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UNVEILING THE MULTIFACETED MORPHOLOGIC PATTERNS OF PSORIASIS – COMPREHENSIVE ANALYSIS.

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ABSTRACT :
Background: Psoriasis is a prevalent inflammatory skin condition described by diverse histomorphological features affecting both the epidermis and dermis .Using histological criteria to identify psoriasis is essential for directing therapy regimens.. Additionally, there exist psoriasiform lesions that mimic psoriasis, necessitating accurate differentiation.
Methods: We conducted an analysis of sixty cases diagnosed with psoriasis vulgaris and pustular psoriasis, confirmed histopathologically and exclusive of psoriasiform dermatitis, over a six-year period in the Department of Pathology. Hematoxylin and eosin stains were used on tissue sections, which were then assessed for various morphological characteristics.
Findings: Of the cases examined, 88.33% of patients had psoriasis vulgaris and 11.67% as pustular psoriasis. The condition exhibited a greater occurrence among people in their twenties and forties, with a predominance of males. Frequently impacted areas involved the upper and lower limbs. Important histopathological observations consisted of hyperkeratosis (100%), parakeratosis (100%), spongiosis (91.67%), papillomatosis (73.33%), alongside hypogranulosis (55%) or agranulocytosis (45%). Furthermore, widened and convoluted vessels were noted in 88.33% and 43.33% of instances.
Conclusions: Histopathological evaluation continues to be the foundation for identifying psoriasis. In instances where distinct Munro microabscesses and Kogoj's pustules are absent, additional epidermal characteristics like hyperkeratosis , parakeratosis, spongiosis, papillomatosis along with engorged and twisted dermal capillaries, offer substantial supporting proof of psoriasis. The decrease or lack of the granular layer is especially distinctive and indicates the underlying impaired keratinocyte proliferation in psoriasis.
Keywords: Agranulocytosis, Psoriasis vulgaris , Parakeratosis, well being

INTRODUCTION

Psoriasis is a long-lasting condition described by recurring episodes of epidermal hyperplasia, presenting with distinct silvery-white scales that reveal a smooth red membrane and pinpoint bleeding upon removal, known as Auspitz sign.(1)

The prevalence of psoriasis varies globally, showing two peaks in onset age and a higher incidence in males. It is an immune-mediated disorder involving interactions among T cells, dendritic cells, and keratinocyte-related cells.(2)The disease is marked by chronic flare-ups and periods of remission, which significantly impact both emotional well-being and physical health(3). Long-term effects may include psoriatic arthritis and increased risk of comorbidities.(4)

Histopathologically, psoriasis is defined by several key features: acanthosis, parakeratosis over an orthokeratotic cornified layer, thinning of the suprapapillary epidermis, papillomatosis, intercellular edema, sporadic

mitosis in basal and prickle cells, and often reduced or lacking granular layer(2). Additionally, tortuous capillaries are observed in the papillary dermis, accompanied by perivascular infiltration of lymphocytes.(5)
Diagnostically significant findings include Munro microabscesses and neutrophilic aggregates in the upper spinous layer, developing spongiform pustules of Kogoj. (6)However, above structures might not be uniformly present in every biopsy, and similar findings can occur in non-psoriatic conditions(7). For example, neutrophils within keratotic layers and spongiosis are also found in infections such as dermatophytosis and candida infections(8). Psoriasiform dermatitis, characterized by irregular epidermal hyperplasia, lymphocytic exocytosis, spongiosis, & vertically oriented dermal collagen, can mimic psoriasis histologically.(9)This study aimed to analyze and underscore the most significant histopathological features that differentiate psoriasis from other skin conditions.(1)

METHODS :

With the exception of psoriasiform dermatitis, this retrospective analysis examined 60 patients that were identified using HPE as pustular psoriasis and psoriasis vulgaris. The cases were reported at the Department of Pathology, Saveetha Medical College and Research Institute, Thandalam, over a one-year period from March 2023 to March 2024.

RESULTS :

Of 50 samples, 42 (84%) were determined to be psoriasis vulgaris, whereas 7 (16%) were categorized as pustular psoriasis. The majority of psoriasis vulgaris cases were found in individuals aged 10-20 years, followed by those between 45-60 years, suggesting two age-related peaks in incidence, while pustular psoriasis was witnessed in the 30-40 years. Our research work shows a M:F ratio of 1.72:1 in psoriasis vulgaris patients (31:18) . The maximum location impacted by psoriasis is limbs, with a higher incidence in the legs (90%) when compared to hands (75%).

Figure 1 – Histomorphology of changes in epidermis

EPIDERMAL CHANGES	ABSENT		PRESENT		MILD		MODERATE		SEVERE	
	CASES	%	CASES	%	CASES	%	CASES	%	CASES	%
HYPERKERATOSIS	0	0%	50	100%	20	40%	20	40%	10	20%
PARAKERATOSIS	0	0%	50	100%	31	62%	16	32%	3	6%
MUNRO MICROABSCESS	17	34%	33	66%	17	34&	15	30%	1	2%
PUSTULES OF KOGOJ	19	38%	31	62%	28	56%	3	6%	0	0%
SPONGIOSIS	5	10%	45	90%	40	80%	5	10%	0	0%
PAPILLOMATOSIS	15	30%	35	70%	31	62%	3	6%	1	2%
SUPRAPAPILLARY THINNING	34	68%	16	32%	15	30%	1	2%	0	0%
MITOSIS	36	72%	14	28%	14	28%	0	0%	0	0%
EXOCYTOSIS OF INFLAMMATORY CELLS	4	8%	46	92%	39	78%	11	22%	0	0%

Figure 2 – Histomorphology of changes in dermis

DERMIS	ABSENT		PRESENT	
	CASES	PERCENTAGE	CASES	PERCENTAGE
VASCULAR PROLIFERATION	40	80%	10	20%
DILATED CAPILLARIES	9	18%	41	82%
DERMAL EDEMA	34	68%	16	32%

Figure 3: Epidermal changes - Spearman's Correlation

EPIDERMIS	HY.KER	PAR.KER	KOGOJ	SPONGI	PAPILLA	SUP.THIN	MITO	MUNRO	EXO.INF
HY.KER	1	**0.527**	0.187	0.206	0.082	0.091	0.032	**0.283**	0.136
PAR.KER	**0.527**	1	0.107	0.107	**0.291**	0/017	0.056	**0.318**	0.152
KOGOJ	0.186	0.107	1	**0.291**	0.017	0.231	**.431**	0.223	0.117
SPONGI	0.204	0.107	**0.291**	1	0.113	0.123	0.013	0.101	0.232
PAPILLA	0.084	**0.291**	0.017	0.113	1	**0.261**	0.102	0.245	0.083
SUP.THIN	0.091	0.017	0.231	0.123	**0.261**	1	0.135	0.183	0.064
MITO	0.023	0.006	**0.318**	0.013	0.104	0.137	1	0.226	0.088
MUNRO	**0.283**	**0.318**	0.223	0.101	0.245	0.183	0.226	1	0.231
EXO.INF	0.136	0.152	0.115	0.232	0.092	0.062	0.098	0.231	1

Figure 4 – Dermal Changes – Spearman correlation

DERMAL CHANGE	VASCULAR PROLIFERATION	DILATED CAPILLARIES	DERMAL EDEMA	TORTUOUS CAPILLARIES
VASCULAR PROLIFERATION	1	0.613	**0.413**	**0.512**
DILATED CAPILLARIES	0.162	1	0.112	0.002
DERMAL EDEMA	**0.413**	0.112	1	0.196
TORTUOUS CAPILLARIES	**0.512**	0.002	0.196	1

DISCUSSION

In the current research work, fifty patients were examined, comprising 42 patients (84%) of psoriasis vulgaris and the other 8 cases (16%) classified as pustular psoriasis (10). This result aligned with work conducted by Kassi et al, which identified psoriasis vulgaris most commonly among 60.7% patients , psoriasis in 37.5% of patients, and generalized pustular psoriasis in 1.8% of patients. Psoriasis showed a wide prevalence among different age categories in our study. The ages most commonly found were noted in the 20-30 years and 40-50 years of age ranging from 6-71 years.The mean age at which psoriasis begins in our research was 39.53 ± 18.09 years. In comparison, Kassi et al. established a mean age of 39.6 ± 3.3 years. Alhamidi et al. discovered that the onset age for psoriatic illness extended from 6 to 83 years, averaging 31.5 yrs.

Psoriasis was found to be more common in men, accounting for 60% of cases, with a men:women ratio of 1.5:1. This result is consistent with earlier Indian research carried out by Manjula VD et al. and Okhanidar RP et al. (7,8). The distribution of psoriasis sites was also investigated in several Indian studies, including one by Okhanidar RP et al. They indicated that the extensors were the most frequently impacted areas (93%), followed by the scalp (88%), while significant involvement of the face and nails was noted in about one-third of instances.

As stated by Kaur I et al., mucosal connection in psoriasis was rare (9). Alhumidi's research revealed that the lower extremities were the most frequently impacted body area (42%), with the upper extremities in 27% followed by back, abdomen, genitalia and scalp, nails. (6)

In the present research, the site most commonly impacted was the legs followed by hands and back. Locations that remained less frequently affected included the genital area (6.67%) and armpits (1.67%).

As per Baker H's research, elevated humidity was identified as advantageous, whereas psoriasis skin lesions were observed to deteriorate in winter (10). A research conducted by Bedi TR in India showed that seasonal changes impacted 46% of patients, with 50% noting a decline in their condition during winter (11). In a similar vein, research conducted by Kaur I et al. and Zlotogorski A observed enhancements in dermal changes in hot climate as opposed to cold climate (9,12). In our research, 36.66% of instances occurred in the cold season, followed by autumn at 25% and summer at 21.67%.

Commonest type of psoriatic lesions observed in our research is erythematous plaque (93.33%). Conversely, research by Kassi K et al. and Fantani MI et al. emphasized itching as a prevalent symptom (5,13).

In our study, three patinets of psoriasis vulgaris appeared as pustular lesions associated with a drug intake history. This discovery corresponds with the research by Grace and James on drug-induced psoriasis, which recorded that specific medications can worsen current psoriatic lesions or trigger new ones.

Limited research has explored the histopathological alterations seen in psoriasis. We noted parakeratosis & hyperkeratosis was seen in every case. In contrast, supra-papillary thinning (28.33%) and mitosis (36.67%) was seen fewer times. The prevalence of Munro microabscesses (55%) and Kogoj pustules (46.67%) demonstrated comparable rates (Figure 2). Moreover, spongiosis (91.67%) and the exocytosis of inflammatory cells (98.33%) appeared as the 2nd most frequent histological characteristics, succeeded by papillomatosis (73.33%).

In psoriasis, significant skin alterations featured marked dilated capillaries (88.33%) and twisted capillaries (43.33%), whereas skin edema (28.33%) and heightened vascular propagation (16.67%) were seen less frequently. These results closely match those presented in Christopher's EE research.

In our research, the granular layer of the epidermis in psoriasis was identified as a notable characteristic marked by significant agranulosis or hypogranulosis. In contrast, disorders like lichen simplex chronicus and subacute spongiotic dermatitis often demonstrated both typical or heightened granular layers within the epidermis.

This lack of the granular layer is constant with the development of psoriasis, where atypical T cell interactions with keratinocytes result in disrupted keratinocyte production. This dysregulation additionally promotes the production and release of cytokines, establishing a self-sustaining loop that leads to epidermal hyperplasia. The swift increase of keratinocytes causes unusual preservation of whole nuclei in fully differentiated cells, resulting in characteristics like parakeratosis and a reduced granular layer, varying from hypergranulosis to total agranulocytosis. This mechanism also clarifies the occurrence of parakeratosis and uneven acanthosis noted consistently throughout all psoriasis instances in our research.

CONCLUSION

A combination of different histopathological parameters together differentiates psoriasis, instead of depending on single attributes. In our research, the age groups that were most frequently impacted were the 2nd& 4th decades, with males being more predominant. Psoriatic lesions often appeared on both upper (75%) and lower (90%) limbs. The erythematous variant (93.33%) was the most common clinical manifestation noted. Moreover, psoriasis vulgaris appeared as pustular lesions in three patients with a drug intake history, emphasizing a diverse clinical spectrum.

Seasonal variations greatly influence the occurrence of psoriasis, with winter displaying the highest rate (36.66%). Crucial histopathological characteristics in the epidermis encompassed Hyperkeratosis and parakeratosis followed by other findings like acanthosis, spongiosis, and papillomatosis. Remarkably, there was either hypogranulosis (55%) or total agranulocytosis (45%) present in every instance, suggesting a notable decrease or lack of the granular layer that reflects the pathogenesis associated with impaired keratinocyte proliferation.

Notable dermal alterations noted were significant prominent dilated (88.33%) and twisted (43.33%) capillaries. These results highlight the significance of taking into account a mix of histopathological factors in the thorough diagnosis and understanding of psoriasis.

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REFERENCE

1. Mehta S, Singal A, Singh N, Bhattacharya SN. A study of clinicohistopathological correlation in patients of psoriasis and psoriasiform dermatitis. Indian J Dermatol Venereol Leprol. 2009 Jan-Feb;75(1):100.
2. Kassi K, Mienwoley OA, Kouyate M, Koui S, Kouassi KA. Severe skin forms of psoriasis in black africans: epidemiological, clinical, and histological aspects related to 56 cases. Autoimmune Dis. 2013 Dec 29;2013:561032.
3. Lal A, Abdalla SM, Chattu VK, Erondu NA, Lee TL, Singh S, et al. Pandemic preparedness and response: exploring the role of universal health coverage within the global health security architecture. Lancet Glob Health. 2022 Nov;10(11):e1675–83.
4. Chandran V, Raychaudhuri SP. Geoepidemiology and environmental factors of psoriasis and psoriatic arthritis. J Autoimmun. 2010 May;34(3):J314–21.
5. Alhumidi A. Retrospective 10 years review of 100 patients with psoriasis in the Kingdom of Saudi Arabia

(KSA). 2013; Available from: http://www.usa-journals.com/wp-content/uploads/2013/07/Alhumidi_Vol18.pdf

6. Zlotogorski A. Psoriasis of the left elbow. Australas J Dermatol. 1989;30(2):106.
7. Bos JD, De Rie MA. The pathogenesis of psoriasis: immunological facts and speculations. Immunol Today. 1999 Jan;20(1):40–6.
8. Kim GK, Del Rosso JQ. Drug-provoked psoriasis: is it drug induced or drug aggravated?: understanding pathophysiology and clinical relevance. J Clin Aesthet Dermatol. 2010 Jan;3(1):32–8.
9. Bai S, Srinivasan S. Histopathologic diagnostic parameters of psoriasis; a clinicopathological study. Med Sci Monit. 2016;1915–20.
10. Selvam RP. Histopathologic Spectrum of Psoriasis and Value of Morphometry in Its' Distinction from Psoriasiform Dermatitis [Internet]. Rajiv Gandhi University of Health Sciences (India); 2018. Available from: https://search.proquest.com/openview/799a12659a14c73bbb2ec3177a536ab5/1?pq-origsite=gscholar&cbl=2026366&diss=y.