e-ISSN: 0975-1556, p-ISSN:2820-2643

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2024; 16(6); 11-14

Original Research Article

Assessment of Clinical and Histopathological Characteristics of Psoriasis in a Tertiary Care Hospital

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Received: 25-03-2024 / Revised: 23-04-2024 / Accepted: 22-05-2024
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Conflict of interest: Nil

Abstract:

Introduction: Psoriasis comprises a group of common chronic inflammatory and proliferative skin conditions associated with systemic manifestations across multiple organ systems. Its prevalence in India remains poorly defined, with varied presentations at different stages that can mimic other conditions.

Materials and Methods: This retrospective study explored the clinical and histomorphological variants of psoriasis and assessed the age and sex distribution in various types of psoriasis in a tertiary care hospital. Nine parameters were used to evaluate and categorize the different types of psoriasis: 1) Hyperkeratosis, 2) Parakeratosis, 3) Munro's microabscesses, 4) Pustule of Kogoj, 5) Supra-papillary thinning, 6) Elongated rete ridges, 7) Inflammatory infiltrate in the dermis, 8) Capillary proliferation and dilatation, and 9) Spongiosis.

Results: The study revealed a male preponderance, with the highest number of cases in the 31-40 age groups. Psoriasis vulgaris was the predominant histological type, followed by Chronic Plaque Psoriasis. Among the cutaneous features of psoriasis, scales were the most common, followed by plaques. The upper extremities were the most frequently involved site. Epidermal histopathological features included acanthosis in all cases and hyperkeratosis in majority. Dermal features showed dermal infiltration in majority of cases.

Conclusion: Psoriasis exhibits multiple relapses and remissions with varied clinical presentations. Early diagnosis is crucial to halt disease progression, with histomorphology aiding in diagnosis. While most changes occur in the epidermis, dermal changes can also assist pathologists in diagnosis. This study contributes to understanding the prevalence and histomorphological features of psoriasis in India, aiding in better clinical management and patient triage.

Keywords: Dermatology, Histopathology, Plaques, Psoriasis, Scales, Vulgaris.

Introduction

Psoriasis is a chronic inflammatory skin condition characterized by red, scaly plaques, often found on the extensor surfaces of limbs and the scalp, with systemic manifestations in multiple organ systems. Its prevalence ranges from 0.1% to 3% globally, typically appearing in the second and third decades of life. Data on the burden of psoriasis in India are limited, although hospital-based studies report an incidence of 0.44% to 2% among patients [1-5].

A hallmark clinical feature of psoriasis is the presence of well-defined silvery-white scales, often revealing a smooth red membrane with bleeding points upon scale removal (Auspitz sign).

Histologically, psoriasis exhibits acanthosis, parakeratosis, suprapapillary thinning, papillomatosis, intercellular edema, mitosis of basal and prickle cells, and tortuous capillaries with perivascular lymphocytic infiltration. Key diagnostic features include micro Munro abscesses and neutrophilic aggregates forming Kogoj's spongiform pustules [6,7].

Psoriasis presents clinical subtypes that can mimic other dermatological conditions, posing diagnostic challenges. For instance, neutrophils and spongiosis can resemble infectious conditions like dermatophytosis and candidiasis, while irregular hyperplasia and lymphocytic exocytosis may mimic psoriasiform dermatitis [6].

Histopathological confirmation is essential in such cases [8]. Given the variability of psoriasis's

clinical presentation and its potential to mimic other diseases, our study aims to categorize its stages, types, and histopathological features across different age groups to obtain reliable patient data. This study aimed to investigate the clinical and histomorphological variants of psoriasis and examine the age and sex distribution in various types of psoriasis to understand incidence patterns.

Material and Methods

We conducted a retrospective study on 156 clinically diagnosed psoriasis patients at a tertiary care hospital in. Biopsies were taken from lesions at the hospital's Department of Dermatology, fixed in formalin, and processed in the histopathology section of the Central Laboratory.

The sections were stained with routine hematoxylin and eosin stain for histopathological analysis.

The inclusion criteria for this study comprised clinically diagnosed cases of psoriasis, encompassing patients across all age groups and both genders.

Exclusion criteria included patients who were unwilling or unable to provide valid consent for biopsy, pregnant women, cases with inadequate biopsy samples (those showing only dermis or epidermis upon histologic examination), and skin biopsies not directly related to psoriasis.

Histopathological evaluation focused on the presence or absence of the following nine criteria:

1) Hyperkeratosis: thickening of the stratum corneum
2) Parakeratosis: abrupt keratinization resulting in retained nuclei in the stratum corneum
3) Munro's microabscess: collections of neutrophils in the corneal layer
4) Pustule of Kogoj: collections of neutrophils in the stratum spinosum
5) Supra-papillary thinning: thinning of the granular layer at the tips of the papillae
6) Elongated rete ridges: widened and club-shaped rete ridges
7) Inflammatory infiltrate present in the dermis
8) Capillary proliferation and dilatation at the tips of the papillae
9) Spongiosis: accumulation of extracellular fluid within the epidermis resulting in the separation of keratinocytes.

Results

Table 1: Demographic profile of psoriasis cases

Age Groups	**n**	**%**
0-10 years	6	3.85
11-20 years	8	5.13
21-30 years	36	23.08
31-40 years	42	26.92
41-50 years	12	7.69
51-60 years	33	21.15
61-70 years	11	7.05
71-80 years	6	3.85
81-90 years	2	1.28
91-100 years	0	0.00
Gender		
Males	111	71.15
Females	45	28.85
Male : Female Ratio	2.46:1	

Table 2: Clinical features of psoriasis cases

Site of Involvement	**n**	**%**
Upper Extremities	123	78.85
Lower Extremities	117	75.00
Palms and Soles	106	67.95
Trunk	100	64.10
Scalp	72	46.15
Back	62	39.74
Nails	47	30.13
Joints	31	19.87
Face and Neck	16	10.26
Cutaneous Features		
Scales	144	92.31
Plaques	129	82.69

Erythema	84	53.85
Auspitz Sign	56	35.90
Hypopigmented Halo	45	28.85
Papules	39	25.00
Koebner Response	34	21.79
Exfoliation	25	16.03
Pustules	8	5.13

Table 3: Histopathological features amongst psoriasis cases

Histopathological Feature	**n**	**%**
Epidermal Features		
Acanthosis	156	100.00
Hyperkeratosis	148	94.87
Elongation of Rete Ridges	140	89.74
Parakeratosis	133	85.26
Munro-micro Abscess	62	39.74
Spongiosis	61	39.10
Suprapapillary Thinning	42	26.92
Kogoj Abscess	28	17.95
Dermal Features		0.00
Dermal Infiltration	151	96.79
Vascular Proliferation	145	92.95
Dilated and Tortuous Capillaries	145	92.95

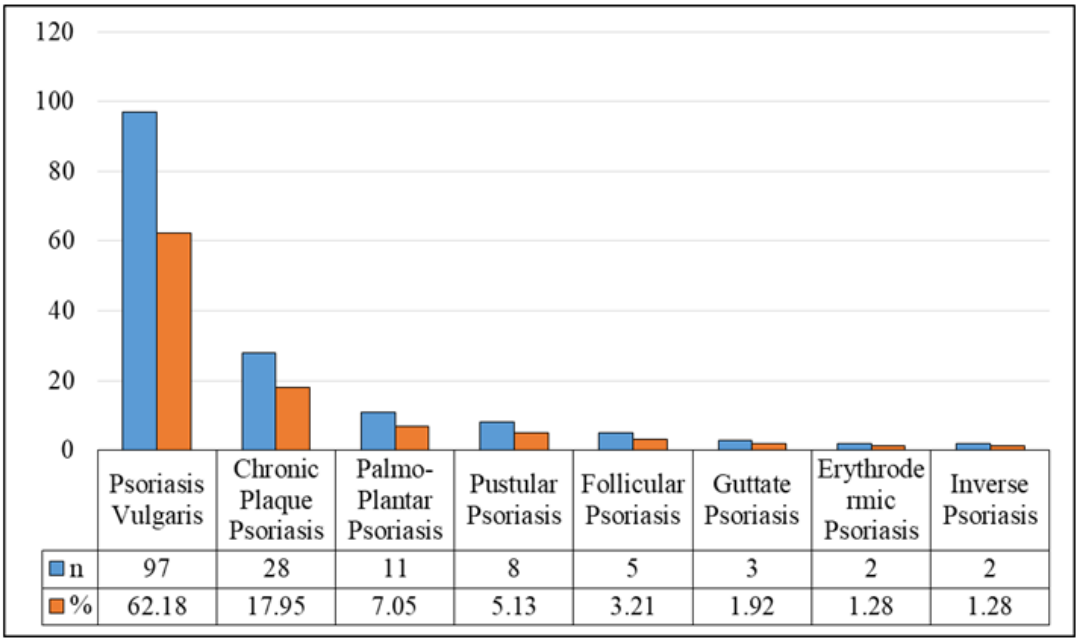

Figure 1: Histopathological subtypes of Psoriasis in study population

Discussion

Psoriasis, a chronic inflammatory condition, is influenced by genetic and environmental factors, leading to varying incidence rates among different ethnic groups and regions worldwide [9]. Studies estimate global psoriasis incidence between 0.3% and 2% [10]. However, in India, accurate population-based assessments are limited, with most data derived from dermatology clinic attendees. Our study, reflecting 8.6% prevalence among dermatology clinic patients, aligns with findings by S. Kumar et al. [11] at 8%. Notably, our prevalence differs from other studies, such as 1.2% in Raghuveer et al.'s study [9] and 4% in Kalpana Kumari M.K's study [12]. The male-to-female ratio in our study (2.4:1) resembles ratios in studies by Bedi et al. [13] and Arora et al. [1].

Upper extremities were most commonly affected in our study, contrasting studies where lower extremities were more involved. For instance, Alhumidi AA reported lower extremity involvement (42%) as maximum [14], and Bai S et al. observed lower limb involvement (90%) primarily [15]. Seasonal variation in psoriasis

symptoms was noted, with worsening in winter and improvement in summer, consistent with findings by Baker H [16], Bedi TR [13], Kaur I et al [5], and Zlotogorski A [17]. High humidity's beneficial effect and xerosis-related issues in winter might explain these patterns [18]. Histologically, acanthosis was predominant (100%) in our study, differing from studies where parakeratosis was more common. Suprapapillary thinning, Munro microabscesses, and chronic inflammatory dermal infiltrates also varied in incidence compared to other studies, possibly due to subjective interpretation [13,15,19].

Overall, our findings contribute to understanding psoriasis's clinical and histological variations, highlighting the need for comprehensive assessments to capture the condition's diverse manifestations accurately. However, the study had limitations as it was retrospective, which restricted the assessment of treatment effects on clinical symptoms and biopsy changes. Furthermore, no interventions were possible due to the study's retrospective nature, and newer diagnostic modalities like immunohistochemistry were not utilized.

Conclusion

Early identification of psoriasis is crucial to prevent its progression, and histopathological examination of skin biopsies plays a vital role in achieving an accurate diagnosis swiftly. While psoriasis can present with diverse features even in skin biopsies, certain consistent features like acanthosis and parakeratosis are typically observed, aiding in diagnosis. This study underscores the significance of histopathological examination (HPE) in diagnosing psoriasis, emphasizing the importance of performing a skin biopsy in suspected cases.

Additionally, it aimed to shed light on the Indian scenario, which is relatively less explored in psoriasis research, highlighting the need for a targeted approach to diagnose psoriasis, with HPE being a crucial component alongside other advanced diagnostic techniques.

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