

## PREVALENCE OF NAIL ABNORMALITIES IN PATIENTS WITH PSORIASIS

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### Abstract

**Introduction:** Psoriasis is a chronic inflammatory skin disease that affects about 2% of general population. Clinically, disease can present with cutaneous and nails lesions. Nail abnormalities can be seen in up to two-thirds of patients with psoriasis and both fingernails and toenails may be affected.

**Objective:** The objectives of our study were to evaluate the frequency and clinical presentations of nail abnormalities in patients with psoriasis. Also, we aimed to find correlation between nail changes and some clinical parameters.

**Methods:** One hundred and ten patients with psoriasis were included in this study. A detailed history and examination was recorded for all study subjects, including the age and gender of the patients, type of psoriasis, duration, and extent of disease. Finger and toe nails were clinically examined and nail changes were noted. In the case of clinically suspected of fungal infection, further mycological investigations were performed.

**Results:** Nail abnormalities were present in 67 patients (60.9%) with psoriasis. Nail pitting was the most common lesion observed on fingernails, followed by discoloration of nail plate. Subungual hyperkeratosis of nail plates were significantly more frequent on the toenails. Positive mycological culture was in 14 (20.8%) psoriatic patients with nail involvement. Also, positive correlation between nail abnormalities and duration of psoriasis was found.

**Conclusions:** Nail involvement is common in patients with psoriasis and accompanies skin lesions on the body surface. Pitting and subungual hyperkeratosis are the most frequent nail abnormality in psoriatic patients.

**Key words:** nail abnormalities; psoriasis; pitting; subungual hyperkeratosis

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### Introduction

Psoriasis is a chronic inflammatory skin disease that affects about 2% of general population [1]. It is classified into several clinical forms. The most common form is chronic plaque psoriasis (CPP) which occurs in 90% of patients [2] and it is usually characterized by erythematous, scaly plaques on elbows, knees, scalp, but any skin surface may be affected as well. Severe clinical forms are psoriasis pustulosa (PP), psoriasis erythrodermica (PE) and psoriasis arthropatica (PA). The specific pathogenesis of psoriasis is not completely understood, but the underlying mechanisms involve a complex interplay between epidermal keratinocytes, T lymphocytes as well as other leukocytes, and vascular endothelium [3,4].

Even though the skin lesions are the most typical manifestations of disease, nail involvement can be seen in up to 50% of psoriatic patients with a lifetime incidence of 80% to 90% [5,6]. Nail changes is seen in association with all types of psoriasis of the skin, and is frequently present with psoriatic arthropathy [7]. A wide spectrum of nail abnormalities is seen among patients with psoriasis, and both fingernails and toenails may be affected. Purpose of our study was to determine the frequency and

clinical presentations of nail changes in patients with psoriasis.

### Material and Methods

One hundred and ten patients with psoriasis were included in this study which was carried out of our Department of Dermatology. A detailed history and examination was recorded for all study subjects, including the age of the patients, age of onset, type of psoriasis, duration of the disease, and extent and severity of disease. Diagnosis of psoriasis was based on clinical findings, and if necessary, a skin biopsy and histopathology examined was performed. Finger and toe nails were clinically observed and nail changes were noted. In patients with nail changes that were suspicious for fungal infection further mycological investigations were performed. Clippings of the affected nails and subungual scrapings from these patients were collected. One part of of nail specimens was subjected to direct microscopic examination with 10% potassium hydroxide aqueous solution and another part of this specimens were cultured on Sabouraud's dextrosa agar medium with cycloheximide (SDA, PB Paureak, Spain).

The other causes of nail changes, like congenital and traumatic dystrophy were excluded from the this study. Statistical comparisons were performed using the chi-square test. The data were considered statistically significant if p values were less than 0,05 (p<0.05).

### Results

Sixty eight patients (61.8%) were male, and 42 patients (38.2%) were female, and their age ranged from 14 to 61 years (mean age 35.7). The majority of the patients had clinical form of chronic plaque psoriasis 66 (60.0%), followed by psoriasis arthropatica 19 (17.3%), psoriasis erythrodermica 14 (12.7%) and psoriasis pustulosa 11 (10.0%). The age of patients at the onset of the disease had a wide range from 14 to 45 years. The disease duration varied between 2 months to 23.5 years (mean duration: 68.2 month). Nail changes were present in 67 (60.9%) patients with psoriasis, as pitting (47.8%), discoloration of nail plate (17.9%), subungual hyperkeratosis (14.9%), oil spot (8.9%), nail thickening (5.9%) and onycholysis (4.5%). The

prominent clinical finding of the observed fingernails was pitting (48.7%). The percentage of nail plate discoloration on the toenails was 9,75%. Subungual hyperkeratosis of the nail plates was significantly more frequent on the toenails than the fingernails (25% vs 7.6%), (p<0.05). Nail changes were more frequent in patients with chronic plaque psoriasis (59.7%) followed by patients with arthropatic psoriasis (19.4%). Male patients were a little more affected than women (54.7% vs 45.3%). There was correlation between the duration of psoriasis and prevalence of nail involvement. Patients with disease duration of more than five years had a higher prevalence of nail changes than those with shorter disease duration. Of total 67 psoriatic patients with nail involvement positive mycological cultures were obtained from 14 (20.8%). The most commonly isolated fungi were *Candida albicans* (64,3%). The prevalence of *Candida albicans* on the fingernails was 49.6 % and on the toenails 14,7 %. *Trichophyton mentagrophytes* was the commonest dermatophyte species. It was isolated only on toenails (21,4%) (Tabl. I).

Clinical Type of Psoriasis	Patientsn (%)	Nail Changes n (%)
Psoriasis vulgaris	66 (60.0)	40 (60,6)
Psoriasis arthropatica	19 (17.3)	13 (68,4)
Psoriasis erythrodermica	14 (12.7)	9 (64,3)
Psoriasis pustulosa	11 (10.0)	5 (45,5)

**Table I. The association between nail abnormalities and clinical type of psoriasis**

### Discussion

Nail changes in psoriasis are common and in many cases cause impairment of manual dexterity, pain, and psychologic stress [8]. Most psoriatic nail changes present in patients with clinically manifest lesions of the skin, while isolated nail psoriasis is rare, occurring about 1-5 % of patients [9]. Nail involvement is common in older patients, severe clinical forms and longer duration of diseases, and at the presence of psoriatic arthritis in which the incidence of nails changes is over 80% [10]. Although the pathology of nail abnormality in psoriasis is not completely understood, it implies the association of genetic, environmental and immunological factors (T-cell mediated inflammatory reaction). The clinical presentation of nail changes in psoriasis varies according to the severity and localization of the lesion. The nail matrix is the germinal center of the nail, with the proximal matrix forming the dorsal nail plate and the distal matrix forming the ventral nail plate. Both the proximal and distal matrix can be affected by psoriatic lesions. Disorders of nail matrix manifest as defects of nail plate such as pitting, thinning, onychorrhexis and leuconychia. The nail plate is a specialized epidermal structure formed by a process known as onycholemmal keratinization, whereby matrix cells mature, lose their nuclei and organelles, and become commented in a thick mortar [11]. The involvement of nail bed produces "oil drop" sign, subungual hyperkeratosis, onycholysis and splinter haemorrhages [12]. Other less common nail changes include nail fold telangiectasias, red lunulae, punctate red spots in the lunula, transverse leuconychia, leukonychia punctata, half-and-half nail, koilonychia, and onychoschizia [13]. In the most severe forms of psoriasis all the anatomical structures of the nail are damaged. Also, nail alteration in psoriasis can be associated with onychomycosis or paronychia. Nail pitting (psoriasis punctata

unguinum, onychia punctata) is the most common changes in psoriasis of nail [12]. Pits in the nails are superficial depressions in the nail plate, single or multiple, that indicate abnormalities in the proximal matrix [14]. Oil drops are translucent, yellow discolorations of nail plate observed beneath the nail plate often extending distally toward the hyponychium, due to psoriasiform hyperplasia, parakeratosis, microvascular changes, and trapping of neutrophils in the nail bed Subungual hyperkeratosis is due to hyperkeratosis of the nail bed and is often accompanied by onycholysis, which usually involves the distal aspect of nail. In our study 60.9% patients with psoriasis had a nail changes. The commonest change observed was pitting seen in 47.8% patients, followed by discoloration of nail plate 17.9% and subungual hyperkeratosis 14.9%. Pitting and discoloration were significantly more frequent on the fingernails, while subungual hyperkeratosis was observed significantly more often on toenails than on the fingernails, (p<0.05).

Our findings are similar to the study of Zaias who also recorded that the most common nail lesion are pitting, nail discoloration, onycholysis and subungual hyperkeratosis [15]. In study of Salomon and al, [16] (78.3%) patients had clinical evidence of nail changes out of total of 106 patients with psoriasis, and subungual hyperkeratosis was the most common nail abnormality observed on both fingernails and toenails [16]. The clinical type of psoriasis associated with nail involvement predominantly was PA (68.4%) followed by PE (64.2%). Although the psoriasis is equally distributed among both genders, some studies showed that the male patients were far more affected [17]. In our study, we observed slight males preponderance (54.7%). The prevalence of nail abnormality was well connected to the duration of psoriasis.

The longer the psoriasis was present, the more the nail changes prevailed. No association was found of the incidence of nail changes with the age of patients as well as with the extent of skin lesions. Fungal infection of nail is common finding in psoriatic patients. In our study positive mycological cultures from nail specimens were obtained in 14 (20.8%) psoriatic patients. The prevalence of onychomycosis caused by yeasts in psoriatic patients is reported as 19-23 % [18,19]. Similarly to the previous report [16], in our study *Candida albicans* was the commonest isolated fungi in psoriatic patients with nail involvement.

### Conclusions

In conclusion, our study confirms that nail involvement is common in patients with psoriasis. Pitting and subungual hyperkeratosis are the most frequent nail abnormality in psoriatic patients. Duration of disease was found to have an impact on the prevalence of nail abnormality.

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