscreen is used to protect the skin against 25% who think it is used to tan and 6.4% who apply sunscreen to please their parents, 60% of the children answered that there are several types of sunscreen and only 10.3% know that it is necessary to apply a sunscreen with SPF 50+. Only 35.4% (138 children) responded that sunscreen should be reapplied every 2 hours. Concerning the different means of clothing that allow us to protect ourselves from the sun, 78.2% (305 children) answered that we should wear a wide-brimmed hat, 62% sunglasses, 32.6% covered clothes while only 13.3% (52 children) think that we should wear a dark color on sunny days. Finally 208 children (53.3%) responded that the sun is stronger between noon and 4 pm.

Statistical analysis using the Chi 2 test showed The existence of a significant difference in the desire to tan according to age, school level and phototype, which is more marked in primary school children between 11 and 13 years of age with light phototypes. and also that female children with fair skin are the ones who apply

Table 4: Analytical study concerning the application of different methods of photoprotection during the vacations

Characteristics	Sunscreen N(%)	P-value	T-shirt N(%)	P-value	Hat N(%)	P-value	tanning desire N(%)	P-value
Age (years)								
8-10	35 (18,7)		29 (21,2)		40 (23,5)		23 (19,7)	0,000
11-13	124 (43,8)	0,079	45 (32,8)	0,079	60 (35,3)	0,273	66 (56,4)	
≥14	106 (37,5)		63 (46,0)		70 (41,2)		28 (23,9)	
Sexe								
Female	132 (39,9)	0,034	72 (47,4)	0,062	79 (46,5)	0,395	49 (41,9)	0,253
Male	161 (60,1)		65 (47,4)		91 (53,5)		68 (58,1)	
Area								
Urban	230 (81,3)	0,636	116 (84,7)	0,021	141 (82,9)	0,609	100 (85,5)	0,224
Rural	53 (18,7)		21 (15,3)		29 (17,1)		17 (14,5)	
Scholarship level								
Primary	169 (59,7)	0,999	80 (58,4)	0,166	66 (38,3)	0,685	82 (70,1)	0,050
Collège	114 (40,3)		57 (41,6)		104 (61,2)		35 (29,9)	
Sector								
Private	76 (26,9)	0,363	87 (63,5)	0,021	57 (33,5)	0,114	29 (24,8)	0,336
Public	209 (73,1)		50 (36,5)		113 (66,5)		88 (75,2)	
Phototype								
Light skin	90 (68,7)	0,044	36 (26,5)	0,25	48 (28,2)	0,085	91 (69,5)	0,041
Medium pigmented skin	62 (57,4)		97 (70,8)		117 (68,8)		77 (96,5)	
Dark skin	7 (2,5)		4 (2,9)		5 (2,9)		0 (0,00)	
Parent's educational level								
Level 1	28 (9,8)	0,87	19 (13,9)	0,071	24 (14,1)	0,25	8 (6,8	0,45
Level 2	93 (32,9)		51 (37,2)		61 (35,5)		40 (34,2)	
Level 3	162 (57,2)		67 (48,9)		113 (66,5)		69 (59)	
History of sunburn								
0	158 (55,8)		77 (56,2)		100 (58,8)		71 (60,7)	
1-2	89 (31,4)	0,228	38 (27,7)	0,157	47 (27,6)	0,21	35 (29,9)	0,472
>2	36 (12,7)		22 (16,1)		23 (13,5)		11 (9,4)	

Table 5 : comparative table of the application of different methods of photoprotection during the vacations and at school

Studied variables	sunscreen	p-value	HAT	P value	Covred clothing	P value
Vacations	249 (88,0)		96 (56,5)		122 (85,1)	
school	34 (12,0)	0,029	74 (43,5)	0,000	15 (14,9)	0,0249

sunscreen the most. We also noted the existence of a significant difference in relation to the application of sunscreen and the wearing of hats during the vacations and during a sports session at school, which are higher during the vacations.

Regarding the level of knowledge, We note a significant difference between the level of knowledge in relation to: Age: it is higher in the middle age group between 11 and 13 compared to the youngest (8-10 years), and the oldest (> 14 years), sector: it is higher among children in the private sector than in the public sector, The level of education: the level of knowledge is higher among children in primary school. environment: it is higher among urban children.

DISCUSSION

In the general population, children should be a specific target because it is now widely accepted that children spend more time outdoors than adults, it has been estimated that 50-80% of a person's exposure to ultraviolet (UV) radiation occurs before the age of 18 [6]. Also, they are more susceptible to the carcinogenic effects of UV radiation. Specific strategies to protect the child population should be encouraged to reduce the future incidence of skin cancers [7].

For a long time, white skin was the standard of beauty in Eastern and Western cultures. This all changed at the beginning of the 20th century, when tanning began to be accepted and then highly valued. Nowadays a dark tanned skin has become the indisputable reference of beauty, while most individuals are aware of the dangers of tanning, both from the sun and from artificial tanning [8]. We wanted to study this preference for tanned skin in our children. In our study 30.5% of the children answered that they like to stay under the sun/tan with a significantly higher percentage in children between 11 and 13 years (p=0,000); (Table 4). Only 16.4% of our children answered that tanning makes them more beautiful. A more recent Swiss study showed that 55% of children reported a favorable attitude

towards tanning [9], 55% of Italian children responded that they liked the sun because they could get a tan especially those aged 11-14 years [10]. We have noted that the percentage of children wishing to tan is slightly lower than the results found in the literature, this difference can be explained by the phototype of the children in our study which is represented in 60% of the cases by children with moderately pigmented skin (phototype III and IV).

concerning the application of sunscreen, We have noted that most of the children are aware of the application of sunscreen but not on the regularity of its application These results are similar to those in the literature, In a similar study, 79.6% of elementary school children reported using sunscreen on sunny days compared to 63.4% for middle schoolers [11].

Since school is the place where children spend the most time during the day, we wanted to study children's sun exposure behavior at school. Compared to the behavior of children during vacations, we found that children are less protected at school, with a significant difference in relation to the application of sunscreen and the wearing of hats (Table 5). It has been shown in Florida that Students protect themselves more outdoors than at school, for sunscreen application 69% of children in a French study applied it at the beach while only 4% of children used sunscreen at school [12].

Parents serve as role models for their children, and their knowledge about ultraviolet radiation exposure and protective behavior has a lasting effect on their children [13]. They can provide personalized and effective prevention messages to their children and initiate outdoor sun protection habits early in life. In our study 276 children (71%) reported that they had already been informed by a parent to protect themselves from the sun. In Switzerland 52.5% of secondary school students reported that sun protection was a topic of conversation at home and that they are continuously asked by their parents to protect themselves from the sun especially in families with higher education [14].

The school, being a place of living and learning, would be a very good place to structure educational actions. The World Health Organization (WHO) has recognized the school as an effective setting for skin cancer prevention efforts [15,16]. In a study conducted in 2017, 44% of students reported that they learned about the sun and sun protection at school [11], Thus, implementing sun protection modules as part of a school-based health education program may be an effective measure to increase parents' and children's knowledge about sun exposure [17]. Several randomized intervention trials (RITs) of school-based interventions promoting sun-protective behaviors are reported in the international literature. Among the published trials, a wide variety of actions and methods have been used, but almost all have the same ultimate goal of increasing sun-protective behavior [13,19-21].Most studies report an overall improvement in knowledge as a result of their intervention, but very few report a persistent change in sun exposure attitudes and behaviors [15,22]. A Spanish study judged the role of schools as insufficient with an imminent need to improve sun protection policies and practices in schools to help children adopt sun protection habits at an early age [23].

Medical personnel (dermatologists, pediatricians, general practitioners, and school nurses) should be involved in disseminating appropriate prevention messages about the sun and its harms. In Thailand, children who reported dermatologists or general practitioners as their source of information tended to have better sun protection behaviors [24].

Finally, concerning the knowledge of our children, most of the children had an average level of knowledge with a significantly high percentage among children between 11 and 13 years old, those from the private sector and living in urban areas. In Switzerland, the knowledge related to the sun was high in only one third of the respondents, and depended mainly on the age of the student, with the oldest students achieving the highest knowledge scores. The knowledge status also depended on the education level of the parents, the better the education of the parents the higher the sun-related knowledge of the students [14].

These results encourage us to reflect on the measures to be taken to improve the behavior and knowledge of children regarding the sun and the prevention of skin cancers in our country. For this we propose: To think about extending the study to other regions of Morocco, in order to have global results on the behavior and knowledge of Moroccan children, organize awareness campaigns against the harmful effects of the sun and the means of photoprotection for parents and children, and to focus on the rural environment and take into consideration the different constraints in which the children live., Conducting education sessions on sun protection measures for children and their parents at school.

Introduce information on the sun and photo protection in the school curriculum, and finally Introduce the media in the prevention of skin cancer.

CONCLUSION

The prevention of sun exposure among our children could reduce the incidence of skin cancers in the future, this justifies the implementation of prevention and information campaigns to try to modify the erroneous behavior of children with regard to sun exposure and to think of rehabilitating the information on the risks of photo exposure in our school programs.

ACKNOWLEDGEMENTS

We are indebted to all the children who participated in this study as well as the school principals and teachers.

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. Andreola GM, Carvalho VO, Huczok J, Cat MNL, Abagge KT. Photoprotection in adolescents: what they know and how they behave. An Bras Dermatol. 2018;93:39-44.
2. Suozzi K, Turban J, Girardi M. Cutaneous Photoprotection: A Review of the Current Status and Evolving Strategies. Yale J Biol Med. 2020;93:55-67.
3. Thoonen, K., Schneider, F., Candel, M. de Vries, H. Osch, L. Childhood sun safety at different ages: relations between parental sun protection behavior towards their child and children's own sun protection behavior. BMC Public Health. 2019;19:1044.
4. Flohil SC, de Vries E, Neumann HAM, Coebergh J-WW, Nijsten T. Incidence, prevalence and future trends of primary basal cell carcinoma in the Netherlands. Acta Derm Venereol. 2011;91:24-30.
5. Limam SAM, Erebih CE, Beyrouk A, Boye KI, Didi EH, Ely SO, et al. [Acral melanoma of the foot: a study of 9 cases and guidelines update]. Our Dermatol Online. 2019;10:23-9.
6. Oulehri A, BayBay H, Filankembo Kava A, Douhi Z, Elloudi S, El Fakir S, et al. The role of general practitioners in the prevention and screening of skin cancer: a cross-sectional study in Morocco. Our Dermatol Online. 2020;11:e134.1-9.
7. Gupta M, Assessment of knowledge, attitudes and practices about sun exposure and sunscreen usage in out patients attending a Dermatology Clinic in North India. J Pak Associat Dermatol. 2018;28:521-5.
8. Harth W. [Superbrown beauty: The surface of tanorexia and tanning dependence]. Hautarzt. 2017;68):968-72.
9. Vuadens A, Ackermann S, Levi F, Bulliard JL. Sun-related knowledge and attitudes of primary and secondary schoolchildren in western Switzerland. Eur J Cancer Prev. 2017;26:411-7.
10. Saridi M, Toska A, Rekleiti M, Wozniak G, Liachopoulou A, Kalokairinou A, et al. Sun-protection habits of primary students in a coastal area of Greece. J Skin Cancer. 2012;2012:629652.
11. Kouzes E, Thompson C, Herington C, Helzer L. Sun Smart Schools Nevada: Increasing Knowledge Among School Children About Ultraviolet Radiation. Prev Chronic Dis. 2017;14:E125.
12. Thoonen K, van Osch L, Drittij R, de Vries H, Schneider F. A Qualitative exploration of parental perceptions regarding children's sun exposure, sun protection, and sunburn. Front Public Health. 2021;9:596253.
13. Laniauskaite I, Ožalinskaite A, Strupaite R, Bylaite M. Skin cancer knowledge, attitude and behavior towards sun exposure among young adults in Lithuania. Our Dermatol Online. 2011;2:189-95.
14. Ackermann S, Vuadens A, Levi F, Bulliard JL. Sun protective behaviour and sunburn prevalence in primary and secondary schoolchildren in western Switzerland. Swiss Med Wkly. 2016;146:w14370.
15. Buller DB, Reynolds KD, Buller MK, Massie K, Berteletti J, Ashley J, et al. Parent reports of sun safety communication and behaviour for students in a randomised trial on a school policy implementation intervention. Aust N Z J Public Health. 2020;44:208-14.
16. World Health Organization. Sun protection in schools: an educational package to protect children from ultraviolet radiation [Internet]. Geneva; 2003. Disponible sur: http://www.who.int/uv/publications/sunschools
17. Mahé E, de Paula Corrêa M, Vouldoukis I, Godin-Beekmann S, Sigal ML, Beauchet A. Sun exposure at school: Evaluation of risk (erythema dose), benefits (vitamin-D synthesis) and behaviour among children in France. Ann Dermatol Venereol. 2016;143:512-20.
18. Sancho-Garnier H, Pereira B, Césarini P. A cluster randomized trial to evaluate a health education programme " Living with Sun at School ". Int J Environ Res Public Health. 2012;9:234561.
19. Kyle JW, Hammitt JK, Lim HW, Geller AC, Hall-Jordan LH, Maibach EW, et al. Economic evaluation of the US Environmental Protection Agency's SunWise program: sun protection education for young children. Pediatrics. 2008;121:e1074-84.
20. Reynolds KD, Buller DB, French SA, Buller MK, Ashley JL. School sun-protection policies: measure development and assessments in 2 regions of the United States. J Sch Health. 2012;82:499–507.
21. Borowska K. How narrow-band and broad-band UVB irradiation influences the immunohistochemistry analyses of experimental animals' skin – a comparative study. Part II. Our Dermatol Online. 2017;8:e6.
22. Hassan I, Dorjay K, Sami A, Anwar P. Sunscreens and Antioxidants as Photo-protective Measures: An update. Our Dermatol Online. 2013;4:369-74.
23. García-Harana C, de Gálvez Aranda MV, Blazquez-Sanchez N, Rivas-Ruiz F, Rodriguez-Martinez A, de Troya-Martín M. Sun protection policies and practices in preschool and elementary schools in Andalusia (Spain). J Cancer Educ. 2020;10.1007/s13187-020-01889-w.
24. Pengpid S, Peltzer K. Bullying and its associated factors among school-aged adolescents in Thailand. Scien World J. 2013:254083.

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

Our Dermatology Online

Brief Report

The role of peripheral arterial occlusive disease in the healing of venous ulcers

Blagoja Vasilev[1], Mirela Vasileva[2], Stojka Vasileva[2]

[1]Cardiology Department, Clinical Hospital Shtip, North Macedonia, [2]Dermatovenerology Department, Clinical Hospital Shtip, North Macedonia

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

ABSTRACT

Background: The biggest challenge in patients with chronic venous insufficiency is venous ulcers that occur in stage 6 of the CEAP classification. In general, acute ulcers have a 71–80% chance of healing, while chronic ulcers only have a 22% chance of healing. Our clinical practice has shown that patients diagnosed with peripheral arterial occlusive disease have a much longer duration of the disease and a more difficult treatment of venous ulcers than patients with normal arterial circulation. **Materials and Methods:** The study included 105 patients with CVI and a developed leg ulcer. Among these, twenty patients were diagnosed with peripheral arterial occlusive disease. All patients were followed for more than twelve weeks. **Results:** Peripheral arterial occlusive disease was significantly more common in patients with delayed healing than in patients with normal venous ulcer healing: 18 (30%) vs. 2 (4.4%). for twelve weeks or longer, and it was statistically significant for p = 0.00097. **Conclusion:** Peripheral arterial occlusive disease has been shown to be an important indicator of venous epithelial wound healing. The establishment of good arterial circulation is closely related to the course of treatment of chronic venous ulcers.

Key words: ulcers, peripheral arterial disease, venous insufficiency

INTRODUCTION

By changing the body position from horizontal to vertical, blood flow through the legs increases from 8% to 23%. The establishment of new physical and hemodynamic conditions in the blood vessels of the legs are the main factors for the appearance of varicose veins [1-3].

Chronic venous insufficiency (CVI) is highly common nowadays and belongs to the group of diseases considered the most widespread. The frequency of CVI is quite controversial, according to several studies in which different data is presented. Thus, it may be said that it is present in 5–25% of the population depending on which part of the world is concerned [4-6].

The biggest challenge in patients with CVI is venous ulcers that occur in stage 6 of the CEAP classification. The problem with venous ulcers is the frequent resistance to therapy and the transition to chronic [7,8]. These ulcers may last for years and significantly reduce the quality of life of the patient [9,10]. Today, there is a number of studies seeking to find the factor that leads to the emergence of treatment resistance and novel types of solutions.

In general, acute ulcers (lasting three months or less) have a 71–80% chance of healing, while chronic ulcers only have a 22% chance of healing after six months of treatment [11,12]. Patients resistant to conservative therapies need to undergo the surgical treatment of their venous ulcers. Wound debridement has long been employed to improve the condition and facilitate healing. During the procedure, a curette or scissors may be used for sharp debridement, or it may be enzymatic, mechanical, autolytic, or biological with larvae, which is the least commonly employed type of ulcer treatment.

How to cite this article: Vasilev B, Vasileva M, Vasileva S. The role of peripheral arterial occlusive disease in the healing of venous ulcers. Our Dermatol Online. 2022;13(3):280-282.

Submission: 18.02.2022; **Acceptance:** 04.04.2022

DOI: 10.7241/ourd.20223.8

Most necrotic tissue wounds should be evaluated for arterial failure as venous ulcers rarely require much debridement [13].

Our clinical practice has shown that patients diagnosed with peripheral arterial occlusive disease have a much longer duration of the disease and a more difficult treatment of venous ulcers than patients with normal arterial circulation.

MATERIALS AND METHODS

The study included 105 patients with CVI and a developed leg ulcer. Among these, twenty patients were diagnosed with peripheral arterial occlusive disease. All patients were followed for more than twelve weeks. The patients were divided into two groups according to the duration of the venous ulcer: normal wound closure up to twelve weeks and a duration longer than twelve weeks.

All patients underwent the same type of therapy consisting of wound dressing, venotonics, and compression therapy in patients not diagnosed with peripheral arterial occlusive disease.

RESULTS

Peripheral arterial occlusive disease was significantly more common in patients with delayed healing than in patients with normal venous ulcer healing - 18 (30%) vs 2 (4.4%). of 12 weeks or 12 weeks and longer, and it was statistically significant for p = 0.00097 (Table 1); (Fig. 1).

With peripheral arterial occlusive disease, ulcer closure took between four to twelve weeks in two (7.7%) patients and twelve weeks or more in eighteen (30%) patients. Patients with ulcer closure shorter than four weeks did not have peripheral arterial occlusive disease. The test difference in the distribution of the patients with and without peripheral arterial occlusive disease was confirmed as statistically significant between the groups with rapidly delayed venous ulcer healing (p = 0.0066) and between the groups with normal and delayed healing (p = 0.025). The patients with delayed venous ulcer healing were significantly more likely to have peripheral arterial occlusive disease when compared to patients with rapid and normal healing. (Table 2) (Fig. 2).

Table 1: Normal and delayed ulcer healing: distribution.

Peripheral arterial occlusive disease	Time of ulcer closure			p-level
	n	< 12 weeks n (%)	≥ 12 weeks n (%)	
yes	20	2 (4.44)	18 (30)	X^2=10.89 ***p=0.00097 sig
no	85	43 (95.56)	42 (70)	

X^2 (Pearson Chi-square) ***p<0.0001

Table 2: Rapid, normal, and delayed ulcer healing: distribution according to peripheral arterial occlusive disease

Peripheral arterial occlusive disease	Time of ulcer closure				p-level
	n	I<4 weeks n (%)	II 4–12 weeks n (%)	III>12 weeks n (%)	
yes	20	0	2 (7.69)	18 (30)	I vs II X^2=1.5 P=0.22 ns I vs III X^2=7.4 **p=0.0066 sig II vs III X^2=5.1 *p=0.025 sig
no	85	19 (100)	24 (92.31)	42 (70)	

X^2 (Pearson Chi-square) *p<0.05 **p<0.01

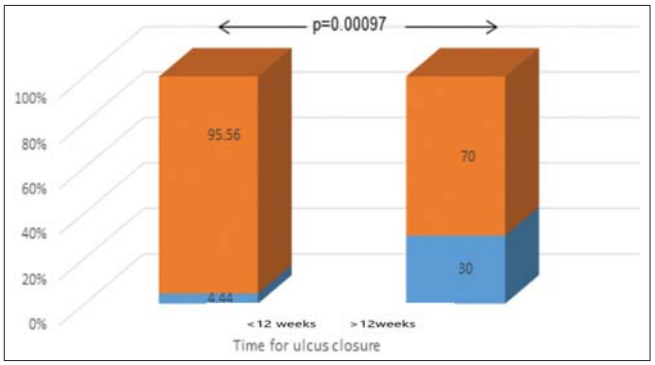


Figure 1: Frequency of peripheral arterial occlusive disease in patients with normal and delayed ulcer healing.

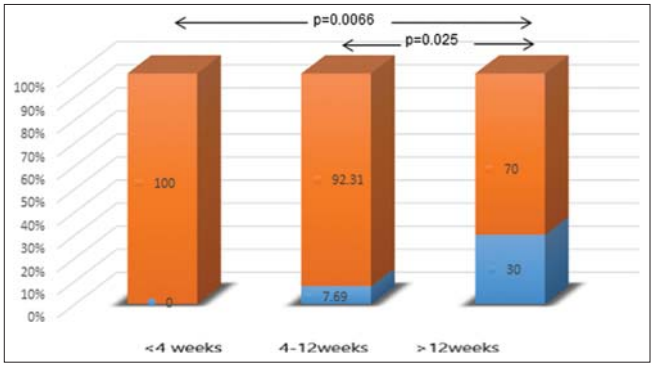


Figure 2: Frequency of peripheral arterial occlusive disease in patients with rapid, normal, and delayed ulcer healing.

DISCUSSION

No patients diagnosed with peripheral arterial occlusive disease were observed in the group of rapidly closing ulcers up to four weeks after the beginning of treatment. The use of pentoxifylline in these patients

has been shown to be reasonable and with a high degree of acceleration in the healing process of venous ulcers [14,15]. The absence of peripheral arterial occlusive disease and chronic leg wounds accelerates wound healing and significantly reduces the chances of amputation in patients with the disease present, as opposed to those with normal arterial circulation. This shows us the importance of simultaneous treatment of diseases and early taking of therapeutic measures to solve circulatory problems.

CONCLUSION

Peripheral arterial occlusive disease has been shown to be an important indicator of venous epithelial wound healing. Delayed wound healing affects the quality of life of these patients, given the need for long-term hospitalizations and the inability to perform daily responsibilities normally. Patients are also financially affected, given the cost of treatment and daily dressings. Peripheral arterial occlusive disease has been shown to be an important predictive factor in the duration of venous ulcers. The simultaneous treatment of both diseases is especially important. The establishment of good arterial circulation is closely related to the course of treatment of chronic venous ulcers. Improving circulation also means faster granulation of the wound, so it is especially important for these patients to be given a multidisciplinary approach to problem-solving.

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. Recek C. Calf pump activity influencing venous hemodynamics in the lower extremity. Int J Angiol. 2013;22:23-30.
2. Franz A, Berndt F, Raabe J, Harmsen JF, Zilkens C, Behringer M. Invasive assessment of hemodynamic, metabolic and ionic consequences during blood flow restriction training. Front Physiol. 2020;11:617668.
3. Youn YJ, Lee J. Chronic venous insufficiency and varicose veins of the lower extremities. Korean J Intern Med. 2019;34:269-83.
4. Lohr JM, Bush RL. Venous disease in women: Epidemiology, manifestations, and treatment. J Vasc Surg. 2013;57:37S-45S.
5. Kirsten N, Mohr N, Gensel F, Alhumam A, Bruning G, Augustin M. Population-based epidemiologic study in venous diseases in Germany: Prevalence, comorbidity, and medical needs in a cohort of 19,104 workers. Vasc Health Risk Manag. 2021;17:679-87.
6. Elamrawy S, Darwish I, Moustafa S, Elshaer N, Ahmed N. Epidemiological, life style, and occupational factors associated with lower limb varicose veins: A case control study. J Egypt Public Health Assoc. 2021;6;96.
7. Raffetto JD. Pathophysiology of wound healing and alterations in venous leg ulcers-review. Phlebology. 2016;31:56-62.
8. Mansilha A, Sousa J. Pathophysiological mechanisms of chronic venous disease and implications for venoactive drug therapy. Int J Mol Sci. 2018;19:1669.
9. Szewczyk MT, Mościcka P, Jawień A, Cwajda-Białasik J, Cierzniakowska K, Ślusarz R, et al. Quality of life in patients with leg ulcers or skin lesions: A pilot study. Postepy Dermatol Alergol. 2015;32:465-9.
10. Vishwanath V. Quality of life: Venous leg ulcers. Indian Dermatol Online J. 2014;5:397-9.
11. Kranke P, Bennett MH, Martyn-St James M, Schnabel A, Debus SE, Weibel S. Hyperbaric oxygen therapy for chronic wounds. Cochrane Database Syst Rev. 2015;2015:CD004123.
12. 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.
13. Manna B, Nahirniak P, Morrison CA. Wound Debridement. 2021 Sep 6. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022. PMID: 29939659.
14. de Oliveira Carvalho PE, Magolbo NG, De Aquino RF, Weller CD. Oral aspirin for treating venous leg ulcers. Cochrane Database Syst Rev. 2016;2:CD009432.
15. Jull AB, Arroll B, Parag V, Waters J. Pentoxifylline for treating venous leg ulcers. Cochrane Database Syst Rev. 2012;12:CD001733.

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

Our Dermatology Online

Case Report

Reactive infectious mucocutaneous eruption in a young-adult with COVID-19

Liat Bainvoll, Melanie Miller, Scott Worswick

Department of Dermatology, University of Southern California, Keck School of Medicine, Los Angeles, California, USA

Corresponding author: Liat Bainvoll, E-mail: bainvoll@usc.edu

ABSTRACT

In this case report, we detail the case of a young adult with a recurrent case of Reactive Infectious Mucocutaneous Eruption (RIME) in the setting of Sars-COV-2 infection, the second time this has been reported in the literature. We review the more common causes of RIME, including Chlamydophila pneumoniae, metapneumovirus, parainfluenza, rhinovirus, enterovirus, and influenza; and we discuss patient characteristics in other reported cases of RIME secondary to COVID-19 and the features of recurrent RIME seen in patients reported in the literature. Our patient had the characteristic severe mucosal involvement seen with RIME, and was treated with supportive care alone and experienced rapid improvement in symptoms.

Key words: COVID-19; SARS-CoV-2; Mucositis; Mouth Mucosa

INTRODUCTION

Reactive Infectious Mucocutaneous Eruption (RIME) is a relatively novel term used to describe a characteristic, severe mucocutaneous eruption most frequently seen in children and young adults with an infectious trigger. RIME has been reported most commonly with Chlamydophila pneumoniae, metapneumovirus, parainfluenza, rhinovirus, enterovirus, and influenza infections [1]. Recently Sars-COV-2 infection has been reported as a trigger. While mucositis is prominent and can affect oral, genital, and ocular mucosa, there is variable cutaneous involvement [2,3]. Some courses may be mild and resolve with supportive treatment while some may require ICU level care secondary to respiratory or esophageal involvement [3]. Here we discuss a case of suspected recurrent RIME secondary to Sars-COV-2 infection.

CASE REPORT

A 23-year-old African American male presented with a one-week history of progressively worsening oral lesions causing significant pain, lip edema, and poor oral intake. He reported subjective fevers and chills four days prior to development of oral lesions. The patient reported a similar episode of mucosal lesions three years prior to presentation that resolved with topical and oral treatment, though he did not recall which treatments specifically. Past medical history was significant for asthma, schizoaffective disorder, and unspecified seizure disorder. Notable medications included levetiracetam, valproic acid, olanzapine, and quetiapine which he had been on for greater than six months with no recent dosage changes. He denied the use of any other medications, supplements, illicit drugs, or herbs.

On physical exam, he appeared non-toxic, but had severe upper and lower lip edema. His buccal mucosa had sloughing with purulent exudate, and diffuse erosions throughout the oral mucosa (Figs. 1a and 1b). There was mild anterior cervical lymphadenopathy with tenderness to palpation. He had no other cutaneous involvement and ocular and genital mucosa were also clear.

The patient's labs were notable for a mild leukocytosis (11.4K cells/mm^3) and elevated Erythrocyte

How to cite this article: Bainvoll L, Miller M, Worswick S. Reactive infectious mucocutaneous eruption in a young-adult with COVID-19. Our Dermatol Online. 2022;13(3):283-285.

Submission: 31.03.2022; **Acceptance:** 03.05.2022

DOI: 10.7241/ourd.20223.9

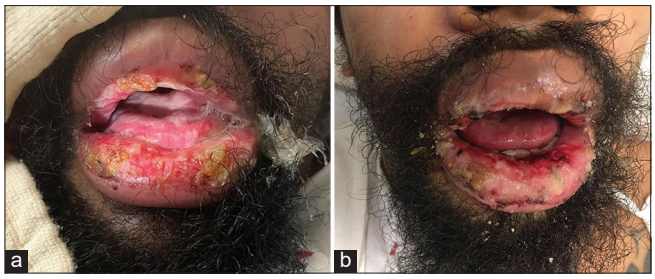


Figure 1: (a) Initial presentation of mucositis with painful erosions, honey-crusting, and edema. (b) Mucositis on hospital day 1 immediately after treatment.

sedimentation rate (30 mm/hr) and C-reactive protein (40.8 mg/L). His nasal Sars-COV-2 polymerase chain reaction (PCR) test was positive. Other negative infectious workup included HIV antibody titer, RSV PCR, influenza PCR, and Herpes simplex virus PCR swabs. Bacterial wound swab from the lower lip was positive for gram positive cocci, consistent with his exam findings suggesting secondary impetiginization. Mycoplasma IgG titer was elevated, but IgM titer was within normal range, consistent with a history of prior mycoplasma infection. All other routine lab studies were within normal limits.

Supportive treatment was implemented with 2% lidocaine/12.5 mg diphenhydramine/nystatin 500,000-unit mouthwash and topical triamcinolone 0.1% ointment twice daily. Within one day, the patient demonstrated considerable improvement in edema, erythema, and crusting, and reported less pain with talking and eating. He was discharged in stable condition.

DISCUSSION

Because our patient had a mucocutaneous eruption and a history of taking multiple medications commonly associated with drug-induced Steven Johnson Syndrome (SJS), we included this diagnosis on our differential; however, his drug timeline was not consistent with SJS. The patient lacked targetoid lesions, making erythema multiforme unlikely. Given the patient's recent Sars-COV-2 infection, severe mucositis, and the rapid resolution of symptoms with topical therapy alone and no recent change to his drug regimen, the patient was given a diagnosis of RIME secondary to COVID-19.

Dermatologic manifestations of COVID-19 have been well documented and include morbilliform, urticarial, vesicular, and potentially pernio-like lesions in more mild disease, as well as retiform purpura in critically ill patients [4].

Of the cases of RIME secondary to COVID-19 reported in the literature, the majority of patients are male (4 of 5) and all are either teenagers or young adults [5-7], as was the case with our patient. None of the cases reported had severe respiratory illness related to Sars-COV-2 infection, including our own. Severity of RIME was generally mild, resolving completely after oral or IV corticosteroids, IVIG, or cyclosporine. One patient required total parenteral nutrition due to the severity of oral lesions and prolonged disease course [7].

Of patients with RIME secondary to Sars-COV-2 infection, only one patient had a previous history of RIME [5]. In patients with recurrent RIME but different initial pathogenic trigger, courses tend to be less severe than the initial presentation with involvement of fewer mucosal sites [2,8].

CONCLUSIONS

RIME is a relatively newly described diagnosis and has an expanding list of pathogens reported to trigger it. We report a case of recurrent RIME secondary to COVID-19 in a young adult who experienced a different trigger for his first episode of RIME. More research is needed to elucidate the pathogenesis of RIME and to characterize which patients are predisposed to recurrent RIME and why in some exposure to the same pathogen triggers the disease while in others differing pathogens can trigger the eruption. In the setting of the COVID-19 pandemic, clinicians should be aware that RIME may be triggered by Sars-COV-2 infection and include this in the panel of tests being used to determine the underlying cause. We suggest in a patient with RIME that work-up include testing for COVID-19 in addition to a thorough drug history, and testing for mycoplasma pneumoniae, Chlamydophila pneumoniae, metapneumovirus, parainfluenza, rhinovirus, enterovirus, and influenza.

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. Ramien ML, Bruckner AL. Mucocutaneous Eruptions in Acutely Ill Pediatric Patients-Think of Mycoplasma pneumoniae (and Other Infections) First. JAMA Dermatol. 2020;2:124-5.
2. Liakos W, Xu A, Finelt N. Clinical features of recurrent Mycoplasma pneumoniae-induced rash and mucositis. Pediatr Dermatol. 2021;38:154-8.
3. Canavan TN, Mathes EF, Frieden I, Shinkai K. Mycoplasma pneumoniae-induced rash and mucositis as a syndrome distinct from Stevens-Johnson syndrome and erythema multiforme: a systematic review. J Am Acad Dermatol. 2015;72:239-45.
4. Freeman EE, McMahon DE, Lipoff JB, Rosenbach M, Kovarik C, Desai SR, et al. The spectrum of COVID-19-associated dermatologic manifestations: An international registry of 716 patients from 31 countries. J Am Acad Dermatol. 2020;83:1118-29.
5. Song A, Nicholson C, Maguiness S. Recurrent reactive infectious mucocutaneous eruption (RIME) in two adolescents triggered by several distinct pathogens including SARS-CoV-2 and influenza A. Pediatr Dermatol. © 2021 Wiley Periodicals LLC.; 2021:1222-1225. vol. 5.
6. Holcomb ZE, Hussain S, Huang JT, Delano S. Reactive Infectious Mucocutaneous Eruption Associated With SARS-CoV-2 Infection. JAMA Dermatol. 2021;157:603-5.
7. Bowe S, O'Connor C, Gleeson C, Murphy M. Reactive infectious mucocutaneous eruption in children diagnosed with COVID-19. Pediatr Dermatol. 2021;38:1385-6.
8. Mazori DR, Nagarajan S, Glick SA. Recurrent reactive infectious mucocutaneous eruption (RIME): Insights from a child with three episodes. Pediatr Dermatol. 2020;37:545-7.

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

Our Dermatology Online

Case Report

A case of Blaschkoid pityriasis rosea following COVID-19 vaccination: A rare exceptional occurrence

Aakanksha Arora, Alpana Mohta, Prasoon Soni

Department of Dermatology, Sardar Patel Medical College, Bikaner, Rajasthan, India

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

ABSTRACT

The launch of COVID-19 vaccines in India has raised the expectations of the dreadful COVID-19 pandemic ending in the future. Various mild and benign cutaneous manifestations of the different forms of the COVID-19 vaccine have been documented. Herein, we are reporting a unique case of Blaschkoid pityriasis rosea (PR) developing after COVID-19 vaccination. A forty-two-year-old female presented with PR along a linear arbitrary zone on the back at the level of L1-L2 extending to involve the abdomen and an oblique zone on the thigh. She was vaccinated with the first dose of the COVISHIELD ChAdOx1/nCoV-19 (recombinant) coronavirus vaccine six days before the onset of the lesions. There are only several case reports of typical pityriasis rosea occurring after COVID-19 vaccination. Our unique case depicts the occurrence of atypical PR after COVID-19 vaccination.

Key words: Blaschkoid pityriasis rosea; COVID-19; COVISHIELD; lines of Blaschko; pityriasis rosea

INTRODUCTION

Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) infection has taken a great toll on the world, causing over two million deaths and economical losses. The launch of COVID-19 vaccines in India has raised the expectations of this dreadful pandemic ending in the future. The Indian population has enthusiastically accepted the vaccine with millions of people being vaccinated. Various mild and benign cutaneous manifestations of different forms of the COVID-19 vaccine have been documented [1]. Herein, we are reporting a unique case of Blaschkoid pityriasis rosea (PR) developing after COVID-19 vaccination. Although PR is a common acute exanthematous disease, around 20% of patients with PR have atypical clinical presentations, posing a risk of misdiagnosis [2].

CASE REPORT

A forty-two-year-old female presented to our skin outpatient department with a well-defined, erythematous plaque, 2 × 3 cm in size, on the lower aspect of the right side of the abdomen. Two days later, secondary lesions developed around the primary herald patch progressing to involve the back, flank, and medial aspect of the thigh in a linear distribution. The distribution of the lesions lay along a linear arbitrary zone stretching from the midline of the back at the level of L1-L2 extending to involve the abdomen (Figs. 1a and 1b) and an oblique arbitrary zone on the thigh extending from the right anterior superior iliac spine to the medial aspect of the right thigh (Figs. 1c and 1d). All lesions had peripheral collarette scaling with a clear wrinkled center. The appearance of the lesions was not preceded by any prodrome. There was no significant history of allergic or irritant contact dermatitis, recent infections or drug intake, contact with a COVID-19-positive patient, a similar skin rash in the past, or a family history. However, the patient was vaccinated with the first dose of the COVISHIELD ChAdOx1/nCoV-19 (recombinant) coronavirus vaccine six days before the onset of the lesions. Routine laboratory investigations were normal. A SARS-CoV-2 PCR test performed from a nasopharyngeal swab sample was negative. Dermoscopy of the lesions revealed

How to cite this article: Arora A, Mohta A, Soni P. A case of Blaschkoid pityriasis rosea following COVID-19 vaccination: A rare exceptional occurrence. Our Dermatol Online. 2022;13(3):286-288.

Submission: 16.01.2022; **Acceptance:** 19.05.2022

DOI: 10.7241/ourd.20223.10

peripheral collarette scaling, blood spots, peripheral dotted vessels, and brown globules (Fig. 2). A punch biopsy taken from the lesions revealed psoriasiform hyperplasia, focal hyperkeratosis, slight parakeratosis, lymphocytic infiltrate around vessels, and red blood cell extravasation (Fig. 3). A possible differential diagnosis included various linear inflammatory skin disorders such as linear psoriasis, linear lichen planus, lichen striatus, and adult blaschkitis. Based on a detailed history and morphology of the lesions, we excluded the possibility of these disorders. The rash fulfilled the diagnostic criteria of pityriasis rosea [3]. Based on the strict unilateral distribution of the group of lesions along linear, oblique strips following the lines of Blaschko, a diagnosis of Blaschkoid PR was reached. The patient was prescribed oral antihistamines and topical betamethasone dipropionate lotion followed by complete recovery within fifteen days. However, the patient returned to the outpatient department two months later with similar lesions involving the same area following the second dose of the COVISHIELD vaccine with a latency period of four days. She was prescribed the same treatment and the lesions resolved in fifteen days.

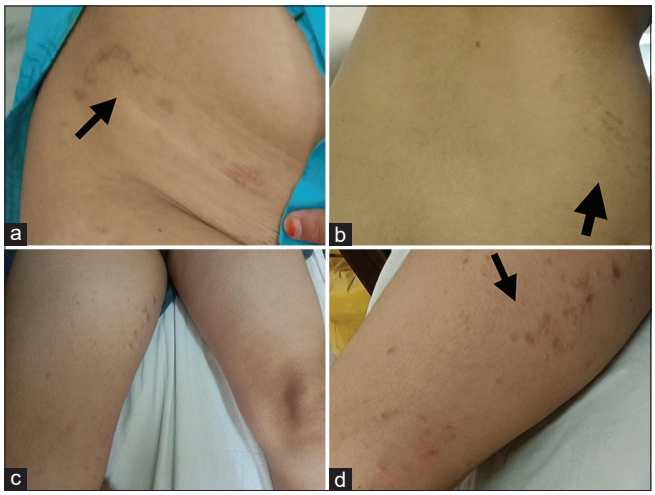


Figure 1: (a-b) Well, defined, erythematous primary plaque on the lower aspect of the right side of the abdomen with secondary lesions developing along the lines of Blaschko in a linear, stripped, unilateral pattern on the lateral side of the abdomen and back. (c-d) Multiple, unilateral, discrete lesions with peripheral collarette scaling and a clear, wrinkled center on the oblique arbitrary zone on the medial aspect of the right thigh following the lines of Blaschko.

DISCUSSION

PR is a common, acute, self-limiting exanthema, yet its exact cause remains unknown. Classical PR is characterized by the appearance of a herald patch followed by discrete lesions, with a symmetrical distribution involving the trunk and proximal parts of the limbs. However, atypical and rare variants of pityriasis rosea have been reported in the literature. Based on the atypical sites and distributions, the lesions may be described as inverse, acral, Blaschkoid, unilateral, limb girdle, mucosal, localized, etc. [4]. Blaschkoid PR is a highly rare variant of PR [5]. The term suggests that the individual lesions coalesce into a group, with the entire group following and extending along Blaschko's lines [6]. The orientation of the individual lesions is not included in this term. The distribution of the lesions is strictly unilateral in Blaschkoid PR. Blaschko's lines are representative of the route of migration of embryonic ectodermal cells. Grosshans hypothesized that the unmasking of tolerance or susceptibility of abnormal keratinocyte clones by an underlying disease leads to the Blaschko linear distribution of lesions in various acquired

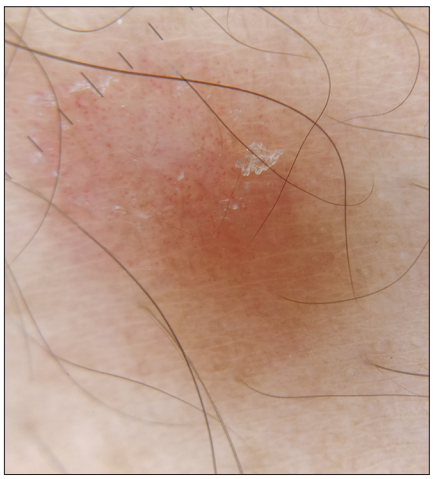


Figure 2: Dermoscopy of the lesions showing peripheral collarette scaling, blood spots, peripheral dotted vessels, and brown globules typical of pityriasis rosea.

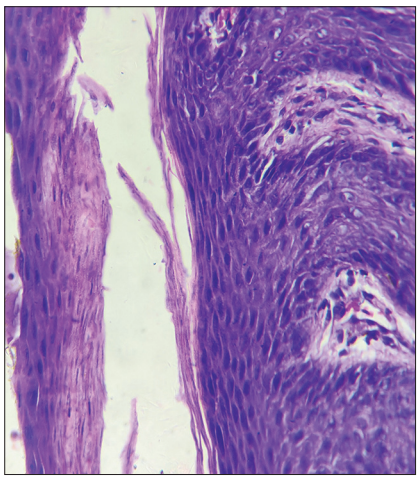


Figure 3: Histopathological examination showing focal hyperkeratosis, slight parakeratosis, lymphocytic infiltrate around vessels, and red blood cells.

Table 1: Cases of Blaschkoid pityriasis rosea in adults identified by PubMed compared with the case reported herein.

Case/year	Age/sex	Prodromal symptoms	Herald patch	Groups of lesions	Symmetry and areas involved	Linear or curved strip	Peripheral collarette scaling	Treatment and clinical course	History of recurrence
Ang CC, Tay YK, 2009 [6]	42 y.o./female	present	present	2	unilateral, left arm and left shin	yes	present	topical 0.025% fluocinolone cream and hydroxyzine; remission after 4 weeks	no
Zawar V, Chuh A, 2017 [5]	20 y.o./male	present	present	1	unilateral region of the right anterior superior iliac spine to the medial aspect of the right thigh	yes	present	oral roxithromycin, desloratadine andbetamethasone dipropionate and fusidic acid cream; remission after 2 weeks	no
Our case/2021	42 y.o./female	absent	present	2	unilateral, the right side of the back and abdomen and the medial aspect of the right thigh	yes	present	oral antihistaminics and betamethasone diproprionate lotion; remission after 10 days with recurrence after 1month.	yes (following COVID-19 vaccination)

dermatoses [7]. Genetic mosaicism to the offending infectious agent trigger an abnormal response of the susceptible clone of a keratinocyte [6,7]. Blaschkoid PR is an extremely rare variant of PR. As of today, we were able to find only two case reports on adults by the Medline search queries "pityriasis rosea" and "lines of Blaschko" (Table 1). Our case was unique in that this rare form of PR was preceded by the administration of the COVISHIELD ChAdOx1/nCoV-19 (recombinant) coronavirus vaccine. There are only several case reports of pityriasis rosea occurring after COVID-19 vaccination [8,9]. The exact pathogenesis behind PR after vaccination is unknown. We hypothesized that the immune response triggered by the vaccine elevated the plasma cytokine levels and distracted the T-cell-mediated control on the latent infections, unmasking the tolerance of abnormal keratinocytes along the particular Blaschkoid's lines [10]. Case reports of typical PR following COVID-19 vaccination already exist in the literature. However, the triggering of atypical forms such as Blaschkoid PR following a COVID-19 vaccine is a highly rare occurrence.

CONCLUSION

Several case reports of typical PR following COVID-19 vaccination already exist in the literature. However, the triggering of atypical forms such as Blaschkoid PR following a COVID-19 vaccine is a highly rare occurrence. A dermatologist must always be on the lookout for these rare cutaneous adverse effects of COVID-19 vaccines. Therefore, we claim that COVID-19 vaccination may be a potential trigger of PR.

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. 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.
2. Chuh A, Zawar V, Lee A. Atypical presentations of pityriasis rosea: Case presentations. J Eur Acad Dermatol Venereol. 2005;19:120-6.
3. Zawar V, Chuh A. Applicability of proposed diagnostic criteria of pityriasis rosea: Results of a prospective case-control study in India. Indian J Dermatol. 2013;58:439-42.
4. Mahajan K, Relhan V, Relhan AK, Garg VK. Pityriasis rosea: An update on etiopathogenesis and management of difficult aspects. Indian J Dermatol. 2016;61:375-84.
5. Zawar V, Chuh A. Pityriasis rosea along Blaschko's lines: A rare variant. Indian J Dermatol Venereol Leprol. 2017;83:516.
6. Ang CC, Tay YK. Blaschkoid pityriasis rosea. J Am Acad Dermatol. 2009;61:906-8.
7. Grosshans EM. Acquired Blaschko linear dermatoses. Am J Med Genet. 1999;85:334-7.
8. Marcantonio-SantaCruz OY, Vidal-Navarro A, Pesqué D, Giménez-Arnau AM, Pujol RM, Martin-Ezquerra G. Pityriasis rosea developing after COVID-19 vaccination. J Eur Acad Dermatol Venereol. 2021;35:721-22.
9. Abdullah L, Hasbani D, Kurban M, Abbas O. Pityriasis rosea after mRNA COVID-19 vaccination. Int J Dermatol. 2021;60:1150-51.
10. Drago F, Ciccarese G, Javor S, Parodi A. Vaccine-induced pityriasis rosea and pityriasis rosea-like eruptions: A review of the literature. J Eur Acad Dermatol Venereol. 2016;30:54.

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

Our Dermatology Online

Case Report

Breast dermatoses: Dermatologists coming to the rescue of gynecologists

Hasna Kerrouch, Meryem Khalidi, Rachid Frikh, Naoufal Hjira, Mohammed Boui

Dermatology Venerology Department, Military Hospital Instruction Mohammed V, University Mohammed V, Rabat, Morocco

Corresponding author: Hasna Kerrouch, MD, E-mail: hasnakerrouch@gmail.com

ABSTRACT

More than any other organ of the body, the breasts represent the symbol of femininity for a woman. As with any part of the skin, they may be the seat of inflammatory, infectious, and/or tumor-related dermatoses. The severity of these dermatoses is related to the existence of an underlying malignant neoplasia with a risk of mastectomy, creating a high psychological impact. Through five observations, we discuss different diagnoses to be evoked in front of a breast dermatosis apart from the tumor pathology.

Key words: Breast; Dermatoses; Etiology

INTRODUCTION

The breast is an extended area between the clavicle, the armpit, and the middle of the sternum as opposed to the pectoralis major muscle.

Although they are also present in men, the breasts are part of the female reproductive system as accessory organs. Women have more breast tissue and mammary glands, which produce breast milk.

The breasts may be the site of several dermatoses of mostly infectious, tumoral, and/or immunoallergic origin [1].

The severity of these dermatoses is related to the existence of an underlying malignant neoplasia with a risk of mastectomy, which puts at risk the vital and functional prognosis [2,3].

The objective of our article is to discuss, through five observations, the main diagnoses to be evoked in front of a breast dermatosis apart from the tumor pathology.

CASE REPORTS

Case 1

A 45-year-old female patient with no pathological history presented to our department with a six-month history of an ulceration of the right breast. A clinical examination revealed an erythematous ulceration with a raised, irregular border 1 cm in diameter (Fig. 1).

The ulceration sat at the lower internal quadrant of the right breast and had a dry base. Pressure on the lesion caused a seropurulent discharge. There was no nipple discharge or palpable adenopathy. Paraclinical examinations—namely, mammography, breast ultrasound, and a chest X-ray—were unremarkable.

Pus culture on Löwenstein–Jensen medium showed colonies of *Mycobacterium tuberculosis*. A histological examination of a skin fragment revealed a tuberculoid granuloma without caseous necrosis. The diagnosis of tuberculous mastitis was retained. Antituberculosis treatment was initiated with good clinical evolution.

How to cite this article: Kerrouch H, Khalidi M, Frikh R, Hjira N, Boui M. Breast dermatoses: Dermatologists coming to the rescue of gynecologists. Our Dermatol Online. 2022;13(3):289-292.

Submission: 02.11.2021; **Acceptance:** 15.02.2022

DOI: 10.7241/ourd.20223.11

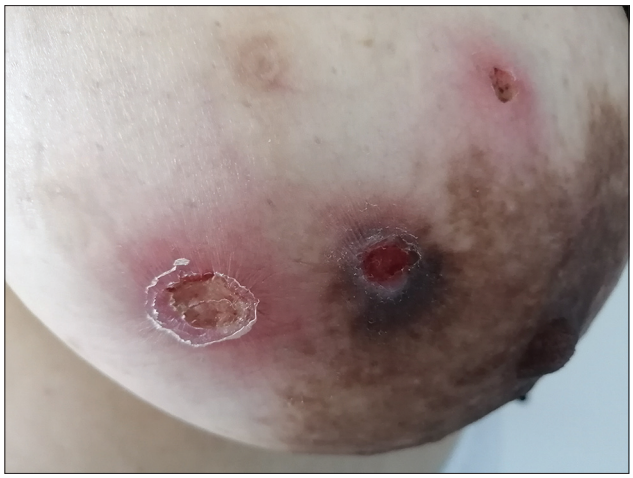


Figure 1: An erythematous ulceration sitting at the lower internal quadrant of the right breast.

Case 2

A 38-year-old female patient with no pathological history presented with erosive, non-infiltrated, violet, and erythematous patches evolving for six months, covering the areolar region and the nipple, with no evidence of nipple discharge or oozing (Fig. 2).

Outpatient antibiotic and dermocorticoid treatment was without clinical improvement. Bacteriological and mycological samples were sterile. A histological examination revealed a non-specific inflammatory infiltrate without cyto-nuclear atypia. A careful interrogation revealed the notion of family conflicts. A hospitalization with psychological care and a local treatment were initiated with an evolution marked by a complete regression of the lesions. The diagnosis of pathomimia was then retained.

Case 3

An 82-year-old female patient without a notable pathological history was diagnosed with an erythematous placard of the left breast that occurred three days after a biopsy of the same site for the histological exploration of a nodule.

A clinical examination revealed a painful erythematous placard 6 cm in diameter with local mechanical bullae and exulcerations located in the lower external quadrant of the left breast with the presence of a sensitive unilateral adenopathy of around 1 cm in diameter (Fig. 3).

On the biological level, an inflammatory syndrome was observed.

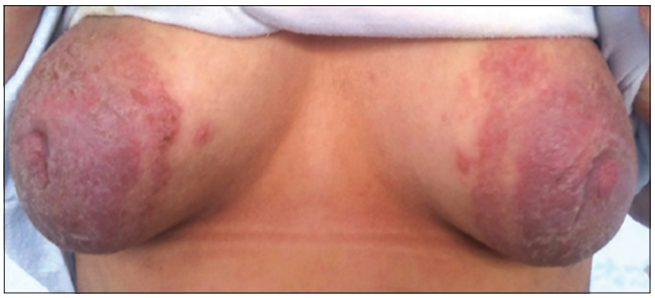


Figure 2: Erosive patches covering the areolar region and the nipple.

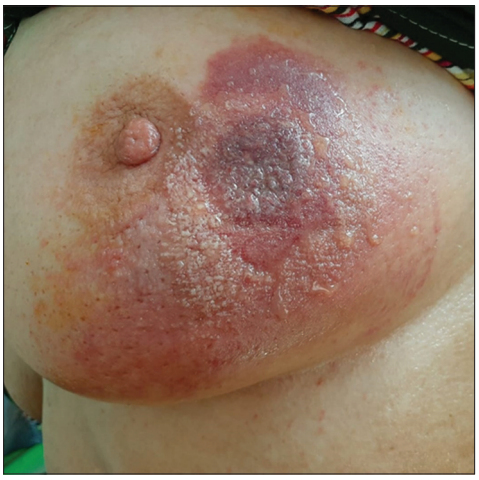


Figure 3: Erythematous placard and exulcerations located in the lower external quadrant of the left breast.

The diagnosis of infectious dermohypodermatitis with a common germ was retained and the patient was put under general antibiotic therapy and local care for fifteen days with good clinical and biological improvement.

Case 4

This patient was an eighteen-year-old female with no pathological history diagnosed with an erythematopruritic rash on both breasts that occurred 48 hours after the application of a cream containing sarsasapogenin (extracted from the roots of an Asian plant).

Upon clinical examination, an erythematous placard with crumbling edges surmounted by crusts in some places was noted on both breasts (Fig. 4).

The clinical aspect, the time of appearance, and the localization evoked contact eczema.

The patient was put on class III dermocorticoids at a rate of one application per day for seven days, then one application every other day for seven days. The local

skin signs regressed in a few days with a good clinical evolution.

Case 5

A 24-year-old female patient, who gave birth one year previously, presented with a non-regressive right breast engorgement. A clinical examination revealed ulcerative-bourgeous, infiltrated, erythematous, suppurative, and painless lesions of the right breast, which had been evolving for two months, with inflammatory arthralgias and erythema nodosum (Fig. 5).

On the biological level, a moderate inflammatory syndrome was observed.

Bacteriological and mycological examinations, as well as PCR tests for BK on pus and tissue samples, were negative.

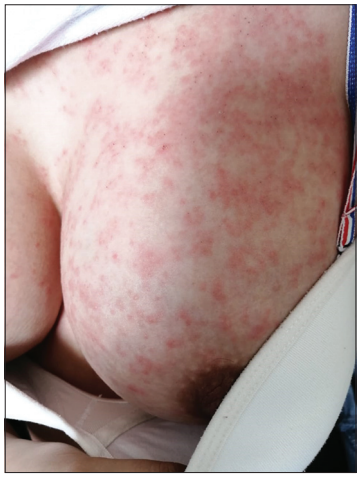


Figure 4: Erythematous placard with crumbling edges, surmounted by crusts in some places on both breasts.

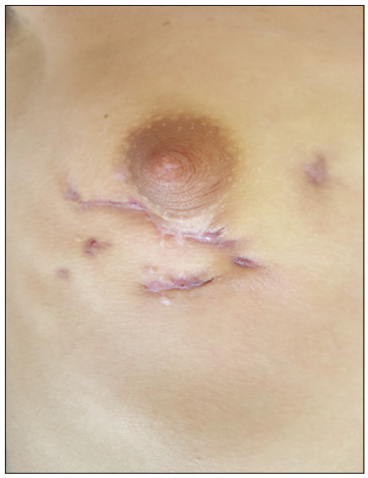


Figure 5: Ulcerative-bourgeous lesions of the right breast.

A skin biopsy with a breast biopsy revealed epithelioid and giganto-cellular granuloma without caseous necrosis.

The diagnosis of idiopathic granulomatous mastitis was retained and the patient was put on oral corticosteroid therapy with a good clinical and biological evolution.

DISCUSSION

Breast dermatoses include all dermatological symptoms located in the mammary gland and/or its skin covering or secondary to a general disease.

The evaluation and management of these dermatoses rely on a good knowledge of the anatomy and the emotional, cultural, and sexual values of this region.

Mammary tuberculosis was first described by Sir Astley Cooper in 1829 in London as "scrofulous swelling of the mammary gland" or "cold tumor of the breast" in a young woman with a swollen breast [4].

Breast tuberculosis is a highly rare form of tuberculosis [5,6]. The rarity of this clinical form may be explained by the fact that breast tissue seems to be poorly suited to the survival and multiplication of the tubercle bacillus [7]. It mainly affects young women [8].

The diagnosis of breast tuberculosis is always difficult for it may mimic a large number of conditions, particularly malignant. This is also due to the lack of specificity in its clinical and radiological signs. Only histological evidence guarantees a definite diagnosis [6].

The treatment is mainly based on anti-tuberculosis drugs, yet surgical treatment is sometimes necessary.

Pathomimicry is defined as a self-induced disease in a clearly conscious state by the patient himself, at the level of the mucocutaneous membrane or the dander [9].

It is a relatively rare condition and one of the most complex problems for a dermatologist [10].

Medical intervention is complex, associating both psychological work and medical and surgical treatment.

Dermohypodermatitis with a breast infection is generally of staphylococcal origin. They are most

often discovered at the stage of a breast abscess. The treatment is medical based on oral antibiotic therapy.

Contact dermatitis, also known as contact eczema, is a common inflammatory skin disease, occurring at the site of contact with non-protein chemical molecules.

In this area, the skin lesions are not different from other areas: They are erythematous and vesicular, sometimes discreetly scaly, and bullous in severe cases. They are associated with pruritus. The causative agent must be sought in order to avoid it, at best after performing patch tests.

Idiopathic granulomatous mastitis is a rare benign inflammatory mastopathy affecting women during their genital activity [11].

The definitive diagnosis is histological and its evolution remains capricious with a risk of recurrence. The treatment is medical, combining antibiotics and anti-inflammatory drugs. It is surgical in abscessed forms.

CONCLUSION

Dermatologic breast symptoms may be primary or secondary to an underlying disease. Directed paraclinical examinations are necessary to reach the diagnosis. They constitute a real challenge for both the dermatologist and the gynecologist.

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. Levy-Bencheton A, Agostini A. Dermatoses de l'aréole et du mamelon. EMC Dermatology. 2013;98-871-A-10.
2. Lachapelle JM, Borradori L. Dermatoses des seins. Dermatologie et infections sexuellement transmissibles 6ème édition. 2017;958-61.
3. Ryerson AB, Miller J, Eheman CR. Reported breast symptoms in the National Breast and Cervical Cancer Early Detection Program. Cancer Cause Control. 2015;26:733-40.
4. Zouhal A, Outifa M, Filali A, El amrani N, Bensaid F, El fehri SH, et al. Les tumeurs pseudonéoplasiques du sein: Tuberculose Mammaire à propos de 2 cas. Médecine du Maghreb. 2000;82:11–4.
5. Agoda-Koussema LK, Djibril AM, Adjenou KV, Gnakadja GN, Balaka A, Amegbor A, et al. Breast tuberculosis: A case report. J Afr Imag Méd. 2014;6:73-7.
6. Ben Hassouna J, Gamoudi A, Bouzaïene H, Dhiab T, Khomsi F, Chargui R, et al. [Mammary tuberculosis: A retrospective study of 65 cases]. Gynecol Obstet Fertil. 2005;33:870-6.
7. Marinopoulos S, Lourantou D, Gatzionis T, Dimitrakakis C, Papaspyrou I, Antsaklis A. Breast tuberculosis: Diagnosis, management and treatment. Int J Surg Case Rep. 2012;3:548-50.
8. Boukadoum N, Kaidi CH, Yassi F, Kheloufi F. Mastite tuberculeuse: un diagnostic à ne pas méconnaître. Imag Femme. 2012;22:221-3.
9. Gieler U, Consolf SG, Tomas-Aragones L, Linder DM. Selfinflicted lesions in dermatology: Terminology and classification, a position paper from the European society for dermatology and psychiatry. Acta Derm Venereol. 2013;93:4-12.
10. Uçmak D, Harman M, Meltem Akkurt Z. Dermatitis artefacta: A retrospective analysis. Cutan Ocul Toxicol. 2014;33:22-7.
11. Carmalt HL, Ramsey-Stewart G. Granulomatous mastitis. Med J Aust. 1981;1:356-9.

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

Our Dermatology Online

Case Report

Cutaneous B-cell lymphoma mimicking a keloid: Dermoscopy-assisted diagnosis

Uzair Khursheed Dar[1], Yasmeen Jabeen Bhat[1], Rohi Wani[2]

[1]Department of Dermatology, Venereology and Leprosy, Govt. Medical College Srinagar, J & K, India, [2]Department of Pathology, Govt. Medical College Srinagar, J & K, India.

Corresponding author: Uzair Khursheed Dar, MD, E-mail: uxairkhursheed@gmail.com

ABSTRACT

Primary cutaneous lymphomas are lymphoproliferative disorders having multiple heterogenous subtypes with a primary cutaneous manifestation in the absence of systemic involvement of the lymph nodes, bone marrow, or visceral organs at the time of diagnosis. Herein, we report the case of a 75-year-old male who presented with a single plaque on the back mimicking a keloid. Clinical and dermoscopic examinations led to the suspicion of a cutaneous malignancy, while histopathology and IHC confirmed a primary cutaneous B-cell non-Hodgkin's lymphoma. The lesion responded well to a R-CHOP chemotherapy regimen.

Key words: Skin cancer; Keloid; Dermoscopy

INTRODUCTION

Cutaneous lymphomas are a distinct subset of non-Hodgkin's lymphomas. They are cancers of the lymphocytes primarily involving the skin. The skin is the most common site of extranodal involvement, after the gastrointestinal tract, in non-Hodgkin's lymphomas [1].

Classification is based on the type of lymphocyte: B-lymphocyte (B-cell) or T-lymphocyte (T-cell). Cutaneous T-cell lymphoma (CTCL) is the most common type of cutaneous lymphoma, typically presenting with red, scaly patches or thickened plaques of skin that often mimic eczema or chronic dermatitis. B-cell lymphoma is much less common and accounts for 20–25% of cases [2]. Primary cutaneous B-cell lymphomas (PCBCLs) are B-cell lymphomas that originate in the skin and are present at the time of diagnosis without evidence of extracutaneous disease [3].

There are three types of primary cutaneous B-cell lymphoma: primary cutaneous marginal zone lymphoma (pcMZL), primary cutaneous follicle center lymphoma (pcFCL), and primary cutaneous diffuse large B-cell lymphoma (pcDLBCL) [4]. Classically, pcMZL presents as solitary or clustered deep-seated, red-to-violaceous, indurated plaques, nodules, or tumors. pcFCL is characterized by slow-growing, 2–5 cm in diameter, firm, smooth, erythematous-to-violaceous plaques, nodules, or tumors that rarely ulcerate and often have telangiectasias. pcDLBCL commonly presents as 2–5 cm erythematous-to-violaceous tumors or nodules on the leg, with 10–15% on non-leg locations [5].

CASE REPORT

A 75-year-old male with a medical history of type 2 diabetes mellitus and hypertension presented with a single, oval, reddish plaque, 11 × 10 cm in size, on the upper right back present for two months (Fig. 1a). It started as a papule and rapidly progressed in size over one month. The patient had no other symptoms, and general and systemic examinations revealed no abnormalities. The plaque was non-tender, firm in consistency, and was not fixed to the underlying structures. Dermoscopy was performed and showed

How to cite this article: Dar UK, Bhat YJ, Wani R. Cutaneous B-cell lymphoma mimicking a keloid: Dermoscopy-assisted diagnosis. Our Dermatol Online. 2022;13(3):293-295.

Submission: 19.12.2021; **Acceptance:** 03.03.2022

DOI: 10.7241/ourd.20223.12

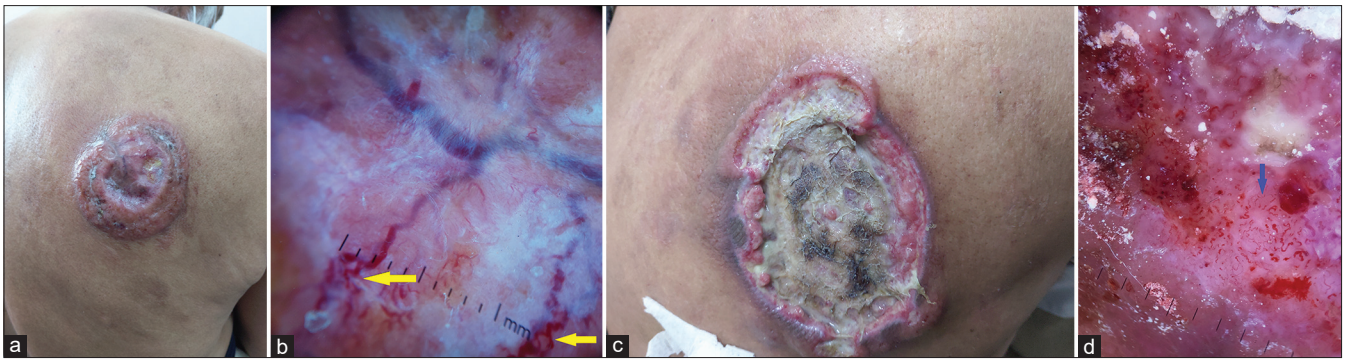


Figure 1: (a) The initial clinical presentation as an erythematous plaque mimicking a keloid. (b) Dermoscopy of the lesion showing a salmon-colored background and large and serpentine vessels (yellow arrows) (polarized, 10×, DermLite DL4). (c) Clinical image showing an ulcerated plaque that developed following an edge biopsy of the lesion. (d) Dermoscopy of the lesion from the margin following the ulceration showing a pinkish background, multiple spermatozoa-like blood vessels (blue arrows), hemorrhages, and whitish keratotic areas (polarized, 10×, DermLite DL3N).

a salmon-colored background with prominent, large, and serpentine vessels (Fig. 1b). An edge biopsy was taken from the lesion following the initial dermoscopic examination. The lesion ulcerated after several days of taking the biopsy, which favored the diagnosis of B-cell lymphoma (Fig. 1c). A further dermoscopic examination of the margins revealed multiple pseudopod vessels (spermatozoa-shaped) (Fig. 1d).

Hematological and biochemical investigations were within normal limits. Ultrasonography of the abdomen and pelvis was unremarkable. Histopathology of the biopsy revealed diffuse infiltration of the dermis by atypical cells with pleomorphic nuclei, coarse chromatin, and conspicuous nuclei with areas of necrosis and ulceration. Spongiosis, parakeratosis, and increased collagenization were present on microscopic examination (Figs. 2a and 2b). Immunohistochemistry revealed atypical cells that tested positive for LCA and CD20 and negative for CD3, TdT, Cyclin D1, CD10, and CD43. Whole-body PET-CT failed to show any extracutaneous involvement, and a diagnosis of high-grade primary cutaneous B-cell lymphoma was reached, following which the patient was initiated on a systemic R-CHOP chemotherapy regimen, to which the lesion responded (Fig. 3).

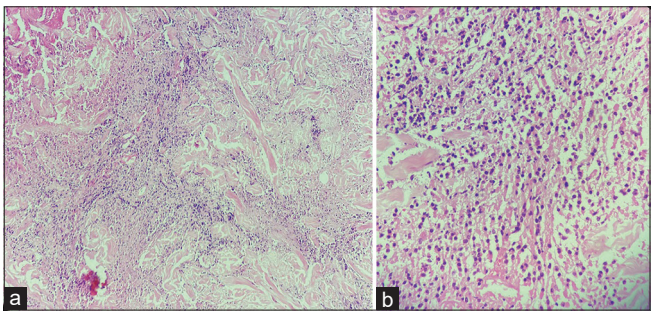


Figure 2: (a) Photomicrograph showing increased collagenization of the dermis with infiltration by dense mononuclear cells (H&E, 100×). (b) Photograph showing collagen with infiltrating lymphocytes and karyorrhexis (H&E, 400×).

DISCUSSION

Primary cutaneous B-cell lymphoma is characterized by clonal proliferation of B-cells primarily involving the skin. The absence of extracutaneous disease is a necessary condition for the diagnosis of PCBCL to be confirmed after a six-month follow-up to exclude a nodal non-Hodgkin's lymphoma (NHL) with secondary cutaneous involvement [6]. The differential diagnosis includes metastasis of small cell carcinoma, Merkel cell carcinoma, sarcoma, and pseudolymphoma. On dermoscopy, Merkel cell carcinomas show a polymorphic vascular pattern, composed of milky-red clods and areas in association with one or more additional vascular structures, such as serpentine or arborizing vessels [7]. Cutaneous sarcomas may present with a total delicate pigment network with the variable presence of multiple hypopigmented areas in piloleiomyomas, a pinkish-red tumor with vessels, white structures, the absence of ulceration in angioleiomyomas, an asymmetric, multilobulated tumor with linear-irregular or polymorphic-atypical vessels, and white structures in leiomyosarcomas [8]. Cutaneous band T-cell lymphomas, as well as pseudolymphomas, may look alike under dermoscopy [9].

Morphology and IHC aid in the diagnosis. In this case, we came across a tumor mimicking a keloid, yet a detailed history and clinical and dermoscopic examinations made us suspect this to be a case of cutaneous malignancy, which was confirmed by histopathological examination and IHC.

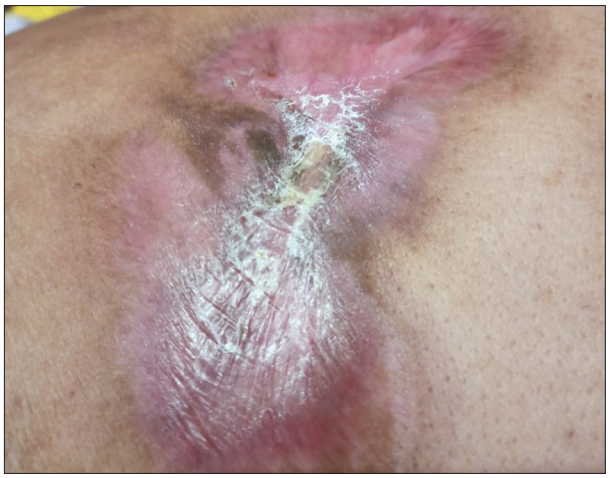


Figure 3: Clinical image of the lesion following four chemotherapy cycles (R-CHOP regimen) showing a regression.

CONCLUSION

The aim of reporting this case was to present a rarely found cutaneous malignancy with high chances of a wrong diagnosis and incorrect treatment if dermoscopy does not assist in the suspicion, which became confirmed by histopathological and immunohistochemical findings.

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. Slimani Y, Hali F, El Fatoiki F-Z, Skali HD, Beliamime I, Marnissi F, et al. Triple-negative diffuse large B-cell lymphoma: A distinct entity. Our Dermatol Online. 2021;12:427-9.
2. Mishra S, Shelly D, VinuBalraam KV, Bharadwaj R. Primary Cutaneous B-cell lymphomas: Case report of two cases. Indian J Dermatol. 2017;62:675.
3. Di Martino Ortiz B, Riveros R, Rodríguez L, Aguilar S, Rodríguez M, Knopfelmacher O, et al. [Diffuse primary B-cell lymphoma of large B-cell, leg-type. A case report]. Our Dermatol Online. 2019;10:151-5.
4. Swerdlow SH, Campo E, Pileri SA, Harris NL, Stein H, Siebert R, et al. The 2016 revision of the World Health Organization classification of lymphoid neoplasms. Blood. 2016;127:2375-90.
5. Goyal A, LeBlanc RE, Carter JB. Cutaneous B-cell lymphoma. Hematol Oncol Clin North Am. 2019;33:149-61.
6. Selva RL, Violetti SA, Delfino C, Grandi V, Cicchelli S, Tomasini C, et al. A literature revision in primary cutaneous B-cell lymphoma. Indian J Dermatol. 2017;62:146-57.
7. Elloudi S, Mernissi FZ. Dermoscopic appearance of a rare localization of Merckel carcinoma. Our Dermatol Online. 2021;12:e68.
8. Zaballos P, del Pozo L, Argenziano G, Medina C, Lacarrubba F, Ferrer B. Dermoscopy of cutaneous smooth muscleneoplasms: A morphological study of 136 cases. J Eur Acad Dermatol Venereol. 2019;33:693-9.
9. Geller S, Navarrete-Dechent C, Myskowski PL. Dermoscopy in lymphoproliferative disorders-experience from a cutaneous lymphoma clinic in a tertiary cancer center. J Am Acad Dermatol. 2019;80:e171-2.

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

Our Dermatology Online

Case Report

Aggressive epithelioid hemangioendothelioma of the forearm with scalp metastasis: A case report

Asmae Abdelmouttalib[1], Soumaya Hamich[2], Amine Haouzi[1], Mariame Meziane[1], Nadia Ismaili[1], Leila Benzekri[1], Karima Senouci[1]

[1]Dermatology and Venereology Department, Mohamed V University in Rabat, Morocco, [2]Traumatology Department, Mohamed V University in Rabat, Morocco

Corresponding author: Asmae Abdelmouttalib, MD, E-mail: abdelmouttalibasmae@gmail.com

ABSTRACT

Epithelioid hemangioendothelioma (EHE) is an extremely rare sarcoma whose target may be different organs, including soft tissue. The spectrum of the disease is highly variable between indolent and aggressive with extended metastases. Herein, we report a case of epithelioid hemangioendothelioma in the left forearm that progressed quietly for ten years before local and distant metastases appeared. Our case report aims to insist on the interest in the management of such tumors at an early stage because of the possible evolution toward metastasis, even after several years of asymptomatology.

Keywords: Hemangioendothelioma; Epithelioid; Soft tissue; Vascular tumor; Metastasis

INTRODUCTION

Epithelioid hemangioendothelioma (EHE) is an extremely rare sarcoma and, as such, may pose a clinical dilemma based solely on its rarity. In addition, the spectrum of the disease is highly variable between indolent and aggressive with extended metastases [1].

Herein, we report a case of epithelioid hemangioendothelioma in the left forearm that progressed quietly for ten years before local and distant metastases appeared.

CASE REPORT

A 38-year-old female presented for dermatological consultation with multiple tumors on the scalp evolving for the previous eight months. Her medical history was insignificant except for a tumor on the left forearm, neglected by the patient, having evolved for the last ten years and having gradually increased in volume. The evolution was marked during these last months by the appearance of pain in the tumefaction of the forearm as well as motor and sensory disorders of the same upper limb. She also presented a notion of weight loss calculated at 10 kg with asthenia. A general clinical examination found a cachexic and dyspneic patient. At the scalp level, the patient presented several ulcerated nodules, painful on palpation, with raised edges and indurated bases. The largest nodule measured 4 cm in its long axis (Fig. 1). On the left forearm, there was a tumor, soft and very painful, fixed at the deep plane. A neurological examination revealed a defect in the finger spacing capacity and in the overall grip of the hand. The rest of the clinical examination was unremarkable. A deep biopsy of the tumor from the forearm performed by traumatologists revealed an epithelioid hemangioendothelioma with foci of necrosis. A scalp biopsy confirmed skin metastases of the same malignant process. The rest of the extension assessment, which included cerebral and thoraco-abdominal CT scans, showed a secondary localization in the lungs (Fig. 2). MRI of the upper left extremity revealed a tissue mass in the anterior compartment of the forearm with bone invasion (Fig. 3). Although chemotherapy was recommended, the patient's condition deteriorated and she died the following month.

How to cite this article: Abdelmouttalib A, Hamich S, Haouzi A, Meziane M, Ismaili N, Benzekri L, Senouci K. Aggressive epithelioid hemangioendothelioma of the forearm with scalp metastasis: A case report. Our Dermatol Online. 2022;13(3):296-298.

Submission: 02.06.2021; **Acceptance:** 09.10.2021

DOI: 10.7241/ourd.20223.13

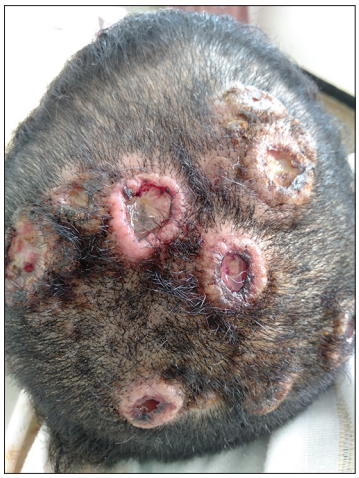


Figure 1: Several ulcerated nodules with raised borders in favor of skin metastases.

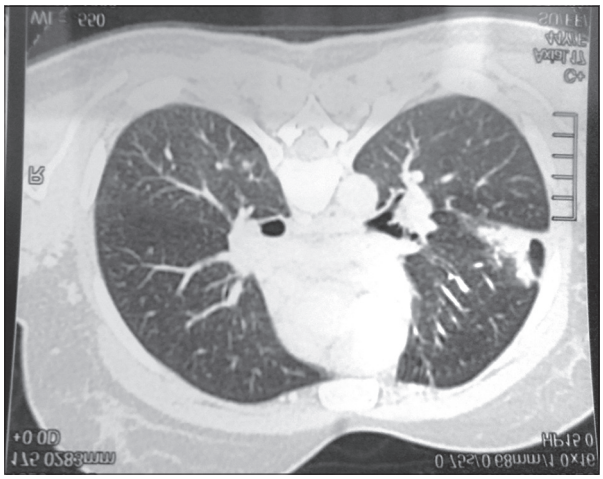


Figure 2: Secondary localization in the lungs.

DISCUSSION

EHE develops from vascular endothelial or pre-endothelial cells and any site in the body (bones, soft tissue, and other organs: lungs, liver, spleen, brain, breasts, heart) may be a target for the disease [2,3]. Epithelioid hemangioendothelioma (EHEM) of soft tissue is rare and is observed in middle-aged adults, rarely during childhood, and in both males and females [4].

The spectrum of the disease varies greatly between indolent and aggressive with widespread metastases [1]. It is characterized by clinical latency with a consultation time of up to ten years or more in one third of patients [5]. Occasionally, a patient may present with systemic manifestations such as weight loss and anemia, as in our patient [2,6]. Patients who are symptomatic or have a metastasis on presentation have a worse prognosis [7]. Histologically, it is an angiocentric vascular tumor consisting of epithelial endothelial cells in a fibro-myxoid stroma [5]. Some histological signs are correlated with a more aggressive tumor evolution and are found in 30% of cases of HEE: the presence of atypia, foci of necrosis, mitosis > 1mitosis per 10 fields under high magnification (40×) and foci of spindle-shaped cells [4,5,7]. In our case, large foci of necrosis were present. The treatment varies depending on the grade of malignancy. The treatment of low-grade forms of malignancy is essentially based on marginal resection with strict monitoring. In multicentric forms, adjuvant

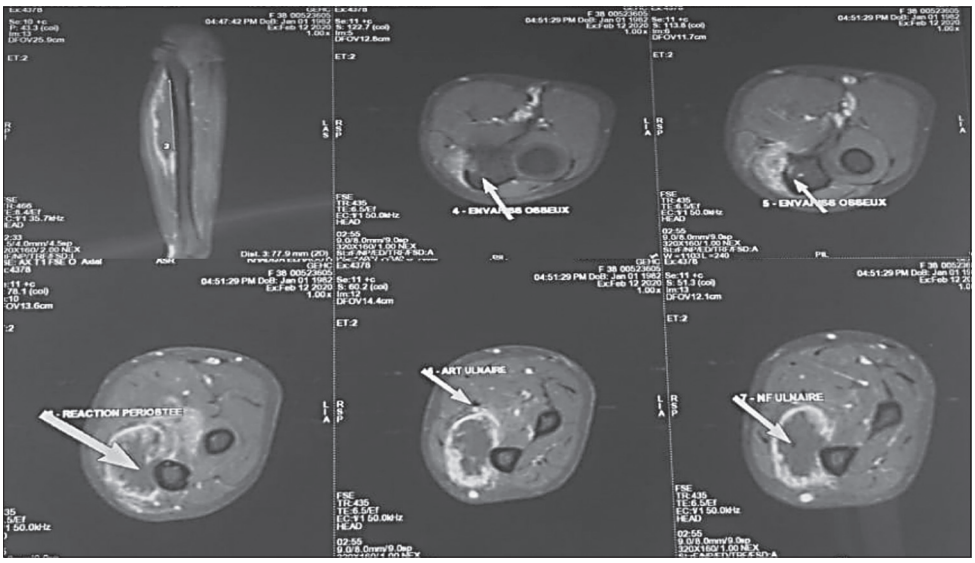


Figure 3: A tissue mass in the anterior compartment of the forearm with bone invasion: a periosteal reaction with a cortical rupture at the ulna and a compassion of the ulnar and median nerves (white arrows).

radiotherapy is indicated and seems to be effective. For high-grade forms of malignancy, the treatment consists of more radical surgery, while for aggressive multifocal forms, polychemotherapy has been used yet without efficacy [7]. New targeted agents such as pazopanib and afatinib have demonstrated anecdotal efficacy [1].

CONCLUSION

Our case report aims to insist on the importance of initially evaluating the aggressive nature of the disease, which will then dictate how urgently the patient needs to be treated.

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. Rosenberg A, Agulnik M. Epithelioid hemangioendothelioma: Update on diagnosis and treatment. Curr Treat Options Oncol. 2018;4:15-19.
2. Sardaro A, Bardoscia L, Petruzzelli MF, Portaluri M. Epithelioid hemangioendothelioma: An overview and update on a rare vascular tumor. Oncol Rev. 2014;2:258-9.
3. Sporn TA. Epithelioid hemangioendothelioma of the pleura: An aggressive vascular malignancy and clinical mimic of malignant mesothelioma. Histopathology. 2002;41:173-7.
4. Deyrup AT, Tighiouart M, Montag AG, Weiss SW. Epithelioid hemangioendothelioma of soft tissue: A proposal for risk stratification based on 49 cases. Am J Surg Pathol. 2008;32:924-7.
5. Fletcher CDM. Lyon: IARC Press; 2002. Tumors of soft tissue and bone Pathology and Genetics.
6. Bagan P, Hassan M, Le Pimpec Barthes F, Peyrard S, Souilamas R, Danel C, et al. Prognostic factors and surgical indications of pulmonary epithelioid hemangioendothelioma: A review of the literature. Ann Thorac Surg. 2006;82:2010-3.
7. Hannachi Sassi S, Mansouri D, Abbes I, Dhouib R, Driss M, Mrad K, Ben Ayed F, Ben Romdhane K. [Soft tissue epithelioid hemangioendothelioma: A case report]. Rev Chir Orthop Reparatrice Appar Mot. 2005;91:671-5.

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

Our Dermatology Online

Case Report

Pyoderma gangrenosum in a patient with metastatic breast cancer

Nouf Bin Rubaian[1,2], Amnah Al-Mulhim[3], Lenah Shaikh[3]

[1]Dermatology Department, King Fahad Hospital of the university, Imam Abdulrahman bin Faisal University, Dammam, Saudi Arabia, [2]Department of Dermatology, College of Medicine, Imam Abdulrahman bin Faisal University, Dammam, Saudi Arabia, [3]Section of Dermatology, Medicine Department, King Fahad Specialist Hospital, Dammam, Saudi Arabia

Corresponding author: Amnah Al-Mulhim, MD, E-mail: amna.almulhim@gmail.com

ABSTRACT

Pyoderma gangrenosum is a cutaneous ulcer diagnosed by exclusion. The underlining causes of pyoderma gangrenosum are numerous. Malignancy is a well-known underlying cause. Nonetheless, breast cancer is an uncommon cause, with few reported cases in the literature. There is no specific treatment of paraneoplastic pyoderma gangrenosum, apart from treating the underlying malignancy. Herein, we report a case of pyoderma gangrenosum with underlying breast cancer, successfully treated by systemic steroids, although the patient showed no response to anticancer therapy and expired shortly after the resolution of the cutaneous lesion. Further studies are needed to conclude the benefit of systemic steroids in paraneoplastic pyoderma gangrenosum, yet we recommend a trial of systemic steroids in the case of generalized resistant paraneoplastic pyoderma gangrenosum.

Key words: Pyoderma gangrenosum; Metastatic breast cancer; Systemic steroids

INTRODUCTION

Pyoderma gangrenosum is a dermatosis that presents as a painful ulcer with an undermined border. It affects females slightly more often than males, with an average age of onset of twenty to fifty years [1]. It is an idiopathic condition in 50% of cases, yet may be associated with inflammatory bowel disease, rheumatoid arthritis, and myeloproliferative disorders [1,2]. It is rarely associated with solid malignancies [2]. Herein, we report a case of extensive paraneoplastic pyoderma gangrenosum with original malignancy of the breast.

CASE REPORT

This was a 54-year-old female with type 2 diabetes, left breast cancer with metastasis to the liver, bone, and lymph nodes. She presented with a breast mass for three years, diagnosed as left breast invasive ductal carcinoma in September 2020, triple positive HER2, ER, PR on a palliative treatment of two cycles of letrozole, Herceptin, and pertuzumab. She presented with a one-month history of a single, painless papule with yellowish discharge, gradually ulcerating. Over the month, multiple similar, extensive, ulcerating lesions, ultimately healing with crustation, developed over the upper and lower extremities, buttock, and trunk. At that time, our team was consulted. Upon examination, the patient was ill-looking, cachectic, with multiple well-defined, undermined ulcers with violaceous borders and hemorrhagic necrotic crust ranging in size from several millimeters to 5 cm over the lower extremities, buttocks, back, abdomen, and arms. No lymphadenopathy was present. Swab was taken from the ulcers showing no growth. The patient initially refused biopsy and was managed with topical antibiotic ointment. One week later, the ulcers progressed and she agreed to undergo a biopsy, showing the typical features of pyoderma gangrenosum of negative PAS, GMS (Figs. 1a – 1c). A systemic steroid was discussed with the patient as an option for treatment. However, she preferred not to take the medication, worrying about a possible cancer

How to cite this article: Bin Rubaian N, Al-Mulhim A, Shaikh L. Pyoderma gangrenosum in a patient with metastatic breast cancer. Our Dermatol Online. 2022;13(3):299-301.

Submission: 19.10.2021; **Acceptance:** 05.04.2022

DOI: 10.7241/ourd.20223.14

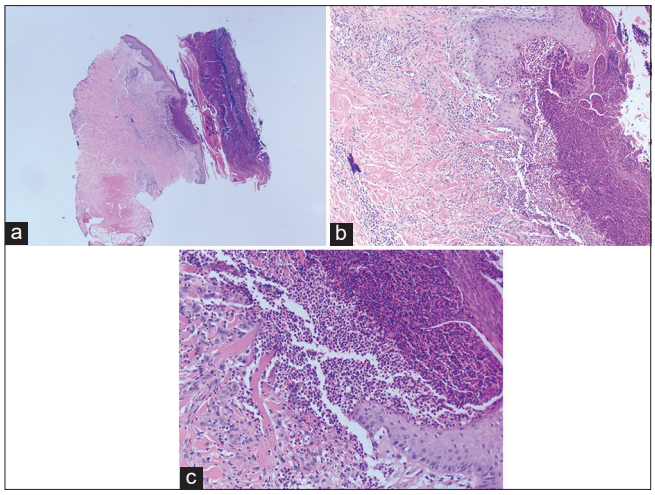


Figure 1: (a) Epidermis and dermis with purulent crust formation and ulceration in the dermis (H&E, 2×). (b) Dense inflammatory infiltrate in the epidermis and dermis with active inflammation and edema (10×). (c) Dense neutrophilic infiltrate mixed with lymphocytic infiltrate, no specific pathogen, granuloma, or viral changes seen and negative for malignancy (10×).

treatment interaction. She was started on topical clobetasol propionate ointment mixed with mupirocin ointment twice daily with a fair improvement. In November 2020, the patient developed pneumonitis as a complication of the medication and was started on oral prednisolone at a dose of 1 mg/kg with the complete resolution of the ulcers.

DISCUSSION

Pyoderma gangrenosum is a neutrophilic dermatosis that classically presents as an ulcer. The exact pathophysiology is not well understood, yet it has been reported that there is a neutrophil dysfunction and overexpression of IL-8, which is a potent neutrophil chemotactic factor [1-6].

Pyoderma gangrenosum is a diagnosis of exclusion. One must exclude other causes of the ulcer before labeling the patient as a case of pyoderma gangrenosum. Cutaneous ulcers may be due to infection, vasculitis, vasculopathy, malignancies, or drugs, among other causes [4].

Inflammatory bowel disease is a common association with pyoderma gangrenosum along with rheumatoid arthritis and hematological malignancies [4,5,7].

Solid organ malignancy is not a common association, yet it has been reported. In a literature review on paraneoplastic pyoderma gangrenosum in solid organ malignancy published in September 2019 in the International Journal of Dermatology, breast cancer was the most common underlying malignancy, followed by rectal cancer. The site of the lesion was widely distrusted between the breast and lower extremities. It was thought that the tumor mediates the production of GCSF, which causes an excess of neutrophils in the blood, which eventually infiltrate the dermis and, therefore, cause a pyoderma gangrenosum lesion. Our case had no lesion on the breast, yet they were on a distant site, on the legs.

Around 80% of the cases reviewed had pyoderma gangrenosum before the diagnosis of a tumor, and it resolved spontaneously after the treatment of the tumor, yet some needed a systemic steroid [1]. However, our patient had pyoderma gangrenosum after being diagnosed with metastatic breast cancer. The patient developed the lesions while she was receiving treatment from oncology, although the lesions resolved completely only when she took prednisolone.

In one case published in the Journal of Medical Case Reports by Renata et al., pyoderma gangrenosum was found to be a recurrent condition activated by a newly diagnosed breast cancer. The initial presentation in that patient was thirty years before the breast cancer diagnosis due to her rheumatoid arthritis exacerbation. What confirms the recurrence to be associated with the malignancy is the lack of a dramatic response after prednisolone and the complete resolution after the endocrine therapy of the breast cancer as the neoplastic cells expressed the estrogen receptor [2].

Twenty-five percent of patients with pyoderma gangrenosum develop pathergy, which means PG lesions on the site of trauma. Lesions may develop after surgery, skin grafting on the donor site, and the rejection of the autologous graft on the recipient site. This was reported in a case of bilateral breast reduction with wound dehisce and infection that did not fully heal after antibiotic therapy and rejected the skin graft multiple times because of the underlying pyoderma gangrenosum. Clues to pyoderma gangrenosum in surgical cases in addition to an incomplete response to antibiotics with local wound care and autologous skin graft rejections are the pain out of proportion of the ulcer, the sparing of the areola and suture lines, worsening of the lesion with debridement, and a prompt response to immunosuppressive therapy [3-5].

CONCLUSION

Pyoderma gangrenosum may be associated with breast cancer and it should be kept in mind if the patient

with breast cancer develops ulceration. It may develop even after the diagnosis of malignancy. Furthermore, if it shows no response to oncology treatment, we recommend a trial of systemic steroids.

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. Shah M, Sachdeva M, Gefri A, Jfri A. Paraneoplastic pyoderma gangrenosum in solid organ malignancy: A literature review. Int J Dermatol. 2020;59:154-8.
2. Duchnowska R, Ziajka E, Góralska A, Grala B. Recurrent pyoderma gangrenosum precipitated by breast cancer: A case report and review of the literature. J Med Case Rep. 2014;8:226.
3. Horner B, El-Muttardi N, Mercer D, Pyoderma gangrenosum complicating bilateral breast reduction. Br J Plast Surg. 2004;57:679-81.
4. Su WP, Davis MD, Weenig RH, Powell FC, Perry HO. Pyoderma gangrenosum: Clinicopathologic correlation and proposed diagnostic criteria. Int J Dermatol. 2004;43:790-800.
5. Ruocco E, Sangiuliano S, Gravina AG, Miranda A, Nicoletti G. Pyoderma gangrenosum: An updated review. J Eur Acad Dermatol Venereol. 2009;23:1008-17.
6. Pandey K, Shishak M, Yadav N. Pyoderma gangrenosum: An ulcerative variant developing at a paraincisional LSCS scar site. Our Dermatol Online. 2021;2:153-5.
7. Belanouane S, Hali F, Baline K, Chiheb S, Marnissi F, Hliwa W. A rare case of malignant pyoderma associated with ulcerative colitis both treated effectively with adalimumab. Our Dermatol Online. 2020;11:393-6.

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

Our Dermatology Online

Case Report

Unusual keloidal granuloma faciale recalcitrant to several treatments

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

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

Corresponding author: Lina Al Soufi, MD, E-mail: fawalheba6@gmail.com

ABSTRACT

Granuloma faciale is a rare chronic skin disorder characterized by asymptomatic papules, nodules, and plaques on the face. Although its pathogenesis is unknown, researchers have suggested that one of the main causative factors may be sun exposure, as lesions are aggravated by sunlight and favor light-exposed areas. Herein, we are reporting the case of an adult female patient with keloidal granuloma faciale treated with a combination of several treatment methods with no improvement and a relapse. In this case, we attempted to highlight the difficulties that the doctor faces in treating the disease and to share the medical literature of our treatment experience.

Key words: Granuloma faciale; Keloidal; Chronic skin disorder; Grenz zone

INTRODUCTION

Granuloma faciale (GF) is a rare, idiopathic dermatosis of benign course and chronic progression characterized by single or multiple, reddish-brown or violaceous, cutaneous nodules or plaques, and their surface may show the exaggeration of follicular openings, telangiectasis, or scaling, most frequently on the face [1]. The term *granuloma faciale* was coined by Wigley in 1945, referring to the condition as eosinophilic granuloma of the skin [2,3]. The plaque is usually located on the face, yet may sometimes appear on the trunk, extremities, or in the nasal cavity (extrafacial GF) [4]. The disease may be seen at any age, yet is primarily a disease of middle age and is more common in males [5]. Granuloma faciale is confined to the skin and there is no systemic involvement, even in patients with disseminated lesions. The disease is usually difficult to treat and has a recurring character, with periods of exacerbation. Spontaneous resolution is rare.

CASE REPORT

A fifty-year-old Syrian female patient presented with asymptomatic, bilateral lesions on the face persistent for twenty years, which had become more pronounced with solar exposure. It began on the left side of the face as nodular eruptions, which had increased in size to form a large tumor. A general examination was within normal limits. A dermatological examination revealed the presence of multiple, brownish, erythematous papules of well-defined limits, located in the malar region. The surface of the lesions was smooth with follicular openings, telangiectasia, and palpable hardness (Fig. 1).

Several previous biopsies were performed and were consistent with the diagnosis of granuloma faciale. However, a histological examination revealed a rectified epidermis, with a subepidermal grenz zone separating the nodular dermal inflammatory infiltrate, composed predominantly of lymphocytes, histiocytes, neutrophils, and numerous eosinophils. There was no granuloma seen. No fungal elements were seen on Giemsa stain. Based on the clinical picture and histological examination, the diagnosis of granuloma faciale was confirmed (Fig. 2).

The condition had undergone numerous treatments, including topical steroids and cryotherapy, then

How to cite this article: Al Soufi L, Fawal H, Al-Shehabi Z. Unusual keloidal granuloma faciale recalcitrant to several treatments. Our Dermatol Online. 2022;13(3):302-304.

Submission: 18.02.2022; **Acceptance:** 05.04.2022

DOI: 10.7241/ourd.20223.15

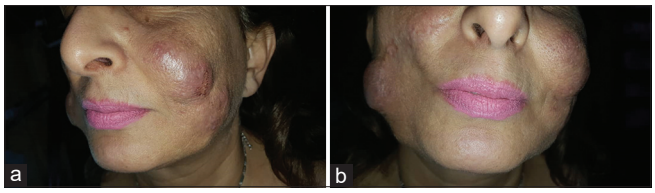


Figure 1: (a and b) Reddish-brown nodules on the left and right cheeks (notice the scar on the right side after the surgical removal of the lesion).

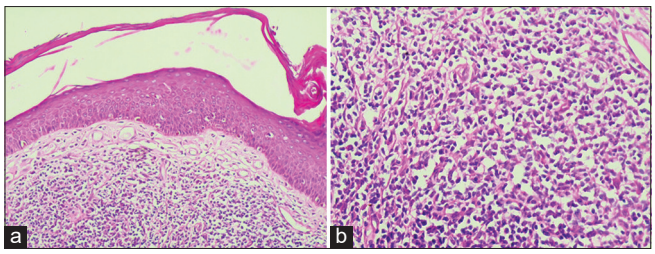


Figure 2: (a) Skin biopsy showing a subepidermal grenz zone separating the nodular dermal inflammatory infiltrate, composed predominantly of lymphocytes, histiocytes, neutrophils, and numerous eosinophils (H&E, 100×). (b) Perivascular infiltrates could penetrate the vascular wall and cause leukocytoclasis (H&E, 200×).

treatment with dapsone in combination with systemic corticosteroids yielded good results, yet the lesions relapsed after stopping the treatment.

Afterward, the patient was treated with antimalarials drugs in combination with systemic steroids, additionally to intralesional injection of triamcinolone and CO_2 fractional laser without improvement.

After the failure of the previous treatments, a surgical excision of the lesions was performed, which led to the healing of the nodular lesions, yet a recurrence occurred after one year on the wound edges of the lesion on the left cheek. A clinical response was evaluated by measuring the size and thickness of the GF.

DISCUSSION

Granuloma faciale (GF) is considered a localized form of small vessel vasculitis with frequent leukocytoclasis [1,6]. Granuloma faciale is a misnomer as granuloma formation is not a histopathological feature of this disease [2]. Clinically, it is characterized by single or multiple, asymptomatic, reddish-brown to violaceous papules, nodules, and plaques. The lesions are typically localized on the face, yet may uncommonly be extrafacial [6,7]. Researchers have suggested that one of the main causative factors for the disease may be sun exposure as lesions are aggravated by sunlight and favor light-exposed areas [8]. Although the clinical presentation of GF is usually characteristic, the diagnosis may be delayed by the relative rarity of the disease and the presence of numerous other pathologies with clinical similarities.

There are several main differential diagnoses, including lymphoma and pseudo-lymphoma, sarcoidosis, lupus erythematosus tumidus, polymorphous light eruption, fixed pigmented erythema, erythema elevatum diutinum, foreign body granuloma, and granulomatous rosacea [9]. The disease tends to be refractory to several therapeutic modalities, including topical and intralesional corticosteroids, antimalarial drugs, dapsone, surgical excision, phototherapy, cryosurgery, dermabrasion, electrosurgery, as in the case of our patient. The specificity of the disease in terms of its refraction to treatment constitutes a challenge for doctors and causes a psychological problem for the patient. However, more recent studies have shown good results after four months with topical tacrolimus 0.1% [10]. Meanwhile, other studies have shown good and promising results with intralesional rituximab [11]. In this case, we attempted to highlight the difficulties that the doctor faces in treating the disease and to share the medical literature of our treatment experiences.

CONCLUSION

Herein, we have reported a case of a refractory keloidal granuloma faciale in an adult female patient persistent for twenty years. GF is a highly persistent disease that resists treatment. However, dermatologists should be encouraged to share experiences regarding the management of granuloma faciale in future publications, due to the low incidence of GF, which would provide a greater opportunity to exchange these therapeutic experiences.

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. Ortonne N,Wechsler J, Bagot M, Grosshans E, Cribier B. Granuloma faciale: A clinicopathologic study of 66 patients. J Am

Acad Dermatol. 2005;53:1002-9.
2. Ziemer M, Koehler MJ, Weyers W. Erythema elevatum diutinum: A chronic leukocytoclastic vasculitis microscopically indistinguishable from granuloma faciale? J Cutan Pathol. 2011;38:876-83.
3. Wigley JE. Eosinophilic granuloma? Sarcoid of Boeck. Proc R Soc Med. 1945;38:125-6.
4. Konohana A. Extrafacial granuloma faciale. Dermatol. 1994;21:680-2.
5. Lindhaus C, Elsner P. Granuloma faciale treatment: A systematic review. Acta Derm Venereol. 2018;98:14-8.
6. Deen J, Moloney TP, Muir J. Extrafacial granuloma faciale: A case report and brief review. Case Rep Dermatol. 2017;9:79-85.
7. Nasiri S, Rahimi H, Farnaghi A, Asadi-Kani Z. Granuloma faciale with disseminated extra facial lesions. Dermatol Online J. 2010;16:5.
8. Burgdorf WHC. Granuloma faciale. In: Freedberg IM, Eisen AZ, Wolff K, Austen KF, Goldsmith LA, Katz SI, Fitzpatrick TB, editors. Fitzpatrick's dermatology in general medicine. 5th ed. New York: McGraw-Hill; 1999. p. 1138-40.
9. Oliveira CC, Ianhez PE, Marques SA, Marques ME. Granuloma faciale: Clinical, morphological and immunohistochemical aspects in a series of 10 patients. An Bras Dermatol. 2016;91:803-7.
10. Lima RS, Maquiné GÁ, Silva Junior RC, Schettini AP, Santos M. Granuloma faciale: A good therapeutic response with the use of topical tacrolimus. An Bras Dermatol. 2015;90:735-7.
11. Morgado-Carrasco D, Giavedoni P, Mascaró JM Jr, Iranzo P. Assessment of treatment of refractory granuloma faciale with intralesional rituximab. JAMA Dermatol. 2018;154:1312-5.

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

Our Dermatology Online

Case Report

A familial case report of pili torti, pili annulati, and trichorrhexis nodosa showing autosomal dominant inheritance with microscopic findings

Vijeta Prasad, Alpana Mohta, Prasoon Soni, Sumiti Pareek

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

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

ABSTRACT

Hair shaft disorders encompass a wide range of hair shaft defects with or without fragility, which could be acquired or inherited genetically. Hair shaft defects may be localized or generalized and are characterized by changes in color, structure, length, and density. Pili torti, also called twisted hair, is a clinical entity in which the hair shaft is flattened and twisted by 180° along its axis. Pili annulati is described as striped hair, showing alternate light and dark bands. Trichorrhexis nodosa is the fracture of the hair shaft. Pili annulati and trichorrhexis nodosa has been reported in a single patient. Herein, we report a familial case of pili torti, pili annulati, and trichorrhexis nodosa with autosomal dominant inheritance.

Keywords: Hair shaft disorders; Pili torti; Pili annulati; Trichorrhexis nodosa

INTRODUCTION

Alterations in the hair shaft may be an acquired condition as well as inherited in an autosomal dominant, autosomal recessive, or X-linked manner. A hair shaft defect may be an isolated finding or may be associated with several types of disorders. A complete physical examination along with a microscopic examination is essential for the clinical evaluation and confirmation of the diagnosis [1]. Pili torti is classified as a hair shaft defect with fragility, in which there is flattening and twisting of the hair by 180° [2]. Pili annulati is a hair shaft abnormality characterized by air-filled cavities that, under light microscopy, appear as alternate light and dark bands [3]. Trichorrhexis nodosa is the fracture of the hair shaft appearing as nodes, mostly acquired due to weathering or chemical trauma, yet may rarely be seen with some congenital disorders as well [4].

CASE REPORT

Case 1

A six-year-old female presented with short, lusterless, and fragile blonde hair and complained of her hair not growing in length. On the physical examination of the scalp, diffuse hypotrichosis was present and individual hairs were easily pluckable. On dermoscopy, the hair varied in the hair shaft diameter as well as the color from light brown to some black hairs. The eyebrows and the rest of the body hair were also sparse. The oral mucosa, teeth, and nails were normal. The child had atopic dermatitis and the rest of the skin examination was normal. She showed normal psychomotor development according to her age. Audiometry and ocular examinations were normal. A light microscopic examination showed pili torti, pili annulati, trichorrhexis nodosa, and normal hair (Figs. 1 – 2).

Case 2

A five-year-old brother of case one had similar clinical (Fig. 3a), dermatoscopic, and light microscopic findings. He also had sparse body hair and atopic dermatitis. The rest of the clinical examination was normal, except for the presence of livedo reticularis on the bilateral lower limb (Fig. 3b). ECG and 2D echocardiography were normal.

How to cite this article: Prasad V, Mohta A, Soni P, Pareek S. A familial case report of pili torti, pili annulati, and trichorrhexis nodosa showing autosomal dominant inheritance with microscopic findings. Our Dermatol Online. 2022;13(3):305-307.

Submission: 20.08.2021; **Acceptance:** 28.04.2022

DOI: 10.7241/ourd.20223.16

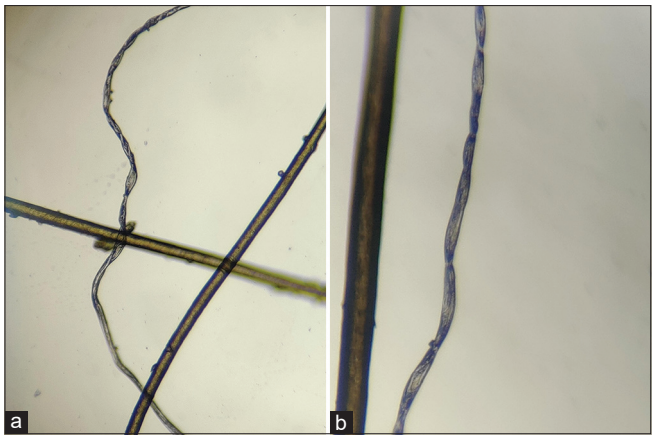


Figure 1: (a and b) Microscopic images of pili torti.

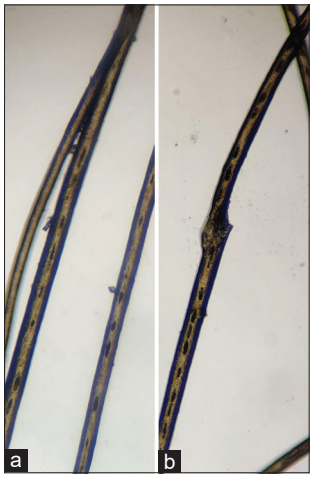


Figure 2: (a) Microscopic image of pili annulati. (b) Microscopic image showing pili annulati and trichorrhexis nodosa in the same hair shaft.

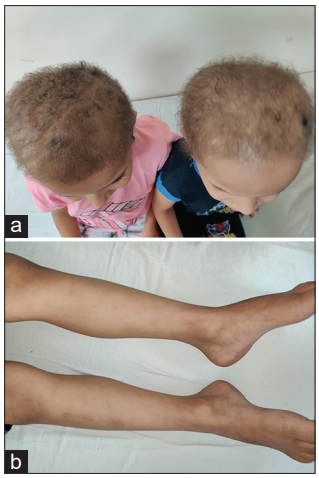


Figure 3: (a) Short, lusterless, fragile blonde hair with reduced hair density. (b) Livedo reticularis in case two.

On eliciting a detailed family history, the children's mother and one of the maternal aunts had similar hair. The rest of the mother's siblings and family members had no similar findings.

DISCUSSION

Hair shaft disorders are a group of diseases in which there is structural abnormality of the hair with and without fragility. It may be genetic such as monilethrix, pili torti, pili annulati, trichothiodystrophy, genetic trichorrhexis nodosa, wooly hair, etc., as well as acquired such as bubble hair, acquired trichorrhexis nodosa, plica polonica, etc. [2-6]. Pili annulati is a rare hair shaft defect without fragility, in which the hair shows alternate bright and dark bands when observed under reflected light. The bright bands are due to the scattering of light by a cluster of air-filled cavities within the hair shaft. These air-filled cavities in the hair, when viewed under light microscopy, appear as dark [3]. Pili annulati may be seen sporadically or inherited as an autosomal dominant trait. Although pili annulati has been classified as a hair shaft defect without fragility, fragility may be found due to associated trichorrhexis nodosa [7,8]. Trichorrhexis nodosa is the most common among all hair shaft defects and is characterized by hair shaft fracture due to damage to the cuticle and intercellular cement responsible for binding cells together [4]. It may be congenital or acquired. The acquired form is classified as proximal, distal, or circumscribed, occurring due to chemical and physical damage such as blow drying, ironing, and overbrushing. When the fractured part is viewed under light microscopy, separated and splayed-out cortical cells give a thrust paint brush appearance [4]. It may be seen in association with citrullinemia, argininosuccinic aciduria, and tricho-hepato-enteric syndrome. Pili torti is the flattening and twisting of the hair shaft on its own axis by an angle of 180 degrees [2]. It may be inherited or acquired, as in anorexia nervosa and retinoid therapy. It has been reported classically with ectodermal dysplasia and Björnstad syndrome, an autosomal recessive condition with hearing loss [2]. It may also be seen in mitochondrial disorders, urea cycle defects, Menkes disease, and Laron syndrome. A child with pili torti may have abnormal hair from birth or the hair may be normal becoming abnormal during infancy. It may be associated with absent and sparse body hair. There is no specific treatment available for hair shaft disorders. Pili torti may improve in puberty.

CONCLUSION

So far, there have been case reports of trichorrhexis nodosa with pili annulati [7,8]. To the best of our knowledge, ours is the first case of pili torti, pili annulati,

and trichorrhexis nodosa in the same individual with autosomal dominant inheritance.

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. Itin PH, Fistarol SK. Hair shaft abnormalities--Clues to diagnosis and treatment. Dermatology. 2005;211:63-71.
2. Yang JJ, Cade KV, Rezende FC, Pereira JM, Pegas JR. Clinical presentation of pili torti--Case report. An Bras Dermatol. 2015;90:29-31.
3. Akoglu G, Emre S, Metin A, Erbil K M, Akpolat D, Firat A, Hayran M. Pili annulati with fragility: Electron microscopic findings of a case. Int J Trichol. 2012;4:89-92.
4. Kharkar V, Gutte R, Thakkar V, Khopkar U. Trichorrhexis nodosa with nail dystrophy: Diagnosis by dermoscopy. Int J Trichol. 2011;3:105-6.
5. Mancy A. Generalized wooly hair with new associations: A case report. Our Dermatol Online. 2021;12:304-6.
6. Bhat YJ, Shah FY, Keen A. Plica polonica: Trichoscopic findings with a brief literature review. Our Dermatol Online. 2021;12:37-9.
7. Gonzalez AM, Borda LJ, Tosti A. Pili annulati with severe trichorrhexis nodosa: A case report and review of the literature. Skin Appendage Disord. 2019;5:114-6.
8. Donati A, Andriolo AC, Barletta M, Valente N, Romiti R. Pili annulati and trichorrhexis nodosa in the same patient: Cause or coincidence? Skin Appendage Disord. 2015;1:25-7.

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

Our Dermatology Online

Case Report

Zinc-responsive acral hyperkeratotic dermatosis

Ritu Rani[1], Reena K Sharma[1], Mudita Gupta[2]

[1]Department of Dermatology, Civil Hospital Kangra, H.P., India, [2]Department of Dermatology, IGMC Shimla, H.P., India

Corresponding author: Reena K Sharma, MD, E-mail: drreena99@gmail.com

ABSTRACT

Zinc-responsive acral dermatitis is a rare entity characterized by chronic, persistent, well-defined, hyperpigmented, and hyperkeratotic plaques on the acral regions of the body. One needs to differentiate this disease from its close differentials such as necrolytic migratory erythema and pellagra. Herein, we report a case of zinc-responsive acral hyperkeratotic dermatosis in a 35-year-old female previously treated with multiple topical drugs without any significant improvement. The diagnosis of zinc-responsive dermatosis should be kept in mind in the case of treatment-refractory, hyperpigmented plaques on the hands and feet.

Keywords: Acral hyperkeratosis; Necrolytic migratory erythema; Zinc

INTRODUCTION

Zinc-responsive acral dermatitis is a rare clinical disorder with distinctive clinical features showing a significant response to oral zinc therapy. Clinically, it is characterized by well-defined, hyperpigmented, hyperkeratotic plaques distributed symmetrically on the acral regions of the body [1]. Herein, we describe the case of a 35-year-old female presenting with hyperpigmented plaques on the dorsa of the hands and feet responsive to oral zinc therapy.

CASE REPORT

A 35-year-old female presented with persistent darkening and thickening of the hands and feet for the last two years and a history of multiple consultations and being treated with topical steroids, tacrolimus, vitamin D analogs, and antihistamines but without improvement. On clinical examination, the lesions were well-defined, hyperpigmented, hyperkeratotic plaques on the dorsa of both hands and feet (Figs. 1a and 1b). No other skin lesions were found. The hair, nail, and oral mucosas were normal. We kept the possibility of necrolytic acral erythema, zinc-responsive dermatosis, and pellagra. We investigated the patient against the possible cause, including a complete hemogram, a urine routine test, liver and renal function tests, serology for hepatitis B, C, and HIV, and serum zinc levels. Routine investigations were normal except for mild anemia. The alkaline phosphatase levels were 32 IU/L, slightly lower than the normal range (40–120 IU/L). Serum zinc levels were 60 μg/dL, slightly less than the normal range (70–120 μg/dL). The viral serological markers were found to be negative. Other systemic gastrointestinal and neurological symptoms, the Casal necklace around the neck, were not seen as in the case of pellagra (Fig. 1c). The hepatitis C viral marker associated with necrolytic acral erythema was also negative. As the patient was unresponsive to topical steroids and other immunomodulators previously along with lower levels of zinc and alkaline phosphatase found on investigations, we made the final diagnosis of zinc-responsive dermatosis and decided to put the patient on oral zinc therapy at the dose of 200 mg three times a day for at least six weeks along with emollients. A follow-up at six weeks was done and a remarkable response to treatment was noted (Fig. 1d).

DISCUSSION

Zinc-responsive acral hyperkeratotic dermatosis is a rare entity characterized by well-defined, hyperpigmented

How to cite this article: Rani R, Sharma RK, Gupta M. Zinc-responsive acral hyperkeratotic dermatosis. Our Dermatol Online. 2022;13(3):308-310.
Submission: 05.05.2021; **Acceptance:** 02.11.2021
DOI: 10.7241/ourd.20223.17

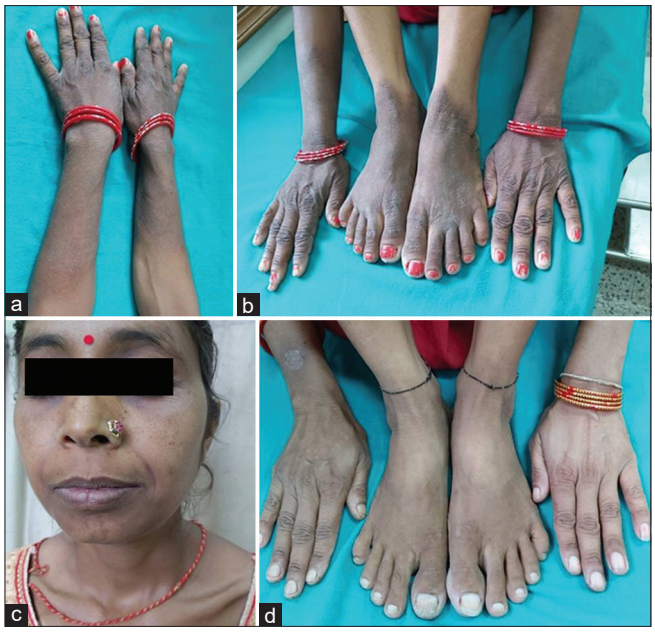


Figure 1: (a-b) Presence of well-defined, hyperpigmented plaques on the dorsa of both hands and feet. (c) Absence of the pellagra-associated casal necklace. (d) Resolution of the lesions after six weeks of oral zinc therapy.

plaques on the acral parts of the body [1]. The diagnosis requires a strong suspicion along with ruling out close differential diagnoses such as necrolytic acral erythema and pellagra. A rapid response to zinc therapy helps to establish the diagnosis of zinc-responsive dermatosis.

Necrolytic acral erythema (NAE) manifests itself similarly as well-circumscribed, violaceous plaques with or without scales, symmetrically distributed on the acral areas. However, it may be present on the Achilles tendons, malleoli, legs, and knees. Less frequent sites of involvement include the elbows, hands, buttocks, and genitalia [2]. It may be associated with metabolic alterations such as hypoalbuminemia, hypoaminoacidemia, increased glucagon levels, hyperglycemia, and deranged liver function [3]. NAE has been considered to be a cutaneous marker of hepatitis C infection [4,5]. However, cases of NAE have been reported all over the world in those who are seronegative to the hepatitis C virus (HCV) [6,7].

Cases of pellagra have significantly decreased after the late 90s and only certain high-risk groups are affected, in which the staple diet is corn or maize. It mainly occurs due to a deficiency of niacin and affects the skin and the gastrointestinal and nervous systems. The four classic Ds of the disease are dermatitis, dementia, diarrhea, and death [8]. The typical rash in pellagra involves the photo-exposed parts of the hands and feet and the Casal necklace around the neck [9,10]. Low serum niacin levels and a remarkable improvement after nicotinamide therapy may aid in the diagnosis.

Herein, we report a unique presentation of treatment-refractory hyperkeratotic acral plaques and their significant response to oral zinc therapy, urging dermatologists to adopt a wider approach to their diagnosis. Knowledge of the condition and close differentials taken into account will help in early diagnosis and treatment without an unnecessary investigation burden.

CONCLUSION

The diagnosis of zinc-responsive acral hyperkeratotic dermatosis should be considered in the case of chronic and treatment-refractory hyperpigmented plaques on the acral parts of the body.

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. Ghosh A, Aggarwal I, De A, Samanta A, Chatterjee G, Bala S, et al. Zinc-responsive acral hyperkeratotic dermatosis-A novel entity or a subset of some well-known dermatosis? Indian J Dermatol. 2015;60:136-41.
2. Inamadar AC, Shivanna R, Ankad BS. Necrolytic acral erythema: Current insights. Clin Cosmet Investig Dermatol. 2020;13:275-81.
3. Ilyas S, Cheema SM, Rashid T. Necrolytic acral erythema: A rare entity. J Pak Assoc Dermatol. 2016;26395-8.
4. Das A, Kumar P, Gharami RC. Necrolytic acral erythema in the absence of hepatitis C virus infection. Indian J Dermatol. 2016;61:96-9.
5. Botelho LF, Enokihara MM, Enokihara MY. Necrolytic acral erythema: A rare skin disease associated with hepatitis C virus infection. An Bras Dermatol. 2016;91:649-51.
6. Srisuwanwattana P, Vachiramon V. Necrolytic acral erythema in seronegative hepatitis C. Case Rep Dermatol. 2017;9:69-73.
7. Pandit VS, Inamadar AC, Palit A. Seronegative necrolytic acral erythema: A report of two cases and literature review. Indian Dermatol Online J. 2016;7:304-7.
8. Brahmaiah U, Parveda AR, Hemalatha R, Laxmaiah A. Pellagra:

A forgotten entity. Clin Dermatol Rev. 2019;3:126-9.
9. Gupta SK, Arora AK, Sood N, Kaur S. Pellgra revisited. Indian Dermatol Online J. 2014;5:525-6.
10. Harsha N S, Suraj B M, Kanakavidu SS, Kodali R. Pellagra: A forgotten ailment in current clinical practice. Med J DY Patil Vidyapeeth. 2019;12:78-80.

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

Clinical Image

Blue scales on an "iced" scalp

Javier Gimeno-Castillo[1], Adriano Pablo Martínez Aracil[2], Aida Menéndez Parrón[1]

[1]Department of Dermatology, Hospital Universitario Araba, Vitoria, Spain, [2]Department of Pathology, Hospital Universitario Araba, Vitoria, Spain

Corresponding author: Javier Gimeno-Castillo, MD, E-mail: javiergimenocastillo@gmail.com

Although the diagnosis of actinic keratosis (AK) is mainly clinical, dermoscopy is a highly useful and accurate diagnostic technique. The dermoscopic features of AK include the strawberry pattern with white areas, keratotic, follicular openings, a pseudonetwork, and rosettes [1].

An 82-year-old male with a personal history of type 3 autoimmune polyglandular syndrome and hypertension was referred to the dermatology department due to the presence of scaly lesions located on the scalp and forehead. A physical examination revealed asymptomatic, keratotic lesions on the forehead and in the occipital region (Fig. 1a). The patient denied the application of any product except toning shampoo for white hair. Interestingly, the lesions had a blue, superficial scale, although they clinically resembled AK. Dermoscopy evidenced an erythematous background with multiple, arctic-blue, keratotic plugs (Fig. 1b). Moreover, a superficial excision of one of the lesions was performed, evidencing solar elastosis and a chronic dermal infiltrate, as well as basal keratinocytes with loss of polarity, presenting with irregular nuclei (Fig. 2). Thus, the clinical and pathological correlation confirmed the diagnosis of AK. The lesions were treated with cryotherapy leading to their resolution.

Blue AK has been termed AK neglecta while the dermoscopic blue coloration the iceberg sign [2,3]. The latter is described to be caused both by sunscreens containing titanium dioxide [3] or shampoos containing Acid Violet (present in the shampoo that the patient used) [2]. Moreover, this exogenous pigmentation may easily be removed with alcohol [3]. Histologically, a basophilic amorphous material on the stratum corneum is described to be present [2]. A lack of this finding in our case might have been explained due to the 10% formol used to preserve the biopsy, eliminating the pigment. Recognizing this presentation is essential due to the widespread use of toning shampoos and sunscreens among the elder population.

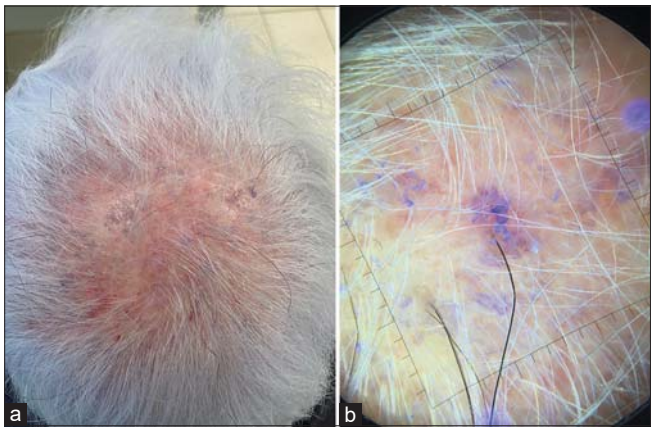


Figure 1: (a) Clinical presentation of the cutaneous lesions: numerous bluish-gray, scaly lesions in the occipital area; the patient confirmed using toning shampoo for white hair containing Acid Violet 43. (b) Dermoscopy of one of the lesions: an erythematous background, as well as numerous arctic-blue, keratotic plugs; the blue scale compatible with the iceberg sign present in AK neglecta.

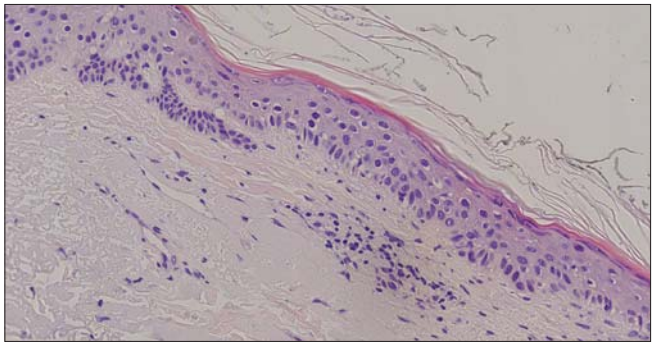


Figure 2: Solar elastosis and a chronic dermal infiltrate, as well as basal keratinocytes with loss of polarity presenting with irregular nuclei; findings compatible with the clinical suspicion of AK; no basophilic amorphous material present in the stratum corneum (H&E, 20×).

How to cite this article: Gimeno-Castillo J, Martínez Aracil AP, Menéndez Parrón A. Blue scales on an "iced" scalp. Our Dermatol Online. 2022;13(3):311-312.

Submission: 23.01.202; **Acceptance:** 03.03.2022

DOI: 10.7241/ourd.20223.18

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. Reinehr CPH, Bakos RM. Actinic keratoses: Review of clinical, dermoscopic, and therapeutic aspects. 2019;94: 637-57.
2. Mir-Bonafé JF, Mir-Bonafé M, Mozos A, López-Sánchez C, Piquero-Casals J, de Dios-Velázquez Á, et al. Iceberg sign in actinic keratosis neglecta caused by toning shampoo for blonde and white hair. Int J Dermatol. 2020;59:e64-5.
3. Mir-Bonafé JF, Rozas-Muñoz E, Dalmau J, Mir-Bonafé M, Iznardo H, García-Melendo C, et al. Iceberg sign as a dermoscopic clue of actinic keratosis neglecta. J Eur Acad Dermatol Venereol. 2019;33:e254-6.

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

Clinical Image

Dermoscopy of trichoblastic carcinoma

Chaymae Jroundi, Sara Elloudi, Ryme Dassouli, Zakia Douhi, Hanane Baybay, Fatima Zahra Mernissi

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

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

Trichoblastic carcinoma is a rare malignant adnexal tumor deriving from the hair follicle. It is clinically highly similar to basal cell carcinoma (BCC), with a greater malignant potential and a higher metastatic risk [1,2]. Histopathology reveals lobules of small, basaloid cells, cytonuclear pleiomorphism, and numerous mitoses with follicular differentiation [1]. It is important to differentiate these two entities as they follow different clinical courses and, therefore, require different treatments [2]. To our knowledge, dermoscopy of this tumor has only been described once, showing scattered specks of brown pigment in a trichoblastic carcinoma of the scalp [3]. Herein, we present a dermoscopic description of a recurrent trichoblastic carcinoma.

A 93-year-old patient, who underwent an excision of a lesion of the left nasolabial fold two years previously with no record of histopathology, presented to our dermatology department with a lesion on the same site of excision evolving for the lasts six months. A clinical examination revealed a well-limited ulceration surrounded by a bluish, peripheric halo with an infiltrated base. Pigmented papules and telangiectasias were also observed along the scar of the nasolabial fold (Fig. 1). Dermoscopy showed blue, ovoid nests, brown and blue globules, telangiectasias, and a central ulceration (Fig. 2). A biopsy revealed a dermal tumor proliferation made from lobules and trabeculae of basaloid cells with nuclear atypia and numerous mitoses, which was more in favor of a trichoblastic carcinoma than a BCC. A radiological assessment revealed no regional or distant metastasis. The patient was referred to the plastic surgery department for further management.

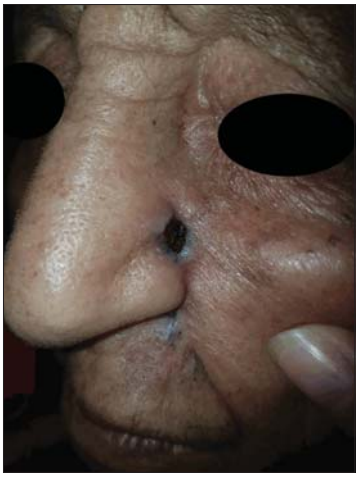


Figure 1: Clinical picture of the ulcerated, bluish, pigmented plaque of the nasolabial fold.

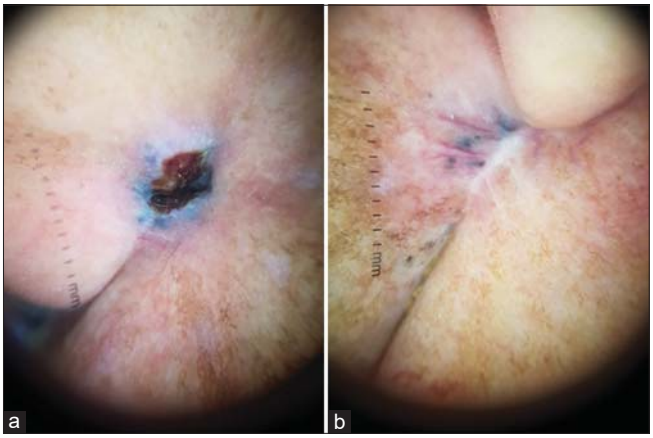


Figure 2: Dermoscopic picture of (a) a central ulceration with a bluish, peripheric halo; and (b) blue, ovoid nests, brown and blue globules, and telangiectasias along the underlying scar.

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

How to cite this article: Jroundi C, Elloudi S, Dassouli R, Douhi Z, Baybay H, Mernissi FZ. Dermoscopy of trichoblastic carcinoma. Our Dermatol Online. 2022;13(3):313-314.

Submission: 18.09.2021; **Acceptance:** 25.11.2021

DOI: 10.7241/ourd.20223.19

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. Romeu M, Foletti JM. Malignant cutaneous adnexal neoplasms of the face and scalp: Diagnostic and therapeutic update. J Stomatol Oral Maxillofac Surg. 2017;118:95-102.
2. Thomas M, Bruant-Rodier C. Why is it important to differentiate trichoblastic carcinomas (CT) from basal cell carcinomas (CBC): About 21 cases. Ann Chir Plast Esthet. 2017;62:212-8.
3. Kwock JT, Casady M. A trichogenic tumor with aggressive features initially diagnosed as basal cell carcinoma. Dermatol Online J. 2018;24:13030/qt1fn5226f.

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

Our Dermatology Online

Clinical Image

Ovoid nests in nevocellular nevus

Soumaya Hamich, Basma Karrakchou, Kaoutar Znati, Karima Senouci

[1]Department of Dermatology, Mohamed V University in Rabat, Ibn Sina University Hospital, Morocco, [2]Department of Histopathology, Mohammed V University in Rabat, Ibn Sina University Hospital, Morocco

Corresponding author: Soumaya Hamich, MD, E-mail: hamich.soumaya@gmail.com

We report the case of a 34-year-old female patient with no medical history presented herself with a lesion near the intergluteal cleft evolving for more than five years and gradually increasing in size. An examination revealed a painless nodule 1.5 × 2 cm in size, of soft consistency, and with a flesh-colored pedicle base with central hyperpigmentation and a depigmented peripheral area (Fig. 1). Dermoscopy revealed a hyperpigmented cerebriform structure in the center surmounted by several white scales and bordered by an irregular melanocytic network and multiple ovoid nests (Fig. 2).

Complete excision was performed. An anatomopathological examination revealed a tumor proliferation arranged in well-circumscribed epidermal and dermal nodules made of monomorphic polygonal cells with some mitotic figures (Fig. 3), suggesting a nevocellular nevus.

In the present case, the lesion appeared similarly to basal cell carcinoma and seborrheic keratosis. On dermoscopic examination, it showed a cerebriform pattern and ovoid nests, suggesting these entities. These findings are not typically found in nevi. It is possible that this nevus was in its involution phase. Indeed, involutional or ancient nevi sometimes show signs of cellular atypia [1,2], which may be found by dermoscopy in ovoid nests.

In any case, it is essential to resort to a biopsy if in doubt to determine the exact nature of the tumor.

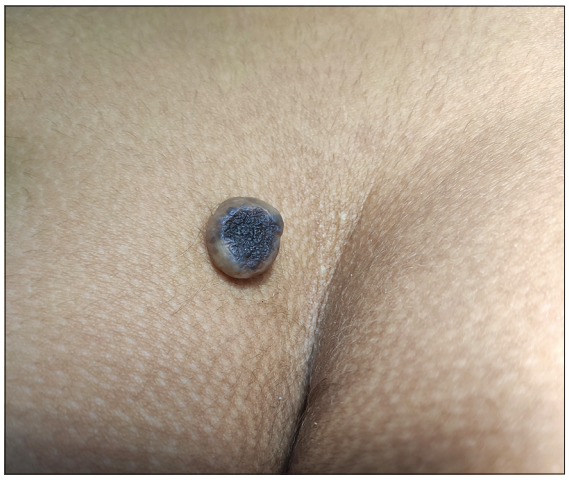


Figure 1: Nodule 1.5 × 2 cm in size with a flesh-colored pedicle base with central hyperpigmentation and a depigmented peripheral area.

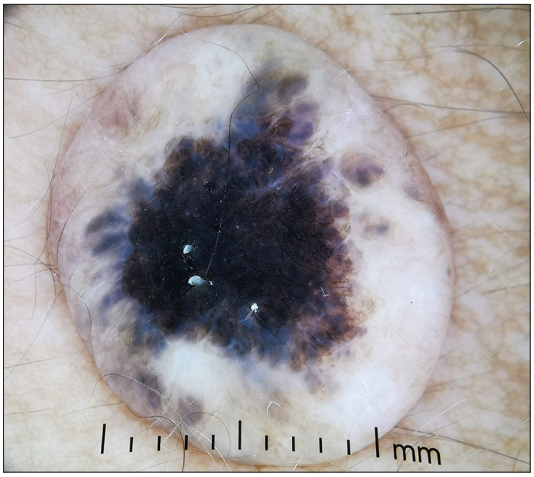


Figure 2: Dermoscopy of the lesion revealing a hyperpigmented cerebriform structure in the center and bordered by an irregular melanocytic network and multiple ovoid nests.

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

How to cite this article: Hamich S, Karrakchou B, Znati K, Senouci K. Ovoid nests in nevocellular nevus. Our Dermatol Online. 2022;13(3):315-316.
Submission: 11.07.2021; **Acceptance:** 17.10.2021
DOI: 10.7241/ourd.20223.20

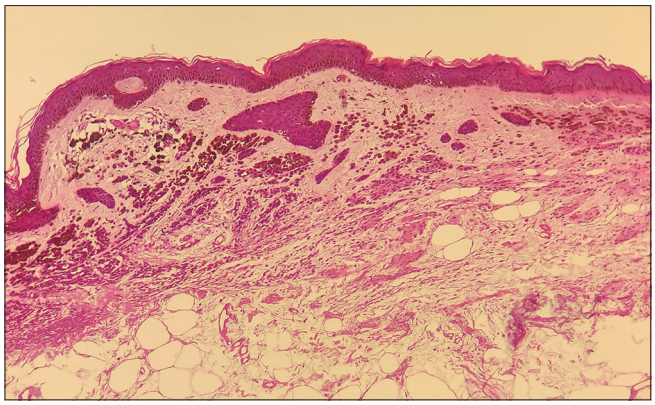


Figure 3: Histological image with a tumor proliferation arranged in well-circumscribed epidermal and dermal nodules made of monomorphic polygonal cells with some mitotic figures, suggesting a nevocellular nevus.

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

REFERENCES

1. Boyd AS, Chen SC, Shyr Y. Intradermal nevi with atypical nuclei in the elderly: The senescent nevus. J Am Acad Dermatol. 2015;73:500-6.
2. Kerl H, Wolf IH, Kerl K, Cerroni L, Kutzner H, Argenyi ZB. Ancient melanocytic nevus: A simulator of malignant melanoma. Am J Dermatopathol. 2011;33:127-30.

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

Research Letter

Serum lipide profile and the severity of acne vulgaris at a Moroccan referral hospital

Hasna Kerrouch, El Khalil El Bakali, Rachid Frikh, Naoufal Hjira, Mohammed Boui

Department of Dermatology Venerology, Military Hospital Instruction Mohammed V, University Mohammed V, Rabat, Morocco

Corresponding author: Hasna Kerrouch, MD, E-mail: hasnakerrouch@gmail.com

Sir,

Acne vulgaris (AV) is one of the most frequent concerns in dermatology consultation. It is an inflammatory chronic condition that affects the pilosebaceous follicle.

Based on the number and types of lesions, AV is classified as mild, moderate, severe, and highly severe [1]. The pathogenesis of AV is due to multiple factors, such as sebum overproduction, inflammation, colonization by *Propionibacterium acnes*, hyperkeratinization, the genetic component, and stress [2-4]. It is known that the sebaceous glands produce and secret sebum, which is a combination of complex lipids, such as squalene, triglycerides, wax, and cholesterol, as well as free cholesterol and fatty acids [5]. A number of studies evaluated the relationship between acne vulgaris and the serum lipid profile.

Therefore, the aim of our study was to analyze the lipid serum profile among Moroccan patients with acne.

We prospectively conducted a study between June 2020 and December 2021 at the Mohammed V Military Hospital in Rabat, Morocco.

The criteria for inclusion in the study were AV patients aged from thirteen to thirty years. The exclusion criteria were obesity, pregnancy and lactation, oral contraceptives, hormonal therapy, cardiovascular disease, and health conditions affecting lipid metabolism.

The clinical data collected from patients included age, sex, weight, and the severity of AV. Acne grading was performed by the same dermatologist according to the Global Acne Grading System (GAGS). The patients were required to have been fasting between eight to twelve hours at the time of the blood test.

Statistical analysis was performed with JAMOVI. The results were presented as follows: mean ± SD.

Descriptive statistics were performed; Student's *t*-test, ANOVA, and X2 were used as statistical tests to compare between variables, and $p < 0.05$ was considered a statistically significant difference.

A total of seventy-six patients were enrolled. The average age was 22.9 ± 6.48 years. Among the seventy-six cases, 69.7% were females and 30.3% were males, with a female-to-male ratio of 2.3. Their weight was 56.5 ± 6.43 kg (Table 1).

In our study, most of the patients had moderate AV (51.3%), followed by mild (34.2%), severe (11.8%), and highly severe AV (2.6%).

CT was low in 30 patients (39.5%) and normal in 46 patients (60.5%). TG was low in 38 patients (50%), normal in 23 patients (30.3%), and high in 15 patients (19.7%).

Table 1: Characteristics of the patients (n = 76)

Characteristics	n = 76
Sex	
Male	23 (30.3%)
Female	53 (69.7%)
Age (yrs.)	22.9 ± 6.48
Weight (kgs.)	56.5 ± 6.43
Severity of AV	
Mild	26 (34.2%)
Moderate	39 (51.3%)
Severe	9 (11.8%)
Highly severe	2 (2.6%)

How to cite this article: Kerrouch H, El Bakali EK, Frikh R, Hjira N, Boui M. Serum lipide profile and the severity of acne vulgaris at a Moroccan referral hospital. Our Dermatol Online. 2022;13(3):317-318.

Submission: 02.02.2022; **Acceptance:** 04.05.2022

DOI: 10.7241/ourd.20223.21

Table 2: Serum lipid profile of the patients with different grades of acne

Parameters (g/L)	Acne patients (n = 73)	Mild acne (n = 25)	Moderate acne (n = 38)	Severe acne (n = 11)	Highly severe acne (n = 2)	p Value
CT	1.52 ± 0.17	1.39 ± 0.08	1.60 ± 0.18	1.51 ± 0.10	1.56 ± 0.01	< 0.001
HDL-C	0.50 ± 0.05	0.53 ± 0.03	0.50 ± 0.05	0.44 ± 0.07	0.40 ± 0.01	< 0.001
LDL-C	0.85 ± 0.15	0.74 ± 0.06	0.94 ± 0.15	0.76 ± 0.03	0.76 ± 0.01	< 0.001
TG	0.96 ± 0.60	0.92 ± 0.62	0.78 ± 0.37	1.66 ± 0.69	2.02 ± 0.01	< 0.001

Results presented as follows: mean ± SD. CT: total cholesterol. TG: triglycerides. HDL-C: high-density lipoprotein cholesterol. LDL-C: low-density lipoprotein cholesterol

HDL-C was low in 8 patients (10.5%) and normal in 68 patients (89.5%). LDL-C was normal in 76 patients (100%).

There was a statistically significant difference in the mean values of plasma CT, HDL-C, LDL-C, TG, and the severity of AV ($p < 0.001$) (Table 2).

There was a statistically significant difference in the mean values of plasma CT, TG, and LDL-C between the males and females ($p < 0.05$), yet there was no such statistically significant difference in the mean value of HDL-C ($p = 0.071$) (Table 3).

AV is a chronic inflammatory disease that affects the pilosebaceous units. Follicular hyperkeratinization, excess sebum, inflammation, and *Cutibacterium acnes* are still the four major pathogenic factors [2-4].

Several factors influenced the plasma lipid profiles, such as nutritional status, diet, genetic factors, smoking, and environmental factors [6,7].

In the present study, there was a significant association between CT, HDL-C, LDL-C, TG, and the severity of acne, which was not similar to results reported by previous studies [8]. It might be explained by the high-fat and high-carbohydrate dietary habits in our country.

The role of medications in reducing sebum excretion is essential in the treatment of AV, especially with retinoids. However, their use is limited due to the side effects. Therefore, more studies on medications or substances that may reduce sebum production in AV are needed.

Further studies are needed to observe the relationship between the lipid profile and the severity of AV.

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.

Table 3: Serum lipid profile of the male and female patients with acne

Parameter (g/L)	Male (n = 23)	Female (n = 53)	p value
CT	1.62 ± 0.14	1.47 ± 0.16	< 0.001
HDL-C	0.48 ± 0.05	0.51 ± 0.05	0.071
LDL-C	0.90 ± 0.18	0.82 ± 0.13	0.043
TG	1.20 ± 0.59	0.86 ± 0.58	0.024

Results presented as follows: mean ± SD. CT: total cholesterol. TG: triglycerides. HDL-C: high-density lipoprotein cholesterol. LDL-C: low-density lipoprotein cholesterol

Statement of Informed Consent

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

REFERENCES

1. Akdogan N, Dogan S, Atakan N, Yalçin B. Association of serum hormone levels with acne vulgaris: Low estradiol level can be a pathogenetic factor in female acne. Our Dermatol Online. 2018;9:249-56.
2. Topal IO, Otunctemur A. An investigation of the effects of acitretin on erectile function. Our Dermatol Online. 2020;11(Supp. 3):1-5.
3. Neerja Puri, Bharat Bhushan Mahajan, Samarjeet Kaur Sandhu: Clinical evaluation of different therapeutic modalities in psoriasis by Pasi score. Our Dermatol Online. 2013;4:16-22.
4. Colonna L, Pacifico V, Lello S, Sorge R, Raskovic D, Primavera G. Skin improvement with two different oestroprogestins in patients affected by acne and polycystic ovary syndrome: Clinical and instrumental evaluation. J Eur Acad Dermatol Venereol. 2012;26:1364–71.
5. Ottaviani M, Camera E, Picardo M. Lipid mediators in acne. Mediators Inflamm. 2010;2010:858176.
6. Gonçalves S. Elaboration and subsequent application of a protocol for measuring reduction in a patient with Hashimoto thyroiditis. Our Dermatol Online. 2020;11:243-6.
7. Brzezinski P, Martini L. Sexual abstinence and restraint in Man allow a harmonic wound healing, owing to blood cortisol increment. Our Dermatol Online. 2019;10:e7.1-e7.5.
8. Abdul-Aziz A, Nayaf MS, Mauloodd KJ. The relationship of body mass index and hirsutism in adult females. Our Dermatol Online. 2015;6:276-9.

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

Research Letter

The skin is the best alarm bell for recognizing the presence of the Omicron variant in younger asymptomatic patients

Lorenzo Martini

[1]*University of Siena, Department of Pharmaceutical Biotechnologies, Via A. Moro 2, 53100 Siena, Italy,* [2]*C.R.I.S.M.A. Inter University Centre for Researched Advanced Medical Systems, Via A. Moro 2, 53100 Siena, Italy*

Corresponding author: Prof. Lorenzo Martini, M.Sc. E-mail: lorenzo.martini@unisi.it

Sir,

Since the real symptoms of having contracted COVID-19 and its variants or subvariants are generally cough, a runny nose, fever, and loss of taste, and since these alarms are not evident in asymptomatic patients infected with Omicron, especially children and young boys, and the only affordable evidence is a rapid or swab test, it is highly important to have other options to determine an infection with the Omicron variant, even if the patient does not feel anything at all [1,2].

Two types of skin rashes may be the distinguishing symptoms for individuals who have contracted Omicron and cannot be sure to have the variant (since no fever is one of the most evident signals of the real absence of SARS-CoV-2).

These two types of skin manifestations are:
1) prickly heat rashes,
2) urticaria or hives rash.

The first type of manifestation is detectable in the youngest and may appear anywhere on the body, yet is believed to have been most commonly found on the hands and feet, as well as the elbows. The second type is more similar to a hives rash and appears as raised bumps on the skin. While the first type is more persistent and may last for days or even weeks, the hive-like type tends to come and go in a much quicker fashion.

The skin symptoms discussed here are thought to be visible in some individuals with the virus who are not showing absolutely any other symptoms.

Heat rashes normally go away without treatment. However, there are medicines available to ease the symptoms of itching. These include calamine lotion (which helps ease itching) and antihistamine medicines.

Instead of calamine, even *magnesia usta* or *alumina* or, if possible, especially in countries in which the powder may be retrieved (in Scandinavia), deer-horn burnt amalgam, blanc d'Espagne or Tripoli, may be employed. These are the best powders to be the reputed vehicles to maintain the active ingredient in contact with the skin, even in the case of sweat or wet skin.

The best natural antihistamine is the butterbur, of the genus *Petasites*, flowering plants in the sunflower family, *Asteraceae*, which are commonly referred to as butterburs and coltsfoots [3,4]. They are perennial plants with thick, creeping underground rhizomes and large, rhubarb-like leaves during the growing season. Most species are native to Asia and southern Europe [3-5].

Applying butterbur to prickly rashes is a sort of Russian roulette, yet there is an ancestral Neapolitan adage that says: *ndove c'è gusto non c'è perdenza* (something to be used to abate an affliction is more desirable when the remedy itself is perilous and risky).

How to cite this article: Martini L. The skin is the best alarm bell for recognizing the presence of the Omicron variant in younger asymptomatic patients. Our Dermatol Online. 2022;13(3):319-320.

Submission: 10.01.2022; **Acceptance:** 03.03.2022

DOI: 10.7241/ourd.20223.22

Effectively, butterbur extracts may contain harmful components called pyrrolizidine alkaloids if the preparation is not carefully and fully purified. The concentration of the toxic alkaloids is often the highest in the rhizomes and the lowest in the leaves, and may vary depending on where the plants are grown. Long-term health effects and the interaction of butterbur with other drugs have not been well documented. However, an interaction with St. John's wort (topical use) may potentially lead to an increased concentration of the toxic alkaloids. Yet, it is obvious that those who use butterbur will never apply *Hypericum perforatum* extract or oil onto the skin.

A panel group of 12 boys and girls (12–24 yrs. old) showing prickly heat rashes and a panel group of 12 boys and girls (12–24 yrs. old) suffering from urticaria [3] (in the presence of a supposed Omicron infection) were recruited to attempt to apply a mash of butterbur to abate the first epidermal malaise or a fluid ointment to defeat the urticaria.

The following is the recipe for the first mash:
- *magnesia usta* (magnesium oxide): 88%;
- butterbur leaves in aqueous extract: 12%

Applications must be replicated for almost fourteen days twice a day. This remedy is only to allow the individual infected with Omicron to feel better.

As far as hive rashes or urticaria are concerned, it is better to employ an oily and fluid emulsion with castor oil (86%) and *Solanum nigrum* lipophilic extract (14%) [6].

Solanum nigrum is a perennial, infesting, and ubiquitous plant, and the unripe fruits and leaves are exceptional to produce a highly efficient liquor for defeating the itch of whichever hive rash.

One must keep in mind that urticaria, also known as weals, welts, or nettle rash, is a raised, itchy rash that appears on the skin and that may appear on one part of the body or be spread across large areas. The rash is usually very itchy and ranges in size from several millimeters to the size of a hand.

The application may be replicated for an entire week on the spots or onto the areas affected with urticaria. The prickly heat rashes disappear after the twelfth day and, in one case, after the fourteenth, while urticaria disappears after the sixth to seventh day of application.

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. Bayerische Landesamt für Gesundheit und Lebensmittelsicherheit (LGL). Vierter Fall der Omikron-Variante des SARS-CoV-2 in Bayern mittels Genomsequenzierung bestätigt. Munich: LGL; 2021. Available at: https://www.lgl.bayern.de/presse/pressemitteilungen/detailansicht.htm?ID=A%2Bs3RgSTi2Tz%2BAoEEso3 2g%3D%3D
2. Department of Health - Government of Ireland. Statement from the National Public Health Emergency Team on the detection of Omicron variant in Ireland - 1 December 2021. Dublin:
3. Zuberbier T, Aberer W, Asero R, Abdul Latiff AH, Baker D, Ballmer-Weber B, et al. The EAACI/GA²LEN/EDF/WAO guideline for the definition, classification, diagnosis and management of urticaria. Allergy. 2018;73:1393-414.
4. Ganjoo S, Vasani R, Gupta T. Urticarial eruption in COVID-19-positive children: A report of two cases. Our Dermatol Online. 2022;13:47-9.
5. Sadowska B, Sztormowska M, Gawinowska M, Chelminska M. Sodium metabisulfi te hypersensitivity in urticaria. Our Dermatol Online. 2021;12:106-12.
6. Fortuin FTJM, Omta SWP. Growth analysis and shade experiment with Solanum nigrum L., the black nightshade, a leaf and fruit vegetable in West Java. Netherlands J Agricult Scien. 1980;28:199-210.

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

Our Dermatology Online

Study Letter

The brown alga *Laminaria ochroleuca*: Charming shell pickers of the strait of Messina, fanciful sirens, and treating war wounds and scars in prostitutes

Piotr Brzezinski[1,2], Lorenzo Martini[1]

[1]University of Siena, Department of Pharmaceutical Biotechnologies, Via A. Moro 2, 53100 Siena, Italy, [2]Department of Physiotherapy and Medical Emergency, Faculty of Health Sciences, Pomeranian Academy, Slupsk, Poland

Corresponding author: Prof. Lorenzo Martini, M.Sc., E-mail: lorenzo.martini@unisi.it

Sir,

In one of his precious masterpieces, Portuguese novelist José Saramago narrates in detail the lives of the rice weeders who used to work in this land and, after a day of work, soak their bare feet in a bath with hot water, salt, mallow, and chamomile in order to restore their ankles, swollen and inflated for the alga native to these particular paddy fields, *Laminaria ochroleuca* (*Bachelot de la Pylaie*), extremely rich in fucose and alginates, provoking an accelerated and paroxistic synthesis of elastin, fibronectin, and collagen.

This brown alga may be retrieved from the waters of France, Spain, Scotland, and the Shetland Islands, yet even in the Azores Islands and Morocco (Alboran Sea) [1-4].

The authors of this paper selected a special *Laminaria* from the Strait of Messina (*Nereocystis luetkeana*), a heterokont that is able to grow half a meter per day reaching the surprising and amazing height of 260 ft.). The legend has it that shell collectors, chiefly young girls, day after day, saw their legs together to create the tail of a siren, a cartilaginous appendage rich in collagen and elastin becoming scaly and squamous owing to the seawater.

The authors created a dermocosmetic emulsion with high concentrations of acetolyte from *Laminaria ochroleuca* (12%) and other nourishing active ingredients (obviously, the chief components were petrolatum and lanolin, as per the pharmaceutical art of preparing the cold cream of Galenus).

Hence, this golden alga is able to support the skin by providing antioxidants to fight free radicals, supporting the health of collagen and elastin, which helps the skin retain elasticity and radiance, reducing fine lines and wrinkles and helping to moisturize the skin while boosting its barrier.

Some researchers [5] claimed that this alga could be useful to build a skin equivalent, as fucoidan significantly stimulates the proliferation of CCD-25Sk human fibroblasts. Also, western blot analysis demonstrates that fucoidan markedly increases the expression of cyclin D1 and decreases the expression of p27. Fucoidan was practically used to reconstruct SE. Immunohistochemical staining reveals that the addition of fucoidan to dermal equivalents increases the expression of proliferating cell nuclear antigen (PCNA) and p63. In addition, the expression of α6-integrin is significantly increased by fucoidan, whereas the expression of β1-integrin, type 1 collagen, elastin, and fibronectin does not markedly change.

In the light of the above, the authors may assert that fucoidan shows positive effects on epidermal reconstruction and is, therefore, beneficial in the reconstruction of all types of skin damage.

The authors recruited a panel of eight people:

- 2 veterans from Iraq and Afghanistan (a-b) presenting old war wounds with no chance to cure

How to cite this article: Brzezinski P, Martini L. The brown alga Laminaria ochroleuca: Charming shell pickers of the strait of Messina, fanciful sirens, and treating war wounds and scars in prostitutes. Our Dermatol Online. 2022;13(3):321-323.

Submission: 15.11.2021; **Acceptance:** 03.02.2022

DOI: 10.7241/ourd.20223.23

Table 1: The increment of the percentage of hydration during the seven days of application of the cream in all volunteers. Measurements were driven in the spot of the cicatrix or wound

Volunteer	% after day 1	% after day 2	% after day 3	% after day 4	% after day 5	% after day 6	% after day 7
A	1.7	3.5	5.8	7.3	11.6	16.4	19.8
B	2.3	4.6	6.6	8.9	12.2	17.1	20.1
C	3.2	5.1	7.2	9.1	13.2	15.9	18.8
D	4.1	6.2	8.5	9.8	12.6	18.3	19.9
E	2.2	3.1	4.3	6.6	11.8	13.6	18.5
F	3.7	5.9	7.1	9.9	13.1	14.6	20.0
G	4.1	5.3	6.9	10.1	13.8	16.5	19.9
H	2.7	8.9	10.1	12.6	14.8	17.5	20.3

these after years of treatments and a myriad of surgical operations;

- 2 elders (one male and one female, 87 and 89 yrs. old, respectively, c-d) presenting severe bedsores;
- 2 older ladies (e-f) who, in the past, underwent unsuccessful aesthetical operations, presenting puckers, seams, furrows and deep wrinkles;
- 2 girls (two ex-prostitutes, one black and one white, g-h) who were scarred with a razor by their enemies.

The evaluation of the efficacy of the cosmetic system was performed with an AC/DC LCD digital triple-clip clamp meter (a voltmeter able to determine the percentage of humidity in the stratum corneum, an ammeter able to determine the percentage of the dermal oil content, and an ohmmeter able to reveal the percentage of skin elasticity, presenting the correct values on a digital display) [6,7].

The experiment lasted 1one week for each of every class of the panel.

Table 1 shows the increment of the percentage of hydration during the seven days of application of the cream in all volunteers. Measurements were driven in the spot of the cicatrix or wound.

Table 2 shows the increment of the percentage of dermal oil content (with palmitic oil as the reference point) during the seven days of application of the cream in all volunteers. Measurements were driven in the spot of the cicatrix or wound.

Table 3 shows the increment of the percentage of total skin elasticity during the seven days of application of the cream in all volunteers. Measurements were driven in the spot of the cicatrix or wound.

Table 2: The increment of the percentage of dermal oil content (with palmitic oil as the reference point) during the seven days of application of the cream in all volunteers. Measurements were driven in the spot of the cicatrix or wound

Volunteer	% after day 1	% after day 2	% after day 3	% after day 4	% after day 5	% after day 6	% after day 7
A	18.4	21.3	23.5	25.4	27.9	31.3	37.8
B	14.3	16.5	19.1	22.6	26.8	29.7	36.3
C	12.4	15.6	18.9	25.4	27.2	30.3	37.5
D	11.9	14.8	16.7	21.4	25.6	29.8	35.3
E	12.7	18.8	20.1	24.3	28.9	33.6	38.1
F	11.9	16.5	19.7	21.8	25.6	32.9	35.2
G	10.8	15.4	18.6	20.9	26.4	33.3	34.9
H	15.7	18.4	21.2	25.6	27.7	29.8	35.0

Table 3: The increment of the percentage of total skin elasticity during the seven days of application of the cream in all volunteers. Measurements were driven in the spot of the cicatrix or wound

Volunteer	% after day 1	% after day 2	% after day 3	% after day 4	% after day 5	% after day 6	% after day 7
A	3.7	5.5	7.1	11.4	16.3	22.1	26.0
B	1.3	4.6	8.3	12.6	18.4	21.5	25.9
C	3.3	5.7	9.1	13.6	19.2	22.4	26.1
D	2.9	4.6	8.8	14.1	18.7	21.9	25.7
E	3.1	5.2	7.7	11.4	16.2	19.3	24.8
F	6.7	11.4	13.3	16.7	18.4	24.6	25.9
G	4.1	7.7	17.8	18.9	21.0	23.1	25.5
H	3.7	8.8	19.6	22.9	23.4	24.1	25.8

It is evident that the percentage depends on the age of the individual, the severity of the injury, and the time of the event of the skin disturbance or ailment.

Fascinating is the rapidity of the scars repairing in the prostitutes. In the case of the white girl (volunteer H), *restitutio ad integrum* was faster and more harmonious than in the case of the black girl (volunteer G).

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. Bunker F, Brodie JA, Maggs CA, Bunker AR. Seaweeds of Britain and Ireland. Second Edition. Wild Nature Press, Plymouth, UK. 2017, ISBN 978-0-9955673-3-7
2. Franco JN, Fernando T, Bertocci I, Rodríguez L, Martínez B, Sousa-Pinto I, et al. The 'golden kelp' Laminaria ochroleuca under

global change: Integrating multiple eco-physiological responses with species distribution models. J Ecol. 2018;106:47-58.
3. Smale DA, Wernberg T, Yunnie ALE, Vanceet T. The rise of Laminaria ochroleuca in the Western English Channel (UK) and comparisons with its competitor and assemblage dominant Laminaria hyperborea. Marine Ecol. 2003;36:1033-44.
4. Parke M. Laminaria ochroleuca de la pylaie growing on the coast of Britain. Nature. 1948;162:295-6.
5. Song YS, Li H, Balcos MC, Yun HY, Baek KJ, Kwon NS, et al. Fucoidan promotes the reconstruction of skin equivalents. Korean J Physiol Pharmacol. 2014;18:327-31.
6. Ezerskaia A, Pereira SF, Urbach HP, Verhagen R, Vargese B. Quantitative and simultaneous non-invasive measurement of skin hydration and sebum levels. Biomed Opt Express. 2016;7:2311-20.
7. Constantin MM, Bucur S, Serban ED, Olteanu R, Bratu OG, Constantin T. Measurement of skin viscoelasticity: A non-invasive approach in allergic contact dermatitis. Exp Ther Med. 2020;20:184.

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

Our Dermatology Online

Case Letter

Acral purpura and pityriasis rosea-like eruption following COVID-19 infection

Eleni Klimi[1], Dionysia Vasdeki[2]

[1]Department of Dermatology Thriassio General Hospital Magula Athens Greece, [2]Department of Plastic Surgery Thriassio General Hospital Magula Athens Greece

Corresponding author: Eleni Klimi, MD, E-mail: eklimi2018@gmail.com

Sir,

A 74-year-old female patient treated with angiotensin-converting enzyme inhibitor for arterial hypertension with metformin and atorvastatin for insulin-independent diabetes mellitus and hyperlipidemia, respectively, consulted the outpatient dermatological clinic for a rash that appeared fifteen days prior to consultation. The patient received the second dose of mRNA COVID-19 vaccine on July 29, 2021, and was due to receive the third dose on December 29, yet she fell ill on day 6 of the same month, probably being infected by one of her grandchildren. The eruption consisted of erythematous, purpuric macules on the anterior face of both tibia (Fig. 1a), of a solitary papule on the left hand (Fig. 1b), and of erythematous papules with a scale on the border on the left buttock (Fig. 1c). A collarette formed on the trailing edge of the advancing border of the hand lesion, a clinical sign pathognomonic of pityriasis rosea. Intense pruritus accompanied the eruption. No herald patch was observed, nor lesions on the trunk, being the typical location of lesions of pityriasis rosea, while lesions on the hands are absent in the typical cases of the disease. The oral and genital mucosae were intact. The cutaneous manifestations of COVID-19 include purpuric, chilblain, vesicular, urticarial, and pityriasis rosea-like lesions. Acral lesions are the most frequent location of the cutaneous manifestations associated with COVID-19 infection [1]. An acral distribution of lesions is a feature of mouth, hand, and foot disease due to infection with Coxsackie A16 virus [2], although no reactivation of this virus has been detected during the COVID-19 pandemic, while the reactivation of herpes 6 and herpes 7 virus associated with pityriasis rosea has occurred [3].

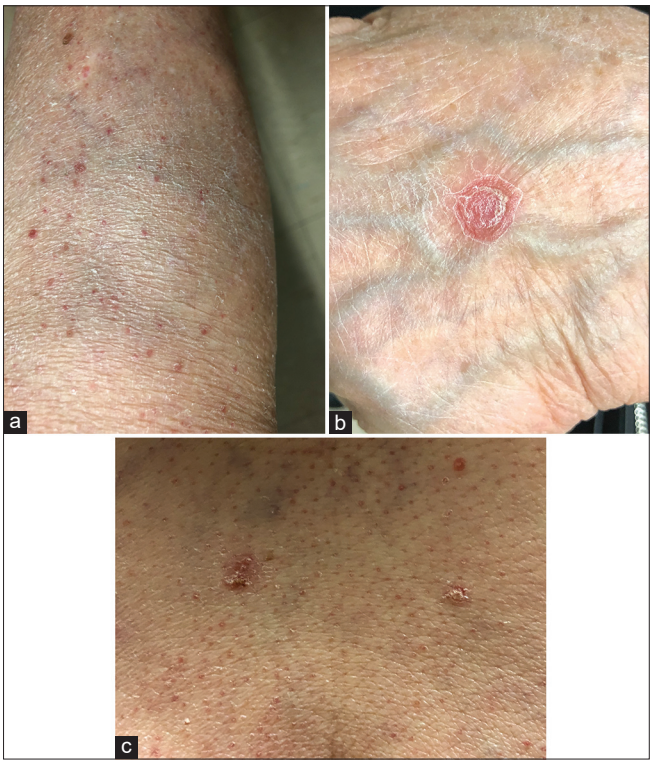


Figure 1: (a) Erythematous lesions on the right tibia. (b) Pityriasis rosea-like lesion on the left hand. (c) Erythematous papules on the left buttock with a peripheral scale.

Erythema multiforme, a disorder associated with herpes infection, has likewise a typical acral distribution of the lesions and is described to be associated with COVID-19 infection during the pandemic [4,5]. The patient presented purpuric and pityriasis rosea-like lesions. Steroids, emollients and

How to cite this article: Klimi E, Vasdeki D. Acral purpura and pityriasis rosea-like eruption following COVID-19 infection. Our Dermatol Online. 2022;13(3):324-325.

Submission: 31.01.2022; **Acceptance:** 09.03.2022

DOI: 10.7241/ourd.20223.24

oral antihistamines were prescribed to relieve the itch. The lesions showed no significant improvement since their appearance two months earlier. This fact and the atypical morphology of the eruption led to the proposal of a biopsy, which the patient refused. A full blood count and urea, creatinine, and liver tests were within normal.

This case is being reported to increase awareness of the cutaneous manifestations of COVID-19 infection with mixed clinical signs, which, although benign in their course, may produce considerable discomfort.

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) de Masson A, Bouaziz JD, Sulimovic L, Cassius C, Jachiet M, Ionescu MA, et al; SNDV (French National Union of Dermatologists-Venereologists). Chilblains is a common cutaneous finding during the COVID-19 pandemic: A retrospective nationwide study from France. J Am Acad Dermatol. 2020;83:667-70.
2) Saguil A, Kane SF, Lauters R, Mercado MG. Hand-foot-and-mouth disease: Rapid evidence review. Am Fam Physician. 2019;100:408-14.
3) Drago F, Ciccarese G, Rebora A, Parodi A. Human herpesvirus-6, -7, and Epstein-Barr virus reactivation in pityriasis rosea during COVID-19. J Med Virol. 2021;93:1850-1.
4) Trayes KP, Love G, Studdiford JS. Erythema multiforme: Recognition and management. Am Fam Physician. 2019;100:82-8.
5) Gül Ü. COVID-19 and dermatology. Turk J Med Sci. 2020;50:1751-9.

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

Our Dermatology Online

Case Letter

Secondary syphilis mimicking psoriasis vulgaris on the buttock

Ngo Binh Trinh, Giang Huong Tran

[1]Department of Venereology, Ho Chi Minh City Hospital of Dermato-Venereology, Vietnam, [2]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,

Secondary syphilis is caused by *Treponema pallidum*, classically characterized by a diffuse, symmetric macular or papular eruption involving the entire trunk and extremities [1]. We, herein, describe a case of secondary syphilis mimicking psoriasis vulgaris in an unusual location and with specific histologic hallmarks.

A 28-year-old homosexual male presented with asymptomatic, erythematous patches of the buttock, which were misdiagnosed as psoriasis vulgaris for one month. He reported a history of sexual contact with an anonymous male four months prior to presentation. A clinical examination revealed multiple, well-defined, erythematous, scaling patches on the buttock (Fig. 1a). He had no regional lymphadenopathy. Other mucocutaneous manifestations were undetectable.

A laboratory evaluation yielded a reactive rapid plasma reagin (RPR) test with a dilution of 1:32 and positive *Treponema pallidum* hemagglutination (TPHA). Fungal microscopy of the buttock was negative. HIV antibody was negative. A biopsy of the lesion revealed psoriasiform epidermal hyperplasia, an elongated rete, a diffuse perivascular and interstitial dermal infiltrate of plasma cells, lymphocytes, and histiocytes (Figs. 2a and 2b). High power view of the inflammatory infiltrate revealed numerous plasma cells and epithelial swelling (Figs. 2c and 2d). No additional stains were performed due to the unavailability of stains. The histologic, clinical, and laboratory findings confirmed the diagnosis of secondary syphilis. A single dose of benzathine penicillin G at 2.4 million units was injected intramuscularly. Three months later, the RPR titer turned negative and the skin lesions resolved (Fig. 1b).

Psoriasiform rash is an atypical clinical manifestation of early secondary syphilis, which usually appears on the hand and feet [1,2]. Therefore, lesions as in our patient is rare.

The treatment of secondary syphilis is benzathine penicillin G 2.4 million units. Alternative treatment

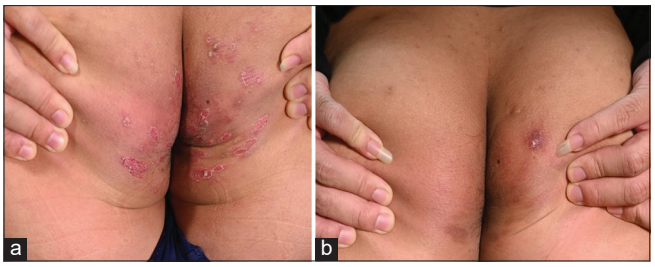


Figure 1: Secondary syphilis on the buttock: (a) before treatment, (b) three months after treatment.

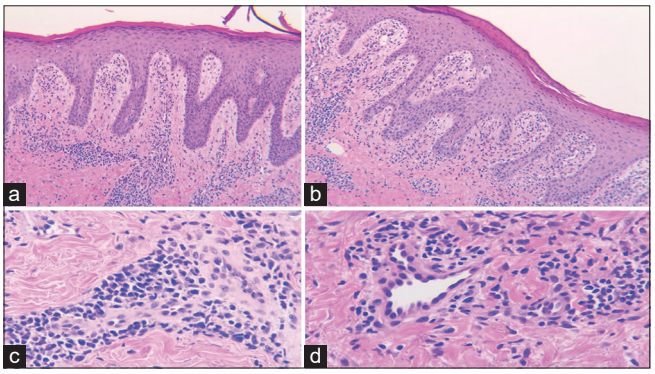


Figure 2: Histologic findings: (a-b) psoriasiform epidermal hyperplasia, an elongated rete, a diffuse perivascular and interstitial dermal infiltrate of plasma cells, lymphocytes, and histiocytes (H&E, 100×); (c-d) numerous plasma cells and epithelial swelling (H&E, 200×).

How to cite this article: Trinh NB, Tran GH. Secondary syphilis mimicking psoriasis vulgaris on the buttock. Our Dermatol Online. 2022;13(3):326-327.

Submission: 17.01.2022; **Acceptance:** 05.04.2022

DOI: 10.7241/ourd.20223.25

regimens include with tetracycline hydrochloride and erythromycin [1,3].

The differential diagnosis of psoriasiform secondary syphilis includes psoriasis vulgaris, lichen planus, and dermatophyte infection [4]. Psoriasis vulgaris is characterized by erythematous plaques with thickened, shiny scales on the elbows, knees, palms, and soles, especially positive Auspitz's sign. Therefore, psoriasis vulgaris was excluded due to the negativity of Auspitz's sign and the unusual location of the lesions. Lichen planus is histologically characterized by a band-like lymphocytic infiltration at the dermal–epidermal junction and a lack of plasma cells. A significant amount of plasma cells on the histological finding and the positive results for syphilis were found in our patient, thus lichen planus was excluded. Fungal microscopy was negative and the diagnosis of dermatophyte infection was also excluded. Based on a previous history of homosexual contact, clinical lesions, serological tests, and a good response to benzathine penicillin G treatment, we confirmed the diagnosis of secondary syphilis.

A psoriasiform lesion is a rare manifestation of secondary syphilis, which may be misdiagnosed with other skin disorders.

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. Cather JC, Cather JC, Menter MA. Psoriasiform lesions on trunk and palms. Proc (Bayl Univ Med Cent). 2003;16:236-8.
2. Lleó MI, Escribano PC, Prieto BM. Atypical cutaneous manifestations in syphilis. Actas Dermo-Sifiliog. 2016;107:275-83.
3. Krishnan A, Samayam A, Patra AK. Syphilis: Case series. Our Dermatol Online. 2019;10:286-8.
4. Tamer F. Remember the great imitator 'syphilis' in oral lesions. Our Dermatol Online. 2018;9:397-8.

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

Case Letter

A case of persistent psoriasis occurring after influenza vaccination

Maki Takada, Toshiyuki Yamamoto

Department of Dermatology, Fukushima Medical University, Fukushima, Japan

Corresponding author: Maki Takada, MD, E-mail: takadamk@fmu.ac.jp

Sir,

A thirty-year-old male received influenza vaccination in the upper arm. Several days later, erythema appeared on the vaccinated site and spread to the trunk and extremities. He had no family history of psoriasis. He was treated with a topical corticosteroid for three months, which yielded no effects and, thus, he was referred to our hospital. A physical examination revealed numerous erythematous, scaly macules scattered on the trunk and upper extremities and erythema with thick scales scattered on the lower extremities (Figs. 1a and 1b). The psoriasis area and severity index (PASI) score was 9.7. We performed a skin biopsy from the left lower leg. Histopathology revealed a regularly elongated epidermis, an absent granular cell layer of the epidermis, parakeratosis in the corneal layer, and subcorneal neutrophil infiltration (Fig. 1c). Immunohistochemistry revealed that CD4- and CD8-positive T-cells infiltrated into the epidermis and upper dermis, and IL-17, CD123, and TNF-α were also detected in the inflammatory cells below the epidermis. He was diagnosed with psoriasis and was started on a treatment with topical betamethasone and calcipotriol formula (Dovobet) ointment and oral cyclosporine (300 mg/day). An improvement in the skin lesions other than those in the lower extremities was observed after two months. However, the scaly, erythematous lesions on the lower legs were resistant to therapy. The treatment was continued thereafter.

The present case developed psoriasis *de novo* on the trunk and extremities following influenza vaccination in the arm. The psoriasis was not transient and the patient developed a chronic course. Thus, we considered that true psoriasis was induced by the vaccination. To date,

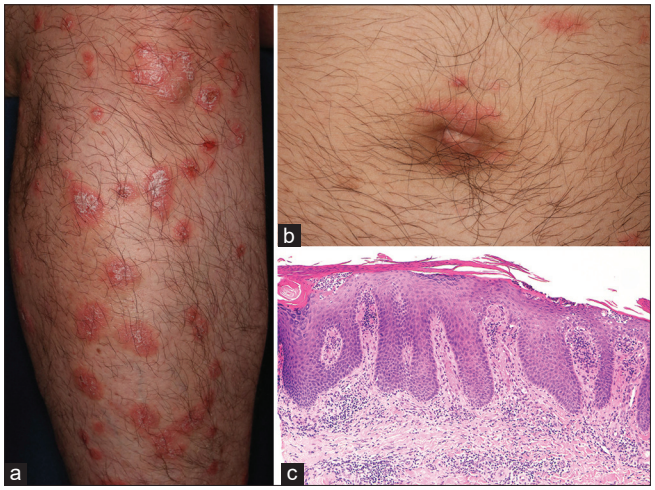


Figure 1: (a) Physical examination revealing diffuse erythema with thick scales on the left leg. (b) Erythema also present in the umbilical region. (c): Histopathology showing uniform epidermal hyperplasia, an absent granular cell layer of the epidermis, as well as parakeratosis and neutrophils in the stratum corneum and epidermis (H&E; 100×).

there have been several cases of the *de novo* onset of psoriasis or psoriasiform eruption or a worsening of pre-existing psoriasis after influenza vaccination. As far as we were able to search, there are sixteen reported cases of psoriasis occurring after influenza vaccination [1-4], including seven with a detailed description of the course and treatment [1-3]. Five of the seven cases improved with topical corticosteroids only (Table 1). The remaining two cases were resistant to topical corticosteroids, one of which was treated with phototherapy and the other was treated with topical corticosteroids and methotrexate (Table 2). In all seven cases, a complete clearance of psoriasis was observed. By contrast, in our case, the scaly, erythematous lesions on the lower extremities were resistant even to cyclosporine therapy, suggesting a rare case of persistent (not transient) influenza-vaccine-induced psoriasis.

How to cite this article: Takada M, Yamamoto T. A case of persistent psoriasis occurring after influenza vaccination. Our Dermatol Online. 2022;13(3):328-329.

Submission: 29.03.2022; **Acceptance:** 27.05.2022

DOI: 10.7241/ourd.20223.26

Table 1: Demographic and clinical features of the five cases treated with topical steroids only.

Patient No.	Sex	Age	Time from vaccination to psoriasis flare onset (days)	Treatment for psoriasis flare	Outcome	Ref.
1	M	37	7	Topical steroids	Complete clearance	1
2	M	47	28	Topical steroids	Complete clearance	3
3	M	45	< 30	Topical steroids	Complete clearance	3
4	F	34	8	Topical steroids	Complete clearance	3
5	F	9	7	Topical steroids	Complete clearance	3

Table 2: Demographic and clinical features of the two cases resistant to topical steroids.

Patient No.	Sex	Age	Time from vaccination to psoriasis flare onset (days)	Treatment for psoriasis flare	Outcome	Ref.
1	F	26	21	Topical steroids and phototherapy	Complete clearance	2
2	M	74	6	Topical steroids initially, switched to methotrexate	Complete clearance	3

Vaccination induces acquired immunity by antigen presentation. Naive T cells stimulated by the vaccine differentiate into effector T cells such as Th1 and Th17 cells. Vaccination also induces innate immunity. Plasmacytoid dendritic cells (pDCs) detect antigens from the vaccine with toll-like receptors and produce interferon-α, which has antiviral effects. These two types of immunity are involved in the course of psoriasis [5]. pDCs are induced by irritation, infection, environmental factors, among others. Interferon-α produced by pDCs induces inflammatory dendritic cells, which in turn induce Th1 and Th17 cells. These factors lead to the development of psoriasis. Influenza vaccination induces the activation of pDCs, Th1 cells, and Th17 cells, which may lead to the development of psoriasis.

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. Raaschou NW. Psoriasis vaccinalis: Report of two cases, one following B.C.G. vaccination and one following vaccination against influenza. Acta Dermato Venereol. 1955;35:37-42.
2. 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.
3. Sbidian E, Eftekahri P, Viguier M, Laroche L, Chosidow O, Gosselin P, et al. National survey of psoriasis flares after 2009 monovalent H1N1/seasonal vaccines. Dermatology. 2014;229:130-5.
4. Gunes AT, Fetil E, Akarsu S, Ozbagcivan O, Babayeva L. Possible triggering effect of influenza vaccination on psoriasis. J Immunol Res. 2015;2015:258430.
5. Armstrong AW, Read C. Pathophysiology, clinical presentation, and treatment of psoriasis: A review. JAMA. 2020;323:1945-60.

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

Our Dermatology Online

Case Letter

Tea-induced chronic urticaria: A case report and review of the literature

Ahmed Abdul-Aziz Ahmed, Hayder Saad Ahmed

Department of Dermatology and Venereology, College of Medicine, Tikrit University, Iraq

Corresponding author: Ahmed Abdul-Aziz Ahmed, MD, FICMS, E-mail: ahmedabdul-aziz@tu.edu.iq

Sir,

Urticaria is an immunologically mediated hypersensitivity reaction developing in both sexes. Although it may occur at any age, young females are more frequently affected [1]. Acute urticaria, shorter than six weeks, is generally self-limited. In contrast, a patient with urticaria lasting more than six weeks is classified as having chronic urticaria. Patients with chronic urticaria may be classified into either chronic inducible urticaria or chronic spontaneous urticaria (CSU). Urticaria may be either a true IgE mediated allergic reaction or a non-IgE mediated pseudo-allergic reaction by releasing prostaglandins and leukotrienes [2].

A routine test usually includes CBC, ESR, and infection screening. Provocation tests for physical urticaria and immunological tests are performed to identify autoimmune urticaria. Skin prick tests and oral provocation tests are employed to differentiate allergic and pseudo-allergic reactions [3].

In contrast to physical urticaria, in which the triggering physical stimuli is usually easy to identify, it is often cumbersome to determine the trigger of chronic spontaneous urticaria. The following case represents an example of such a hidden trigger of CSU.

A thirty-year-old male had been suffering from ordinary urticaria for the last eight years. At one point, the patient developed angioedema but there was no history of anaphylaxis. No specific physical trigger was noted throughout this period. Apart from antihistamines, no drugs, including OTC or supplements, had been used regularly. The patient was distressed with a poor quality of life because of the difficult to control urticaria. There was no personal or family history of atopy or allergic diseases. Laboratory testing, including CBC, ESR, hepatitis screening, a *H. pylori* test and a general stool examination, were all negative. The symptoms were difficult to control with antihistamines. No immunosuppressive or biologic drugs were used for the urticaria. A pseudo-allergen-free diet was considered and included only rice, potatoes, additive-free bread, and oils for two weeks with daily monitoring of the severity of the symptoms. Shortly thereafter, the patient's symptoms improved dramatically. Then, dietary products were introduced gradually one item every three days with a food diary. Interestingly, deterioration was noted within one hour after the re-introduction of tea. The triggering effect of tea was further confirmed with a subsequent tea-withdrawal-induced remission and relapse of urticaria upon a tea oral provocation test under direct supervision. During the entire period of pseudo-allergen-free diet, the patient was on the standard dose of an antihistamine. Subsequently, oral provocation tests were performed with different types of tea yet without triggering any symptoms. Therefore, only one particular type of tea was responsible for triggering the urticaria. Since the dietary elimination of that type of tea, the patient has never developed urticaria even without antihistamines. Currently, while consuming a different type of tea, the patient is free of urticaria without taking any antihistamines.

The role of food in inducing or aggravating chronic urticaria is well recognized. It may be either a food allergy (IgE-mediated) or food intolerance (non-IgE-

How to cite this article: Abdul-Aziz Ahmed A, Ahmed HS. Active vitiligo vulgaris following the administration of the Oxford–AstraZeneca (AZD1222) vaccine against SARS-CoV-2. Our Dermatol Online. 2022;13(3):330-331.

Submission: 29.10.2021; **Acceptance:** 06.01.2022

DOI: 10.7241/ourd.20223.27

mediated). Despite the fact that the self-reported prevalence of food as a trigger of CSU is 13–80%, the true prevalence of allergic reactions is 2%, while pseudo-allergic-reaction-induced urticaria reported in the literature ranges from 1% to 50% [4].

Dietary triggers of pseudo-allergen-mediated-urticaria include natural compounds (certain fruits, spices, vegetables), artificial additives (dyes, preservatives, flavorings), and vasoactive compounds (acetylsalicylic acid, histamine, nitric oxide). Nevertheless, additives represent only a minority of the pseudo-allergic reactions. Tea-induced urticaria is well documented yet without a known prevalence. Caffeine was reported to induce urticaria in eight patients [5]. On the other hand, traces of chlorothalonil, a fungicide used in organic tea, was reported to induce several allergic reactions, including urticaria and angioedema. Tea flavorings were also responsible for inducing urticaria. Our patient developed urticaria within several hours of the consumption of one particular type of tea, indicating an IgE-mediated reaction. Since the symptoms were not induced by consuming coffee or cola, the effect of caffeine as a potential trigger was excluded. In addition, the patient developed no urticaria after oral provocation tests with other types of tea. Therefore, the probability of certain flavorings being a potential trigger of urticaria was strongly considered in this case [4,5].

Three types of dietary management were described in the literature, a pseudo-allergen-free diet, a low-histamine diet, and a diet without fish products. A complete remission and partial remission to these dietary regimens were (4.8%, 37.0%), (11.7%, 43.9%), and (10.6%, 4.3%), respectively. In the case of IgE-mediated urticaria, the specific food allergens need to be eliminated as far as possible, leading to a remission within less than 24 hours [6]. The risk of a nutritional deficiency from a low pseudo-allergen diet is minuscule as most macro- and micronutrients will be compensated by the consumption of vegetables. However, the latest guidelines from the EAACI/GA2LEN/EDF/WAO do not recommend a PFD or LHD because of its controversy and the lack of well-controlled, double-blind, placebo-controlled studies [7].

This case report confirms tea as a hidden trigger of chronic urticaria, which resolves completely upon tea dietary elimination. It also draws attention to the role of diet in chronic urticaria. In addition, this case report highlights the importance and safety of dietary restriction in the diagnosis and control of chronic urticaria.

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. Frigas E, Park MA. Acute urticaria and Angioedema. Am J Clin Dermatol. 2009;10:239-50.
2. Antia C, Baquerizo K, Korman A, Bernstein JA, Alikhan A. Urticaria: E comprehensive review: Epidemiology, diagnosis, and work-up. J Am Acad Dermatol. 2018;79:599-614.
3. Sánchez J, Sánchez A, Cardona R. Dietary habits in patients with chronic spontaneous urticaria: Evaluation of food as trigger of symptoms exacerbation. Dermatol Res Pract. 2018;19:2018.
4. Reese I, Zuberbier T, Bunselmeyer B, Erdmann S, Henzgen M, Fuchs T, et al. Diagnostic approach for suspected pseudoallergic reaction to food ingredients. JDDG: J Dtsch Dermatol Ges. 2009;7:70-7.
5. Tognetti L, Murdaca F, Fimiani M. Caffeine as a cause of urticaria-angioedema. Indian Dermatol Online J. 2014;5(Suppl 2):S113.
6. Andres C, Chen WC, Ollert M, Mempel M, Darsow U, Ring J. Anaphylactic reaction to camomile tea. Allergol Int. 2009;58:135-6.
7. Zuberbier T, Aberer W, Asero R, Abdul Latiff AH, Baker D, Ballmer-Weber B, et al. The EAACI/GA²LEN/EDF/WAO guideline for the definition, classification, diagnosis and management of urticaria. Allergy. 2018;73:1393-414.

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

Our Dermatology Online

Case Letter

Prurigo pigmentosa and diabetes: A case report

Fatima Azzahra El Gaitibi, Sanae Sialiti, Asmae Abdelmoutalib, Soumaya Hamich, Mariame Meziane, Laila Benzekri, Nadia Ismaili, Karima Senouci

Department of Dermatology, Mohammed V University in Rabat, Ibn Sina University Hospital, Rabat. Morocco

Corresponding author: Fatima Azzahra El Gaitibi, MD, E-mail: elgaitibi.fatimaazzahra@gmail.com

Sir,

Prurigo pigmentosa is a rare inflammatory disease first reported in 1971 by Nagashima et al. as a "peculiar pruriginous dermatosis with gross reticular pigmentation" in Japan [1], where the largest number of such cases have been described, with only several cases having been described elsewhere. Herein, we report a new case of prurigo pigmentosa.

A 32-year-old Moroccan female presented at our dermatology department with a several-week-old history of pruritic eruptions on the chest, abdomen, lumbosacral area, and neck. According to the patient, the onset was marked by itchy papules coalescing to plaques, secondarily becoming hyperpigmented reticulated macules. The patient was treated with antifungal drugs without improvement. Additionally, the patient had recently been diagnosed with type II diabetes and was treated by oral antidiabetics.

A physical examination revealed hyperpigmented macules arranged in a reticulate pattern, mainly on the chest, abdomen, lumbosacral area, and neck (Figs. 1 and 2). She had no acanthosis nigricans or other associated symptoms. The main diagnoses considered were pityriasis versicolor, confluent and reticulated papillomatosis of Gougerot–Carteaud, and prurigo pigmentosa. A histological examination revealed a discreetly atrophic epidermis surmounted by compact orthokeratotic hyperkeratosis and slight basal pigmentation. The dermis was the site of perivascular mononuclear infiltrates associated with a small number of melanophages. Periodic acid–Schiff staining was negative. This was consistent with the diagnosis of prurigo pigmentosa.

After stabilizing the patient's diabetes, the eruption disappeared spontaneously, leaving only faded pigmentation.

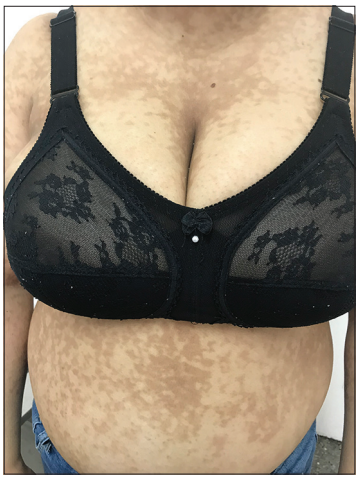


Figure 1: Hyperpigmented macules arranged in a reticulate pattern on the chest and the abdomen.

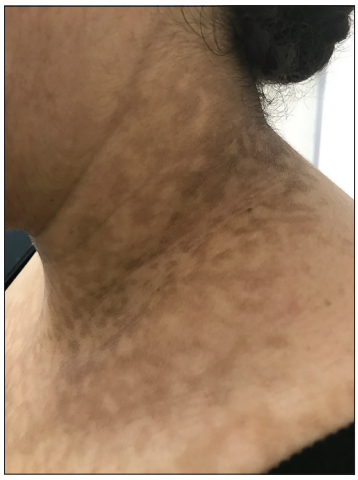


Figure 2: Hyperpigmented macules arranged in a reticulate pattern on the neck.

How to cite this article: El Gaitibi FZ, Sialiti S, Abdelmoutalib A, Hamich S, Meziane M, Benzekri L, Ismaili N, Senouci K. Prurigo pigmentosa and diabetes: A case report. Our Dermatol Online. 2022;13(3):332-333.

Submission: 27.01.2021; **Acceptance:** 16.04.2021

DOI: 10.7241/ourd.20223.28

Prurigo pigmentosa occurs more often in females in the third decade of life [2]. It is characterized by erythematous itchy plaques or papules organized in a transient reticulate pattern, later with post-inflammatory hyperpigmentation that persists for several months. It commonly appears symmetrically on the chest, lumbosacral area, and neck.

Histologically, we noticed a superficial and perivascular mononuclear infiltrate with papillary dermal edema and spongiosis. In the advanced stage of the disease, lymphocytic dermal infiltrate is found along with upper dermal melanophages. Besides, the epidermis is the site of focal parakeratosis and sometimes necrotic keratinocytes [2].

The etiology is unknown. Several reported cases were associated with fasting, dieting, and diabetes. These suggest the probable contribution of ketosis to the pathogenesis [3]. Indeed, prurigo pigmentosa occurs more often in individuals with insulin-dependent diabetes, which progresses more easily to ketoacidosis than in those with non-insulin-dependent diabetes [4]. Glycemic control with the disappearance of ketonuria may therefore be sufficient to resolve prurigo pigmentosa. In some cases, however, treatment with cyclins or dapsone is necessary.

In the present case, the adaptation of an antidiabetic treatment and glycemic control resolved the rash.

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. Nagashima M, Ohshiro A, Shimizu N. [A peculiar pruriginous dermatosis with gross reticular pigmentation]. Jap J Dermatol. 1971;81:78-91.
2. Almaani N, Al-Tarawneh AH, Msallam H. Prurigo Pigmentosa: A Clinicopathological report of three middle eastern patients. Case Rep Dermatol Med. 2018;2018:9406797.
3. Alshaya MA, Turkmani MG, Alissa AM. Prurigo pigmentosa following ketogenic diet and bariatric surgery: A growing association. JAAD Case Rep. 2019;5:504-7.
4. Ohnishi T, Kisa H, Ogata E, Watanabe S. Prurigo pigmentosa associated with diabetic ketoacidosis. Acta Derm Venereol. 2000;80:447-8.

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

Our Dermatology Online

Case Letter

Leser–Trélat syndrome and squamous cell carcinoma of the bladder

Ida Aurélie Lenga Loumingou[1], Almamy Diabaté[2], Yannick Ijosdi Dimi Nyanga[3]

[1]Department of Dermatology, University of Brazzaville Medical Center, Brazzaville, Republic of the Congo, [2]Department of Dermatology, CHU de Bouaké, Université Alassane Ouattara, Bouaké, Côte d'Ivoire, [3]Department of Urology, University of Brazzaville Medical Center, Brazzaville, Republic of the Congo

Corresponding author: Ida Aurélie Lenga Loumingou, MD, E-mail: idalengaloumingou@gmail.com

Sir,

Paraneoplastic syndromes are contemporaneous with various malignant tumors. Leser–Trélat syndrome is a paraneoplastic syndrome associated with certain cancers, notably, breast, lung, kidney, hepato-digestive, melanoma, and lymphoma [1].

The pathogenesis of Leser–Trélat syndrome remains unknown. Exceptional observations associate Leser–Trélat with bladder carcinoma [2].

Herein, we report Leser–Trélat syndrome in a 75-year-old black patient with bladder carcinoma.

The aim of this work is to report an unusual association.

The patient was a 75-year-old male, a non-smoker, with no previous history, admitted to the urology department of the Brazzaville Hospital for bladder carcinoma. The tumor suspected on ultrasound was documented by anatomopathological examination.

The incidental discovery of a rash of diffuse pigmented papules located preferentially on the trunk, consisting of lesions of variable size, measuring from 3 to 1 cm, with a soft or firm consistency and irregular surface (Fig. 1). These lesions were suggestive of seborrheic keratoses.

Leser–Trélat syndrome is rare, described in 1800 by Edmond Leser and Ulysse Trélat, updated in 1900 by Hollander, and for some authors is hypothetical, defined as a sudden eruption of seborrheic keratoses contemporary with a malignant tumor [3]. These tumors are carcinomas, melanomas, or lymphomas [3]. Seborrheic keratoses are considered a variant of *dermatosis papulosa nigra*, which has less voluminous lesions and is specific to pigmented skin [4].

The first association of Leser–Trélat syndrome with bladder carcinoma was reported in 1994 by Yaniv [2].

Seborrheic keratoses in elderly individuals are typical. The average age of a patient with bladder cancer is 60–70 years [5].

The relevance of a link between seborrheic keratoses and bladder carcinoma may be argued by the data in the literature [2], and then by the explosive character of the skin rash. This link may be confirmed by the search for specific antibodies (epidermal growth factor, inhibiting growth factor, and transforming growth

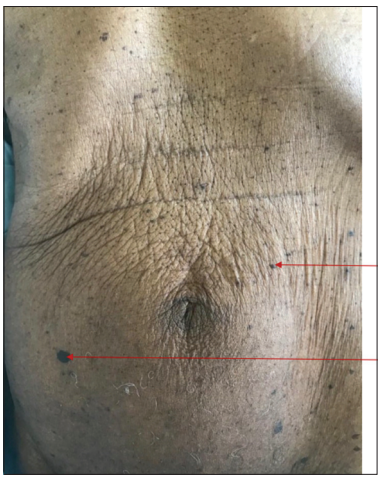


Figure 1: Multiple seborrheic keratoses of the trunk.

How to cite this article: Lenga Loumingou IA, Diabaté A, Dimi Nyanga YI. Leser–Trélat syndrome and squamous cell carcinoma of the bladder. Our Dermatol Online. 2022;13(3):334-335.

Submission: 22.01.2022; **Acceptance:** 05.04.2022

DOI: 10.7241/ourd.20223.29

factor alpha) followed by immunohistochemical analysis of the keratoses revealing the epidermal growth factor receptor [1,5].

The interest of this observation is to report an exceptional association of Leser–Trélat syndrome with bladder carcinoma and to remind the necessity to look for a malignant tumor in front of an explosion of seborrheic keratoses.

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. Ponti G, Luppi G, Losi L, Giannetti A, Seidenari S. Leser–Trélat syndrome in patients affected by six multiple metachronous primitive cancers. J Hematol Oncol. 2010;3:2.
2. Yaniv R, Servadio Y, Feinstein A, Trau H. The sign of Leser–Trélat associated with transitional cell carcinoma of the urinary bladder: A case report and short review. Clin Exp Dermatol. 1994;19:142-5.
3. Bernett CN, Schmieder GJ. Leser–Trélat sign. 2021 Sep 19. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan.
4. Metin SA, Lee BW, Lambert WC, Parish LC. Dermatosis papulosa nigra: A clinically and histopathologically distinct entity. Clin Dermatol. 2017;35:491-6.
5. Didona D, Didona B, Fania L, Bidonna B, Eming R, Hertl M. Paraneoplastic dermatoses: A brief general review and an extensive analysis of paraneoplastic pemphigus and paraneoplastic dermatomyositis. Int J Mol Sci. 2020;21:2178.

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

Our Dermatology Online

Case Letter

Leser–Trélat syndrome: What does it hide?

Dassouli Ryme, Zakia Douhi, Kenza Tahri, Hanane Baybay, Sara Elloudi, Fatima Zahra Mernissi

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

Corresponding author: Dassouli Ryme, MD, E-mail: dassouliryme@gmail.com

Sir,

Seborrheic keratoses (SKs) are common, benign, non-melanocytic epidermal tumors [1]. Still, they may be suspicious of other, more serious underlying conditions.

Leser–Trélat syndrome may be considered a paraneoplastic condition characterized by the sudden onset of multiple SKs [2]. Herein, we report two cases of malignancy revealed by eruptive KS.

The first case, an 83-year-old male with no notable pathological history, presented for two years with rapidly evolving lesions of the trunk over a six-month period. The patient also noticed for three months melena with transit disorders, justifying a consultation in which the diagnosis of sigmoid tumor was reached and the patient was referred for surgery.

A clinical examination revealed multiple, sessile, exophytic tumors of round or oval appearance, 1 to 3 cm in diameter, well-delimited. The surface of the lesions was verrucous, brownish-black, with numerous, black, keratotic plugs (Fig. 1a). A dermoscopic examination revealed a cerebral appearance with pseudocysts and pseudocomedones (Fig. 1b). The diagnosis of seborrheic keratosis was thus reached.

The second case was an 84-year-old male, a chronic smoker, who was hospitalized at the oncology department for a squamous cell carcinoma of the lung, which had been evolving for one year and which had been treated with carboplatin and paclitaxel. The patient consulted for pruritic lesions of the trunk that appeared two years previously with rapid growth and extension.

A dermatological examination revealed multiple, brownish, exophytic plaques and tumors with sessile bases, round or oval in appearance, ranging in size from 0.5 to 4 cm, scattered on the trunk, axillary region, and face (Fig. 2). Dermoscopy found brownish lesions with a cerebral appearance and good border demarcation, pseudocysts and pseudocomedones, and a coral-like appearance. These were multiple seborrheic keratoses in a subject with pulmonary neoplasia. The diagnosis of Leser–Trélat syndrome was retained, although the patient was unwilling to treat the lesions.

The Leser–Trélat sign (LTS) is considered a relatively rare paraneoplastic skin marker of internal malignancy. To date, there have been no standardized or quantified diagnostic criteria defining the Leser–Trélat sign, yet the familiar definition includes an increase in the number and/or size of seborrheic keratoses (SKs) [3].

SKs primarily affect the chest and back, followed by the extremities, face, abdomen, neck, and axilla. Pruritus and inflammation are common [4].

The LTS is most frequently associated with adenocarcinomas (gastrointestinal in 32% of cases), followed by lymphoproliferative disorders in 20% and, more rarely, with carcinomas of the breast, lung, liver, kidney, prostate, ovary, and nasopharynx [5]. In addition, mycosis fungoides, Sézary syndrome, and plasmacytoma have been described in association with this paraneoplastic disorder [6].

The exact underlying pathogenesis remains unknown. More recent observations have shown a correlation between the release of TGF-alpha and EGF from malignant cells and the rapid proliferation of keratinocytes in the lesional syndrome [7].

How to cite this article: Ryme D, Douhi Z, Tahri K, Baybay H, Elloudi S, Mernissi FZ. Leser–Trélat syndrome: What does it hide? Our Dermatol Online. 2022;13(3):336-337.

Submission: 07.09.2021; **Acceptance:** 05.05.2022

DOI: 10.7241/ourd.20223.30

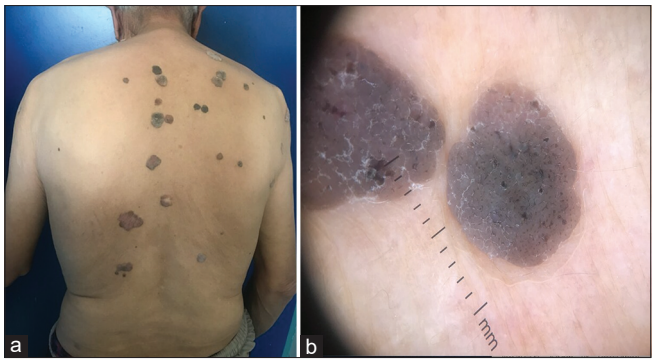


Figure 1: (a)Tumors with a round or oval appearance, well-defined, localized on the trunk. (b) Cerebral aspect with pseudocysts and pseudocomedones.

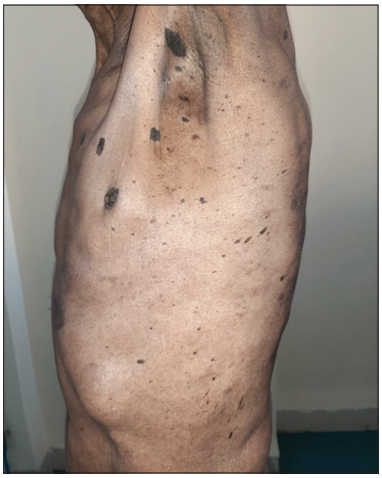


Figure 2: Multiple, brownish papules and plaques on the face and trunk.

A careful search for an underlying malignancy should be undertaken. A physical examination with a complete blood count, serum biochemistry, chest X-ray, mammogram, Pap smear, PSA screening, upper GI endoscopy, and colonoscopy is required during this examination [5-7].

Curettage is the first choice of treatment. After the removal of the internal neoplasm, the regression of seborrheic keratoses is observed [7].

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. Karadag AS, Parish LC. The status of the seborrheic keratosis. Clin Dermatol. 2018;36:275-7.
2. Silva JA, Mesquita Kde C, Igreja AC, Lucas IC, Freitas AF, Oliveira SM, et al. Paraneoplastic cutaneous manifestations: Concepts and updates. An Bras Dermatol. 2013;88:9-22.
3. Gori N, Esposito I, Del Regno L, D'Amore A, Peris K, Di Stefani A. Leser–Trélat sign as a rare manifestation of cutaneous melanoma. Dermatol Reports. 2020;12:8665.
4. Bernett CN, Schmieder GJ. Leser–Trélat sign. Trasure Island (FL): StatPearls; 2020.
5. Wollina U. Recent advances in managing and understanding seborrheic keratosis. F1000Res. 2019;8:F1000.
6. Narala S, Cohen PR. Cutaneous T-cell lymphoma-associated Leser–Trélat sign: Report and world literature review. Dermatol Online J. 2017;23:13030/qt0w01b1t3.
7. Asri H, Soualhi M. The sign of Leser–Trélat: Think in the adenocarcinoma of the lung. Pan Afr Med J. 2018;30:270.

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

Our Dermatology Online

Case Letter

A case of eccrine spiradenoma presenting as a painless, reddish nodule on the forearm

Sarra Saad[1,2], Nadia Ghariani Fetoui[1,2], Feriel Amri[1,2], Amina Aounallah[1,2], Sana Mokni[1,2], Mouna Ben hamouda[1,3],Badereddine Sriha[1,3], Najet Ghariani[1,2],Colandane Belajouza[1,2], Mohamed Denguezli[1,2]

[1]University of Medecine of Sousse, University of Sousse,4000, Sousse, Tunisia, [2]Department of Dermatology, Farhat Hached Hospital, Sousse, Tunisia, [3]Department of Pathology, Farhat Hached Hospital, Sousse, Tunisia

Corresponding author: Sarra Saad, MD, E-mail: drsaadsarra@gmail.com

Sir,

Eccrine spiradenoma (ES) is a rare and benign adnexal tumor originating from the eccrine glands. It is usually located in the truncal region and is most common in young adults twenty to forty years old. Herein, we report a clinical, dermoscopic, and histological description of the case of an elderly male with an atypical tumor localization.

A 74-year-old male presented with a painless, nodular mass on the anterior aspect of the left forearm, growing progressively over the previous year. He had no medical history. A dermatological examination revealed a solid, skin-colored nodule with a central ulceration and a peripheral collar, measuring approx. 1 to 1.5 cm in diameter, not bleeding on contact (Fig. 1a). There were no similar nodules or palpable lymph nodes. Dermoscopy was performed with DermLite 4. It demonstrated a vascular pattern of branched vessels and a central ulceration with a reddish background and scattered blue clods. It also showed a yellowish-brown, serohematic crust surrounding the ulceration and the reddish background (Figs. 1b and 1c). Upon histopathologic examination, the excised nodule revealed a tumoral proliferation, which was well demarcated from the surrounding tissue. It consisted of sharply defined lobules and cords intertwined into a puzzle-like structure (Fig. 2a). Two cell populations were identified: small basaloid cells and larger cuboidal ones. The cells displayed high mitotic activity yet no abnormal mitotic figures and no necrotic background. The section also showed numerous amorphous eosinophilic deposits within the cell cords and a richly vascularized stroma (Fig. 2b). The excision was complete and there were no recurrences on subsequent checks.

Eccrine spiradenoma (ES) presents mostly (97%) as a solitary nodule and, rarely, as multiple [1], linear, Blaschkoid, or grouped lesions [2]. The tumor arises from the intradermal part of the duct of eccrine sweat glands [3]. It is most common in young adults twenty to forty years old [2]. Eccrine spiradenoma is usually located in the truncal region. However, uncommon sites have been reported, such as the ears, eyelids, lips, and hands [4]. Paroxysmal pain and tenderness are the main features of the tumor, observed in 91% of cases [1,5]. Our patient accumulated numerous misleading clinical features, notably, the location in the anterior aspect of the forearm, the reddish color of the tumor, its painless nature, the presence of ulceration, and a peripheral collar. The dermoscopic features, rarely described in the literature, are non-specific and may be easily confused with those of basal cell carcinoma (BCC) [6]. In the case of our patient, the vascular pattern of serpentine, branched vessels in combination with blue clods suggested the diagnosis of BCC. While blue clods correspond to nests of pigmented trichoblasts in BCC, they are a sign of ES. Aside from BCC, the branched vessels may be found in any kind of adnexal tumor [6]. Although the histological features of ES are well established, very few cytological descriptions of this tumor have been documented [3]. Authors typically report tight

How to cite this article: Saad S, Ghariani Fetoui N, Amri F, Aounallah A, Mokni S, Ben Hamouda M, Sriha B, Ghariani N, Belajouza C, Denguezli M. A case of eccrine spiradenoma presenting as a painless, reddish nodule on the forearm. Our Dermatol Online. 2022;13(3):338-339.

Submission: 12.12.2021; **Acceptance:** 03.03.2022

DOI: 10.7241/ourd.20223.31

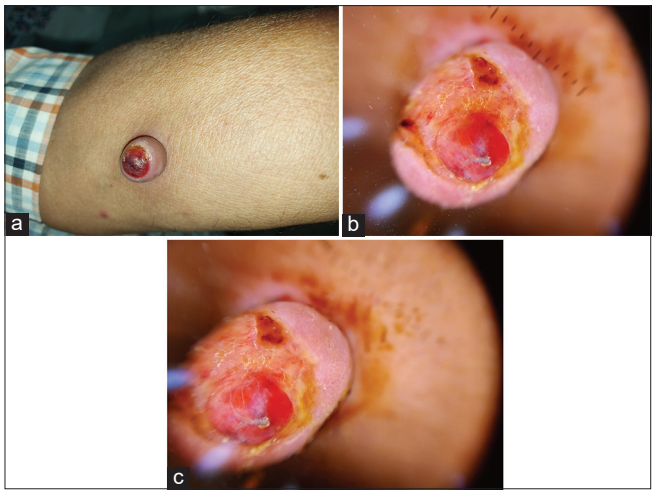


Figure 1: (a) Solid, skin-colored nodule with a central ulceration and a peripheral collar, 1 to 1.5 cm in diameter. (b and c) Dermoscopic features showing a vascular pattern of branched vessels and a central ulceration with a reddish background and scattered blue clods, as well as yellowish-brown, serohematic crusts.

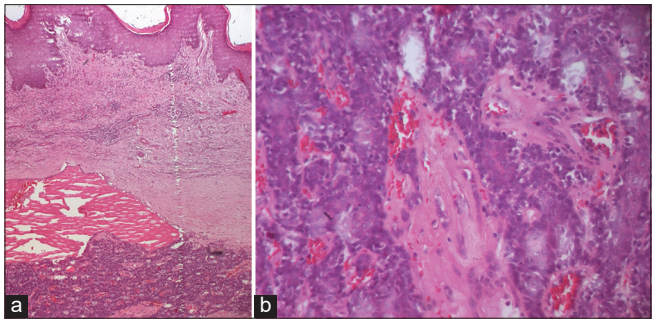


Figure 2: (a) Tumoral proliferation well demarcated from the surrounding tissue made of sharply defined lobules and cords intertwined into a puzzle-like structure (H&E, 40×). (b) The presence of two cell populations, small basaloid cells, and larger cuboidal ones, with high mitotic activity, and numerous amorphous eosinophilic deposits within the cell cords and a richly vascularized stroma (H&E, 200×).

clusters of multilayered, uniform, cuboidal, bland epithelial cells arranged around hyalinized material [3]. ES should be cytologically differentiated from other eccrine adnexal tumors (hidradenoma, cylindroma, chondroid syringoma), glomus tumors, adenoid cystic carcinoma, and spiradenocarcinoma [3,7]. In our case, histopathological examination, showing two cell populations (basaloid and cuboidal) and a puzzle-like structure made of lobules and cords, allowed the diagnosis of ES and the exclusion of pyogenic granuloma. It also excluded any malignant changes.

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. Gerochristou M, Mazioti M, Douvali T, Gerodimou M, Chasapi V. Multiple eccrine spiradenoma in a young Greek patient: Case report and review of the literatute. Our Dermatol Online. 2019;10:278-80.
2. Sharma A, Sengupta P, Das AK, Nigam MK, Chattopadhya S. Eccrine spiradenoma in knee. Indian J Dermatol. 2014;59:513-5.
3. Sinha A, Pal S, Phukan JP. Fine needle aspiration cytology of eccrine spiradenoma of back: Report of a rare case. J Lab Physicians. 2014;6:130-2.
4. Benedict MA, Ozerdem U. Eccrine spiradenoma arising from the breast skin. Case Rep Pathol. 2015;2015:615158.
5. Son JH, Choi YW, Cho YS, Byun YS, Chung BY, Cho HJ, et al. A case of eccrine spiradenoma: A rarely seen soft tissue tumor on the extensor surface of arm. Ann Dermatol. 2017;29 519-22.
6. Tschandl P. Dermatoscopic pattern of a spiradenoma. Dermatol Pract Concept. 2012;2:0204a09.
7. Jaehee Kim, Ho Jik Yang, Jung-Soo Pyo. Eccrine spiradenoma of the scalp. Arch Craniofac Surg. 2017;18:211-3.

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

Case Letter

Bortezomib-induced injection-site reaction in refractory multiple myeloma

Chaymae Jroundi, Sara Elloudi, Sabrina Oujdi, Zakia Douhi, Hanane Baybay, Fatima Zahra Mernissi

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

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

Sir,

Multiple myeloma (MM) is a malignant proliferation of monoclonal plasma cells often confined to the bone and bone marrow [1]. The outcome for patients with multiple myeloma (MM) has significantly improved with the introduction of novel agents such as the proteasome inhibitor bortezomib [2]. Bortezomib has been approved for the treatment of relapsing multiple myeloma. Since its approval, numerous bortezomib-related cutaneous adverse events have been reported in the literature, including herpes zoster, epidermal necrolysis, vasculitis, and other skin eruptions [3]. Subcutaneous (*SC*) rather than intravenous (*IV*) administration of bortezomib is still commonly preferred because *SC* bortezomib results in a lower incidence and severity of peripheral neuropathy and has equivalent efficacy. Unfortunately, detailed information on injection site reactions (ISRs) has not been sufficiently documented. It is recommended that *SC* injections of bortezomib should be rotated among eight different sites in the abdomen and thigh [2]. Oral prophylactic therapy before each bortezomib treatment with oral corticosteroids is also suggested and might be helpful in preventing such reactions or in limiting their extent in susceptible patients. Disseminated cutaneous manifestations due to the *IV* use of bortezomib, have been described in the past. To our knowledge, only one case has been reported in the literature describing an immune-associated necrotizing eruption on the site of an *SC* injection of bortezomib treated with intravenous methylprednisolone [3]. Herein, we report a case of localized ulceration following *SC* injection of bortezomib in a patient with refractory MM.

A 58-year-old patient with a history of refractory multiple myeloma was initially treated with a CDT protocol with progression, hence the decision to switch to *SC* bortezomib. The patient received three injections with no incidents. The fourth injection was followed by the appearance of a painful, well-defined, 5 cm ulceration with deep infiltration on the injection site on the left side of the abdomen (Fig. 1). The patient initially received oral antibiotic therapy without improvement and extension of the ulceration (Fig. 2). She underwent a biologic workup and an ultrasound of the soft tissues to exclude an abscess. An ultrasound revealed a hyperechogenic subcutaneous infiltrate with no visible collection. The final diagnosis was bortezomib-induced injection-site reaction and the patient was treated with highly potent topical corticosteroids. She showed a significant improvement, complete healing of the ulceration, and the persistence of a painless, pigmented infiltration on the palpation of the injection site (Fig. 3). Oral

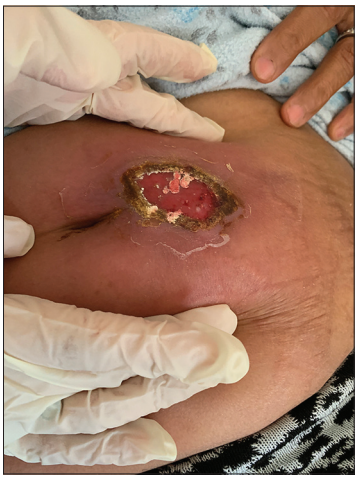


Figure 1: Painful, well-defined, 5 cm ulceration with deep infiltration on the injection site on the left side of the abdomen.

How to cite this article: Jroundi C, Elloudi S, Oujdi S, Douhi Z, Baybay H, Mernissi FZ. Bortezomib-induced injection-site reaction in refractory multiple myeloma. Our Dermatol Online. 2022;13(3):340-341.

Submission: 08.10.2021; **Acceptance:** 05.01.2022

DOI: 10.7241/ourd.20223.32

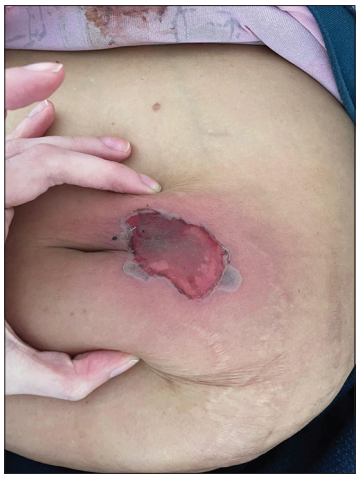


Figure 2: Extension of the ulceration despite oral antibiotic therapy.

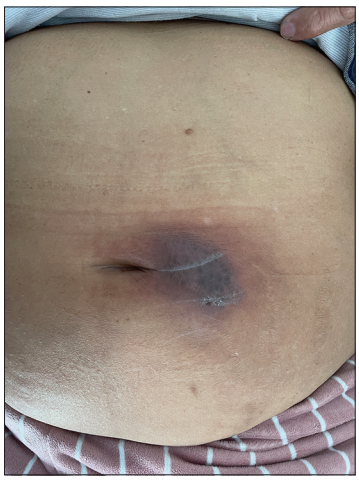


Figure 3: Complete healing of the ulceration and the persistence of a painless, pigmented infiltration after topical corticosteroids.

prophylactic corticosteroid therapy is to be considered for future injection in our patient.

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. Gil F, Duarte M. Extramedullary plasmacytomas and prognostic implications in multiple myeloma. Our Dermatol Online. 2020;11:84-5.
2. Kamimura T, Miyamoto T, Yokota N, Takashima S, Chong Y, Ito Y, et al. Higher incidence of injection site reactions after subcutaneous bortezomib administration on the thigh compared with the abdomen. Eur J Haematol. 2013;90:157-61.
3. Obeid KM, Ferrara R, Sharma M. Cutaneous lesion induced by a subcutaneous administration of bortezomib. Clin Lymphoma Myeloma Leuk. 2012;12:284-6.

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

Case Letter

A digital myxoid pseudocyst with novel dermoscopic signs

Elga Muralidharan[1], Lovleen Kaur[2], Mohita Mahajan[1], Bharat Bhushan Mahajan[1], Sachdeep Kaur[2]

[1]Department of Dermatology, Venereology and Leprosy, Government Medical College, Amritsar, Punjab, India, [2]Department of Dermatology, Venereology and Leprology, Pt. B.D. Sharma Post Graduate Institute of Medical Sciences, Rohtak, Haryana, India

Corresponding author: Dr. Lovleen Kaur, MD, E-mail: dr.lovleen555@gmail.com

Sir,

A 61-year-old female presented to us with a slowly progressive, asymptomatic, localized swelling in the proximal nail fold (PNF) of the left ring finger present for nine months. An examination revealed a discrete, well marginated, skin-colored, firm, non-tender nodule, 8 × 8 mm in size, between the distal interphalangeal (DIP) joint and the PNF of the left ring finger. Besides this, the concomitant nail plate also had longitudinal guttering originating from underneath the PNF and extending until the free edge of the nail plate, corresponding to the possibility of pressure effects of the lesion on the nail matrix (Fig. 1a). Polarized light dermoscopy revealed thick, white, linear structures intermingled with dotted vessels and short, linear, curved, comma-shaped vessels in the center of the lesion (Fig. 2a). High-resolution ultrasonography with power Doppler of the lesion revealed a hypoechoic area without any vascular component (Fig. 2b) and normal appearing interphalangeal joints. Under aseptic precautions, triamcinolone acetonide (TA) at 10 mg/mL was injected intralesionally from its lateral margin until the blanching of the lesion. A transparent, jelly-like material extruded through the entrance of the needle, thus confirming the clinical diagnosis of a digital myxoid pseudocyst (DMP) (Fig. 1b). No recurrence was observed within six months of follow-up (Fig. 1c). A DMP, also called a digital synovial cyst or ganglion cyst, is a benign tumor of the digit. It is not a true cyst as it lacks a cyst wall lined with epithelial cells. It is filled with mucoid materials overproduced by fibroblasts [1]. They arise due to repetitive trauma causing either focal mucinous degeneration of the connective tissue or the leakage of synovial fluid from the DIP joint. Two types of digital mucous cysts are distinguished: the myxomatous, or superficial, type and the ganglion, or deep, type. A DMP may sometimes compress the nail matrix, creating longitudinal depressions in the nail plate, as seen in this case. Nail changes may precede cyst formation by up to six months. Occasionally, the cyst may exert pressure on the nail matrix giving rise to a bluish-red lunula [2]. Salerni et al. described the dermoscopic features of a DMP as bright white areas with a linear, branched, serpentine vascular pattern [3]. Dermoscopy of our case, however, revealed white, linear structures intermingled with dotted vessels and short, linear, curved, comma-shaped vessels. These non-identical dermoscopic patterns could be attributed to the different depth of the DMP in our case to these observed by Salerni et al. The pseudocyst in our case also demonstrated compression effects on the proximal nail matrix indicated by longitudinal guttering in the nail plate, while no such finding was present in the former. In addition, arboriform and polymorphic vascular patterns have also been described. Repetitive puncturing, aspiration, sclerotherapy, and intralesional steroids have been attempted; however, recurrences may develop [4]. Although surgical excision of a DMP with synovectomy shows a lower recurrence rate, it may cause complications such as nail deformities, post-operative pain, and limited post-operative functional use. To conclude, the dermoscopic features of the DMP in the current case may hold an addition to the existing dermoscopic signs, hence aid in the diagnosis of the DMP.

How to cite this article: Muralidharan E, Kaur L, Mahajan M, Mahajan BB, Kaur S. A digital myxoid pseudocyst with novel dermoscopic signs. Our Dermatol Online. 2022;13(3):342-343.

Submission: 21.11.2021; **Acceptance:** 19.02.2022

DOI: 10.7241/ourd.20223.33

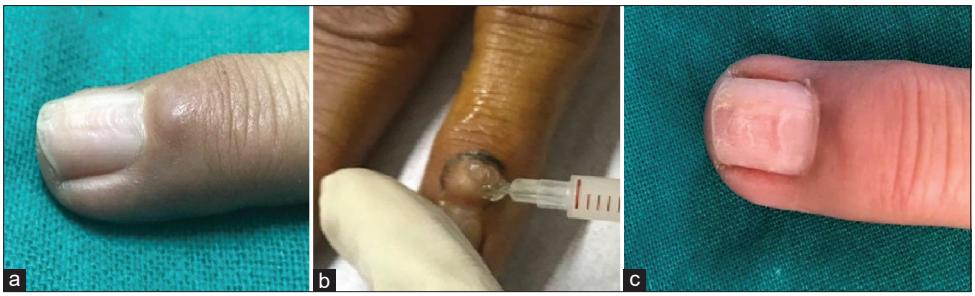


Figure 1: (a) Well-demarcated nodule on the PNF with a concomitant longitudinal groove extending to the free edge of the nail plate; (b) clear, gelatinous substance extruding from the entrance of the needle during triamcinolone acetonide infiltration; (c) the response at twenty weeks after a single injection.

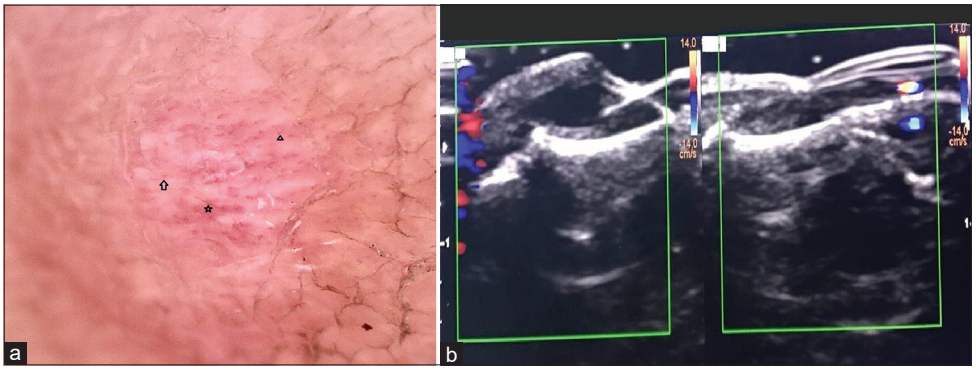


Figure 2: (a) Dermoscopy revealing white, linear structures intermingled with dotted vessels (arrow) and short, linear (star) and short, curved or c-shaped vessels (triangle); (b) the hypoechoic area without any vascular component observed on high-resolution ultrasonography with power Doppler of the lesion.

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. Nakamura-Wakatsuki T, Yamamoto T. Cutaneous myxoid cyst on the sclerotic finger in a patient with diffuse systemic sclerosis. Our Dermatol Online. 2013;4:506-7.
2. de Berker D, Goettman S, Baran R. Subungual myxoid cysts: Clinical manifestations and response to therapy. J Am Acad Dermatol. 2002;46:394-8.
3. Salerni G, González R, Alonso C. Dermatoscopic pattern of digital mucous cyst: Report of three cases. Dermatol Pract Concept. 2014;4:65-7.
4. Monteagudo-Sánchez B, Luiña-Méndez L, Mosquera-Fernández A. Dermoscopic features of a digital myxoid cyst. Acta Dermatovenerol Croat. 2019;27:129-30.

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

Our Dermatology Online

Case Letter

Vestibular papillomatosis: A differential diagnosis of vulvar condylomas

Asmae Abdelmouttalib, Sanae Sialiti, Mariame Meziane, Karima Senouci

Dermatology and Venereology Department, Mohamed V University in Rabat, Morocco

Corresponding author: Asmae Abdelmouttalib, MD, E-mail: abdelmouttalibasmae@gmail.com

Sir,

For a considerable time, vestibular papillomatosis (VP) has been conceived of as a secondary pathology to HPV (human papilloma virus). Nowadays, several authors are reconsidering it as an anatomical variant of the vestibular mucosa. We report a case of VP initially mistaken for vulvar condyloma.

A 25-year-old female without any particular medical history presented herself to the gynecologist for genital papules, without functional signs of genital discharge or dyspareunia. A cervicovaginal smear and viral serologies for HIV and hepatitis B and C were negative, and a diagnosis of vulvar condyloma was reached. The patient was referred to the dermatology department for eventual treatment. A clinical examination revealed filiform, flexible, flesh-colored papillae 1–2 mm in diameter located on both edges of the vulva (Fig. 1). A dermoscopic examination found linear, symmetrical papillae in the vulval vestibule with abundant vessels along them (Fig. 2). There was no whitening of the lesions under the acetic acid test. The diagnosis of vestibular papillomatosis was reached, the patient was reassured, and no treatment was prescribed.

At the beginning of the eighties, authors linked the occurrence of VP to an HPV infection based on histological and/or molecular evidence of the presence of the virus and considered VP to be responsible for many cases of pruritus and/or vulvodynia. Based on these findings, a number of clinicians have treated this condition with laser ablation or topical application of podophyllin or trichloroacetic acid [1]. Currently, several studies have shown the rare relationship between HPV infection and VP. VP is thus considered an anatomical variant of the vestibular mucosa [2]. Papillae are generally distinguishable from condyloma acuminata by clinical and dermoscopic examination, without the need for biopsies or HPV testing [1]. Clinical criteria have been proposed to assist in the differential diagnosis between VP and condyloma acuminata. In VP, the papillae are symmetrical or linear, soft and pinkish. Their bases are separated, unlike acuminate condylomata, which are hard and irregular and whose projections may cluster around the same base. In addition, most acuminate condylomata bleach under the acetic acid test [3]. Dermoscopy of VP shows abundant and irregular vessels along the center of cylindrical papillae. In addition, in acuminate condyloma, irregular projections with tapered ends are found, which are clearer and wider than in VP. Hemorrhages in the form of red dots or streaks may also be present [4]. No ablative treatment is usually necessary in the case of VP even in the presence of concomitant symptomatology or molecular HPV infection [1].

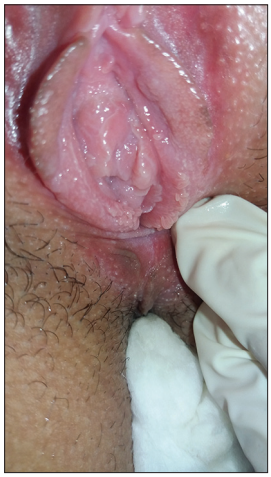


Figure 1: Filiform, flesh-colored papillae on the lateral edges of the vulva.

How to cite this article: Abdelmouttalib A, Sialiti S, Meziane M, Senouci K. Vestibular papillomatosis: A differential diagnosis of vulvar condylomas. Our Dermatol Online. 2022;13(3):344-345.

Submission: 21.12.2020; **Acceptance:** 06.03.2021

DOI: 10.7241/ourd.20223.34

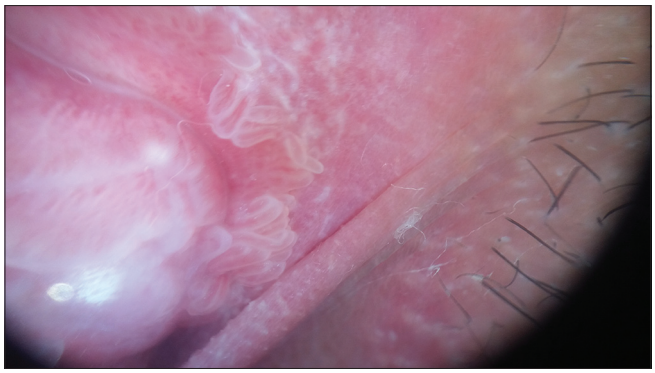


Figure 2: Profuse and irregular vascular channels in the transparent core of multiple, cylindrical filiform projections, with the bases of the individual projections remaining separate.

Vestibular papillomatosis is an entity that dermatologists should be aware of. Correct diagnosis helps to reassure patients and avoid unnecessary laboratory tests, biopsies, and invasive treatments.

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. Ozkur E, Falay T, Turgut Erdemir AV, Gurel MS, Leblebici C. Vestibular papillomatosis: An important differential diagnosis of vulvar papillomas. Dermatol Online J. 2016;22:13030/qt7933q377.
2. Kakkar S, Sharma PK. Benign vulvar vestibular papillomatosis: An underreported condition in Indian dermatological literature. Indian Dermatol Online J. 2017;8:63-5.
3. Thakare SA, Udare S. Importance of dermoscopy to diagnose vulvar vestibular papillomatosis vs. warts. Indian Dermatol Online J. 2020;11:680-1.
4. Kim SH, Seo SH, Ko HC, Kwon KS, Kim MB. The use of dermatoscopy to differentiate vestibular papillae, a normal variant of the female external genitalia, from condyloma acuminata. J Am Acad Dermatol. 2009;60:353-5.

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

Our Dermatology Online

www.odermatol.com

3.2022 (01.July.2022)