

Original Article

Palmoplantar Psoriasis versus Eczema: Major Histopathologic Clues for Diagnosis

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ABSTRACT

Background & Objectives: Accurate differentiation of eczema and psoriasis can be difficult, especially in areas of palm and sole. This study was designed to evaluate histopathological features and identify statistically significant parameters in distinguishing palmoplantar psoriasis from eczema of these regions in patients referring to Razi Skin Hospital, Tehran, Iran.

Methods: In a cross-sectional study, the patients referring to Razi Skin Hospital were subjected. Biopsies of 36 patients with palmoplantar psoriasis and 16 patients with eczema of these regions were collected from archive of pathology. All of the biopsies were examined blind to the clinical diagnosis by four dermatopathologists separately and data collection forms were completed. Then obtained data were analyzed by SPSS software.

Results: The females were more affected than males. There was no difference on involving palm and sole between psoriasis and eczema. Hypogranulosis ($P<0.0001$), Monro's microabscess ($P<0.0001$), tortuous blood vessels in papillary dermis ($P<0.0001$), suprapapillary plate thinning ($P=0.020$), confluent parakeratosis ($P=0.044$) and spongiform pustule ($P=0.047$) were found to be statistically significant contributors to the clinicopathological concordance in cases of psoriasis. Plasma mounds ($P=0.022$) were significantly associated with diagnosis of eczema.

Conclusion: Psoriasis was more common than eczema in the palms. Histopathologic finding like hypogranulosis, Monro's microabscess, tortuous blood vessels in papillary dermis, suprapapillary plate thinning, confluent parakeratosis and spongiform pustule had significant relationship with psoriasis and might be useful for its diagnosis.

Keywords: Psoriasis, Eczema, Diagnosis

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Introduction

Psoriasis is a common, chronic, inflammatory and proliferative skin disease affects about 2% of the US population, and characterized by abnormal keratinocytic hyperproliferation resulting in thickening of the epidermis (1-3). Psoriasis affects men and women equally, but in women it can occur in early ages. The most clinical feature of the disease is red and scaly lesions that almost seen in the scalp and extensor areas. The disease relapses periodically with variable duration (4). Because of the strong evidence of genetic factors in psoriasis, based on having some particular HLA alleles classified into inherited which is occurs at younger age and is more severe than the second type or sporadic that is not related to HLA types and occur later and is less severe (5).

Eczema is often characterized by clinical and histological features of the skin inflammation which is seen in a variety of dermatitis. Eczema characterized clinically by itching, pain, stiffness, abrasions, exudates, fisher and vesiculation. Some evidences show the interaction of genetic and environmental factors in the initiation and development of disease. Some of the causal factors include trauma (such as the Koebner phenomenon), Infections (streptococcal infection), AIDS, corticosteroids, ACE Inhibitors, NSAIDs, sunlight, metabolic factors, psychological causes (like stress), alcohol and smoking. Histologic changes include spongiosis, acanthosis, hyperkeratosis and infiltration of inflammatory cells in the dermis (4,6).

Distinguishing palmoplantar psoriasis (PPP) from an eczematous dermatitis at these sites is difficult, because they share some histological features (7-9). However, for example, some histopathological finding like Munro's microabscess may in favor of psoriasis. Sometimes histological features are ambiguous, so differentiation of eczema from psoriasis clinically will be difficult.

To our knowledge, only a few histopathologic studies focused on psoriasis and eczema of

the palms and soles have been performed. The present study was designed to (a) evaluate common histopathologic findings of psoriasis and eczema, and (b) identify diagnostic findings in distinguishing them.

Material and Methods

In this cross-sectional study, biopsies from patients with primary clinical diagnosis of psoriasis or eczema (in their palms and soles) referring to Razi Skin Hospital, Tehran, Iran, from October 2010 to October 2011, were examined. After confirmation of diagnosis with clinical biopsies and taking of ethical consent, patients entered to study. The biopsies were examined by two experienced dermatopathologists and at least two experienced dermatopathologists separately reviewed the slides under the light microscope, after completion of data collection forms data analyzed by SPSS software.

Statistical analysis

Statistical analysis performed using SPSS version 16.0.1 (SPSS Inc., Chicago, IL, U.S.A.) to compare types of diseases "t test" and "chi-square test" used with Kappa agreement coefficients. The statistical differences between proportions were determined by χ^2 analysis. Numerical data evaluated using analysis of variance, followed by Tukey's post hoc test. *P* value < 0.05 considered as significant and in all tests, significance level of alpha equaled with 5%.

Results

Demographic data

Fifty two cases, including 36 patients with psoriasis (69.2%) and 16 patients with eczema (30.8%) of palms and soles enrolled into the study. Women were more affected than men (34 versus 18). The mean age of the patients was 44.5 years (ranged 16-70 years). The most of the patients were between 41-60 years (61.5%) followed by

21-40 years (30.8%). Only two patients were below 20 years and two patients over than 60 years. There was no difference in involving palm

and sole between psoriasis and eczema. The demographic data of studied patients according to disease is shown in Table 1.

Table 1- Demographic data in patients with psoriasis and eczema of the palms and soles

Disease	No. (%)	M/F	Mean age (range)	Palm/Sole
Psoriasis	36 (69.2)	11/25	43.25 (16-62)	25/11
Eczema	16 (30.8)	7/9	47.5 (27-70)	11/5
Total	52 (100)	18/34	44.5 (16-70)	36/16

Histopathologic data

Statistically significant histopathologic findings contributes to the diagnosis of psoriasis were hypogranulosis, Munro's microabscess, tortuous blood vessels in papillary dermis, plasma mounds,

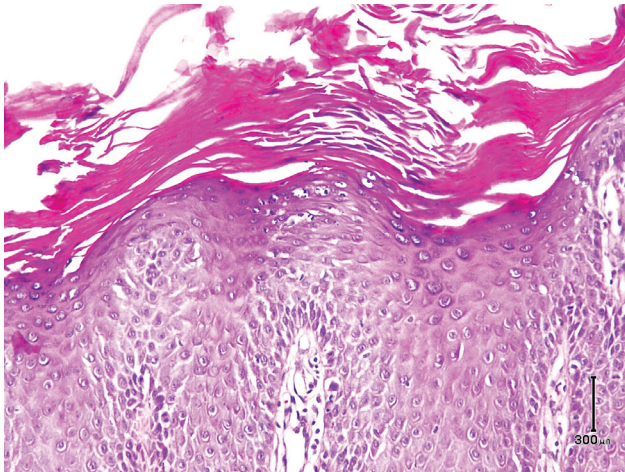


Fig. 1: Spongiform pustule of Kogoj in epidermis is characteristic for psoriasis. (H&E, original magnification $\times 20$)

confluent parakeratosis and spongiform pustule of Kogoj (Fig. 1) (Table 2). Plasma mounds were seen in all eczema cases and although it has been seen in 72.2% of psoriasis cases, were significantly associated with diagnosis of eczema (Fig. 2).

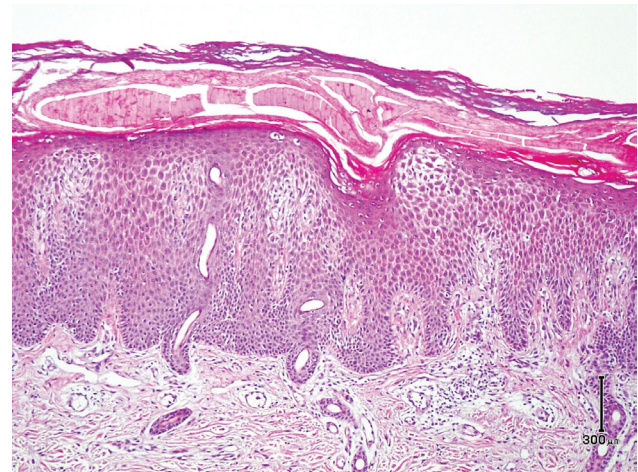


Fig. 2: Plasma mounds in keratotic layer and marked spongiosis in upper layers of the epidermis in subacute eczematous dermatitis. (H&E, original magnification $\times 10$)

Table 2- Major histopathologic findings in 52 cutaneous biopsies of palmoplantar psoriasis and eczema

Histopathologic findings	Psoriasis N=36 (%)	Eczema N=16 (%)	P value
Hypogranulosis	27 (75)	3 (18.8)	<0.0001
Munro's microabscess	26 (72.2)	0 (0)	<0.0001
Tortuous vessels	23 (63.9)	1 (6.3)	<0.0001
Suprapapillary plate thinning	26 (72.2)	4 (25)	0.020
Plasma mounds	26 (72.2)	16 (100)	0.022
Confluent parakeratosis	12 (33.3)	1 (6.3)	0.044
Spongiform pustule (Kogoj)	22 (22.2)	0 (0)	0.047

Focal and alternating parakeratosis were seen in both psoriasis and eczema in the same rate but confluent parakeratosis was statistically significant for diagnosis of psoriasis (Fig. 3, 4). Neutrophilic infiltration in dermis, papillary dermal

edema, mitosis in basal layer, pseudolipomatous changes and RBC's extravasation were seen more in psoriasis. Severe spongiosis and spongiotic vesicle were found more in eczema (Table 3).

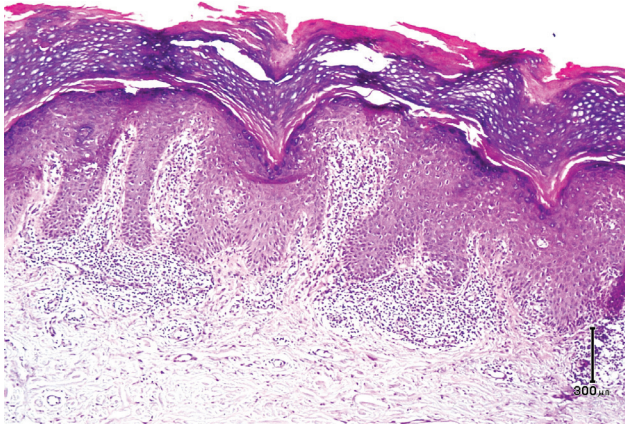


Fig. 3: Hyperkeratosis alternating with parakeratosis, hypergranulosis and irregular acanthosis are more suggestive of eczema. (H&E, original magnification $\times 10$)

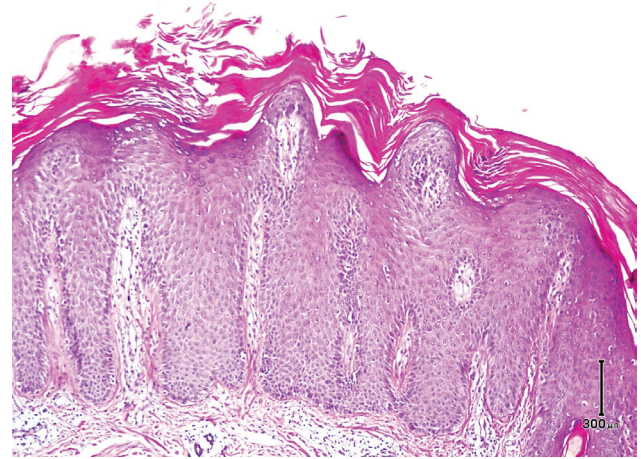


Fig. 4: Confluent parakeratosis, hypogranulosis and regular psoriasiform hyperplasia in psoriasis. (H&E, original magnification $\times 10$)

Table 3- Minor histopathologic findings in 52 cutaneous biopsies of palmoplantar psoriasis and eczema

Histopathologic findings	Psoriasis No.=36 (%)	Eczema No.=16 (%)
Parakeratosis		
Focal	4 (11.1)	5 (31.3)
Alternating	20 (55.6)	10 (62.5)
Confluent*	12 (33.3)	1 (6.3)
Spongiosis		
No	4 (11.1)	2 (12.5)
Mild	16 (44.4)	2 (12.5)
Severe	16 (44.4)	12 (75)
Spongiotic vesicle	14 (38.9)	9 (56.3)
Psoriasiform hyperplasia		
Irregular	25 (69.4)	12 (75)
Regular	11 (30.5)	4 (25)
Infiltration in upper dermis		
Lymphocyte	35 (97.2)	15 (93.8)
Neutrophil	14 (38.9)	2 (12.5)
Eosinophil	14 (38.9)	3 (18.8)
Papillary dermal edema	30 (83.3)	12 (75)
Dyskeratosis	21 (58.3)	9 (56.3)
Mitosis in basal layer	11 (30.6)	2 (25)
Lymphocytic exocytosis	30 (83.3)	12 (75)
Pseudolipomatous changes	11 (30.6)	4 (25)
RBC's extravasation	26 (72.2)	8 (50)

* P value = 0.044

Discussion

The most important differential diagnosis of psoriasis is eczematous dermatitis specially in palm and sole regions (10,11). In the present study, a series of 52 biopsies of palmoplantar psoriasis and eczema removed from patients with clinically diagnosed psoriasis and eczema were studied to identify statistically significant parameters that might help in the distinguishing between two diseases. According to our results, frequency of psoriasis (69.2%) is more common than eczema (30.6%) in palms and soles. Furthermore most of the patients were women.

In a recently published study (10), comparing histopathological parameters in patients with psoriasis and eczematous dermatitis of the palms and soles, only the vertical alternation of parakeratosis and orthokeratosis was significantly different between these two disease groups. In another study based on clinicohistopathological correlation in patients of psoriasis and psoriasiform dermatitis, histological evidence of suprapapillary thinning and absent granular layer, besides the Munro microabscess and Kogoj's abscess was contributed to the diagnosis of psoriasis (12).

In the present study, incidence of Kogoj pustules and Munro's microabscesses in psoriatic plaques of palms and soles were 72.2% and 22.2%, respectively, although this was not in line with another study (10).

The spongiosis have been seen in palms and soles of psoriasis patients, although it is characteristic of eczema but it is often restricted to the lower epidermis in psoriasis (10). However, in our series 88.8% of psoriasis cases showed spongiosis. Spongiotic vesicles were present in about 75% of psoriasis cases in a study (10). However, it was seen in 38.9% and 56.3 % of psoriasis and eczema in our series. The histopathologic features which were statistically significant in distinguishing palmoplantar psoriasis from eczema were hypogranulosis ($P<0.0001$), Munro's microabscess ($P<0.0001$), tortuous blood ves-

sels in papillary dermis ($P<0.0001$), thinning of suprapapillary plate ($P=0.020$), confluent parakeratosis ($P=0.044$) and spongiform pustule of Kogoj ($P=0.047$). Plasma mounds (100%) were significantly associated with diagnosis of eczema ($P<0.0001$). We considered these histopathologic findings as major differentiating factors between palmoplantar psoriasis and eczema (Table 2). Interestingly, edema of papillary dermis in both diseases was common.

Regular psoriasiform hyperplasia, mitosis in suprabasal layers and pseudolipomatosis changes were more common in psoriasis than eczema, but not statistically significant. In a recent study, regular epidermal hyperplasia and marked parakeratosis were more frequent in psoriasis than in allergic contact dermatitis (13). Considered as minor differentiating factors between palmoplantar psoriasis and eczema, there are parakeratosis, spongiosis, psoriasiform hyperplasia, papillary dermal edema, dyskeratosis, mitosis in basal layer, lymphocytic infiltration, pseudolipomatous change and RBC extravasation (Table 3).

In a study of palmoplantar psoriasis versus allergic contact dermatitis of palms and soles, the finding of irregular epidermal hyperplasia and the detection of a higher number of S100 positive dendritic cells were in favor the diagnosis of allergic contact dermatitis over psoriasis (13).

Conclusion

Histopathologic finding like hypogranulosis, Munro's microabscess, tortuous blood vessels in papillary dermis, suprapapillary plate thinning, confluent parakeratosis and spongiform pustule of Kogoj have significant relationship with psoriasis. Plasma moundis significantly more common in eczema. Other histopathological findings in the two diseases had largely overlapped. Several histological features could serve as useful 'clues' to differentiate between palmoplantar psoriasis and eczema.

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