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Clinicohistopathological study of cutaneous vasculitis

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Abstract
Background: *Vasculitides comprise a group of disorders characterized by inflammation directed at blood vessels, identified by histologic examination. Biopsy is the gold standard for the diagnosis of cutaneous vasculitis.*
Aims:*1) to study in detail, the classic histopathological features of cutaneous vasculitis and correlate them with the clinical features for the emergence of a composite diagnosis of cutaneous vasculitis.2) to evaluate the role of Direct Immunofluorescence in the diagnosis of cutaneous vasculitis.*
Materials and Method: *this cross sectional descriptive study was conducted in the Department of Pathology, Government Medical College, Thiruvananthapuram, during a period of 2 years in 90 cases having a clinical diagnosis of cutaneous vasculitis. Histopathological findings of the skin biopsy specimens were noted. Direct Immunofluorescence was done in a selected number of cases. Data was analyzed using SPSS software. For all statistical evaluations, a 2-tailed probability of value, <0.05 was considered significant.*
Results: *This study shows good correlation between clinical and histopathological diagnosis (93.3% of cases) and is statistically significant. DIF acts as an adjuvant investigation in cases suspected to be immunologically mediated.*
Keywords: *Cutaneous vasculitis, histopathology, Direct immunofluorescence.*

Introduction

Vasculitides comprise a group of disorders characterized by inflammation directed at blood vessels, identified by histologic examination. Zeek was the first to develop a classification system for vasculitis, differentiating patients mostly on organ system involvements.[1] Cutaneous involvement in vasculitis may be primary, reflector of fatal systemic disease or an evidence of association with some other systemic disorder.[5] Skin, being the most accessible organ, is most frequently sampled for this purpose.[2,3,4] Biopsy is the gold standard for the diagnosis of cutaneous vasculitis and is also necessary for the detection of cutaneous vascular immune complexes by direct immunofluorescence. Skin biopsies should

be done within the first 24 hours of development of lesions in clinically suspected cases of cutaneous vasculitis.

This study is based on the classification system of Chapel Hill Consensus Conference (CHCC) 1994, which defines ten types of vasculitis based primarily on histopathologic criteria under three broad categories as 1) large vessel vasculitis 2) medial vessel vasculitis and 3) small vessel vasculitis.[6] For histopathological purpose, cutaneous small vessel vasculitis can be classified according to the composition of inflammatory infiltrate into leukocytoclastic / neutrophilic small vessel vasculitis, lymphocytic vasculitis & granulomatous vasculitis.[7] In assessing the extent of disease, it is important to review for signs & symptoms of visceral involvement. The Birmingham Vasculitis Activity Score is used to identify patients with concurrent systemic disease.[8] Histologic diagnostic criteria was in accordance with Carlson et al. [9] Direct Immunoflourescence findings were in accordance with Tsai et al; Van hale et al , Barnadas et al and Khetan et al.[10,11,12]

Only a few studies have been published on cutaneous vasculitis from India. This study analyses, in depth, the histopathological patterns of various types of vasculitis from skin biopsies and analyses the findings so that a working data may be arrived at, to correlate the clinical classification with the histological.

Aims

1) To study in detail, the types of classic histological patterns in cutaneous vasculitis and to effect a correlation between the histological and clinical features, for the emergence of a composite diagnosis for cutaneous vasculitis.
2) To evaluate the role of Direct Immunoflourescence in the diagnosis of cutaneous vasculitis.

Materials & Methods

The study was conducted in the Department of Pathology, Government Medical College, Thiruvananthapuram during a period of 2 years in consecutive 90 cases having a clinical diagnosis of cutaneous vasculitis. Detailed history regarding age, sex, presenting complaints and associated symptoms were recorded. Relevant clinical examination findings and investigations were included in the proforma. Formalin fixed skin biopsy specimens received in the department of Pathology were processed, paraffin embedded and 4 micrometer thick sections taken. The sections were stained with haematoxylin and eosin. The slides were studied and correlations between clinical and histopathological findings were done to arrive at a complete diagnosis. Direct Immunflourescence (DIF) was done in 25 cases clinically suspected to be Henoch schonlein Purpura (HSP). Skin sampling for DIF was done from a fresh noninfarcted most proximal lesion of less than 6 hours duration. Ethical clearance was obtained from the Human Ethical Committee, Government Medical College, Trivandrum before the study started.

Statistical Analysis: Data was analyzed using Statistical Package for Social Sciences (SPSS) software. Data is expressed in its frequency and percentage, to elucidate associations and comparisons between different parameters. Chi square (x^2) test was used as nonparametric test. For all statistical evaluations, a two-tailed probability of value, <0.05 was considered significant.

Observations & Results

90 patients with clinical diagnosis of Cutaneous vasculitis were included in the study of which 84 patients had histopathological diagnosis of cutaneous vasculitis. Maximum patients (20) were in the age group of 21-30 years (23.8%)[13] with a slight female preponderance (47 cases; 48.8%). Most common dermatological finding was palpable purpura (40.5%) followed by plaques (28.57%).[13] ESR was raised in 52 cases

(57.8%). ASO titre was raised in 31% cases with clinical diagnosis of Henoch Schonlein Purpura. ANA was positive in 33.33% cases with histopathological diagnosis of Discoid Lupus Erythematosus. Most frequently seen epidermal findings was hyperkeratosis (71.43%) followed by keratotic plugging (42.86%), basal cell degeneration (38.09%) and atrophy (28.57%). Most frequent dermal change observed was perivascular inflammatory infiltrate and infiltrate within the vessel wall, seen in all histopathologically diagnosed cases of cutaneous vasculitis. Endothelial swelling (78.57%), extravasation of RBC (38.1%), karyorrhexis (25%), fibrinoid necrosis(15.47%) and oedema (16.66%) were the other dermal changes observed. Leukocytoclastic vasculitis was the histopathological diagnosis in majority of cases (44.05%) followed by Discoid Lupus Erythematoses (29.76%) and Lymphocytic vasculitis(19.05%).

Direct Immunofluorescence was done in 25 clinically suspected cases of HSP shows good correlation between histopathological and clinical diagnosis (93.3% of cases) and is statistically significant. C_3 was the most common immunoreactant present, seen in 23 cases (92%).[13] Fibrin was present in 20 cases (80%). IgA was positive in 16 cases (64%)

Table 1: Distribution of clinical diagnosis in histopathologically proven 84 cases of vasculitis

Clinical diagnosis	frequency	percentage
DLE	28	33.33
HSP	29	34.53
Vasculitic lesion	16	19.05
HD type 2 reaction	04	4.76
Behcets disease	04	4.76
Urticarial vasculitis	03	3.57

Table 2: Histopathologic diagnosis in 84 cases of Cutaneous vasculitis

Histopathology	Frequency	Percentage
DLE	25	29.76
LCV	37	44,05
Lymphocytic vasculitis	16	19.05
HD type 2 reaction	04	4.76
Behcets disease	02	2.38

Table 3: Epidermal changes

Epidermal changes	**Dermal changes**	**percentage**
Hyperkeratosis	60	71.43
Keratotic plugging	36	42.86
Atrophy	24	28.57
Spongiosis	13	15.48
Exocytosis	5	6
Ulceration	5	6
Acanthosis	20	23.8
Basal cell degeneration	32	38.09

Table 4: Dermal changes

Dermal changes	**Frequency**	**Percentage**
Oedema	14	16.66
Karyorrhexis	21	23.33
Perivascular infiltrate	84	100
Vessel wall infiltrate	84	100
Endothelial swelling	66	78.57
RBC extravasation	32	38.1
Fibrinoid necrosis	13	15.47

Table 5: Correlation between clinical & histopathologic diagnosis

Clinical diagnosis ⇨ / histopathology ⇩	DLE	HSP	Vasculitic lesion	HD type 2 reaction	Behcets disease	Urticarial vasculitis	SLE
DLE	83%						
LCV	10%	90%	28%		25%	67%	
Lymphocytic vasculitis		10%	61%		75%	33%	
HD type 2 reaction				100%			
Lichen planus							50%
Lichenoid interface dermatitis			5.6%				
Lupus vulgaris							50%
Morphea	3%						
Spongiotic dermatitis	3%						
TEN			6%				

Chi square= 333.5: p<0.001

Figure 1: Discoid Lupus Erythematosus

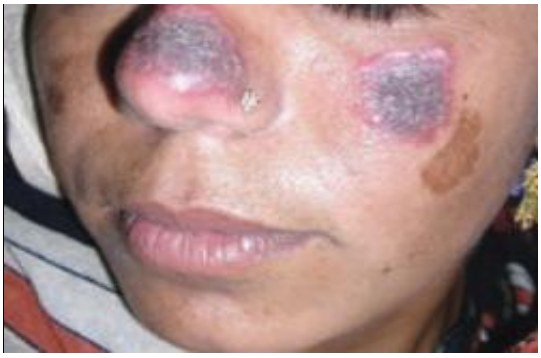
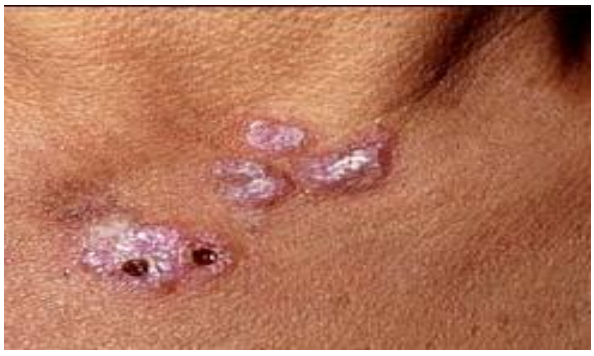



Figure 2: Palpable purpura, erosions and ankle odema in HSP

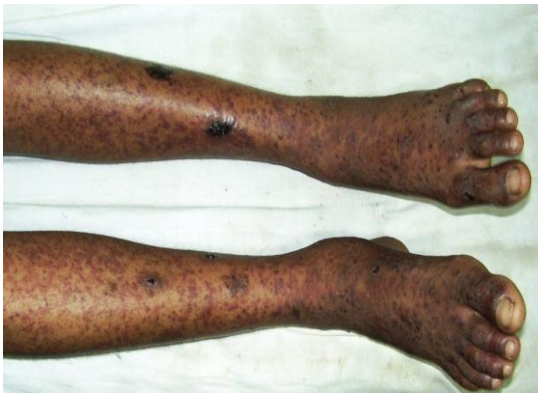
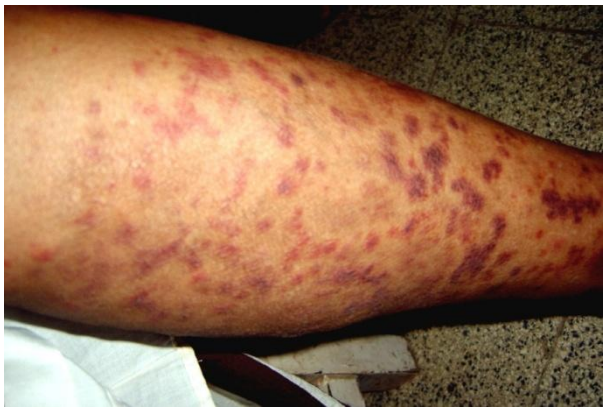



Figure 3: Basal cell vacuolation, keratotic plugging & epidermal atrophy in DLE (X 400)

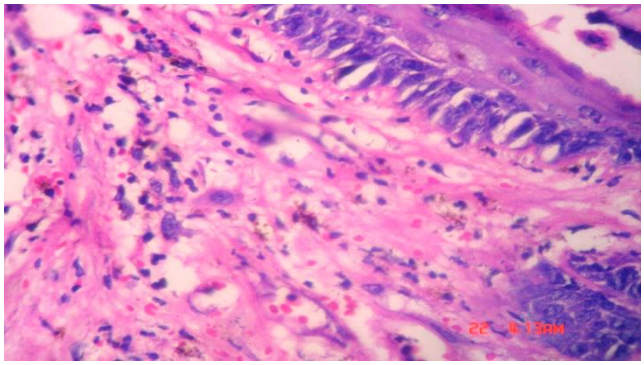
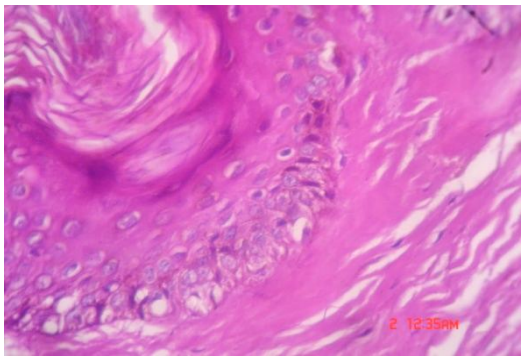



Figure 4: Leukocytoclastic vasculitis with endothelial cell proliferation, fibrin deposits and leukocyte infiltration of vessel wall (X 400)

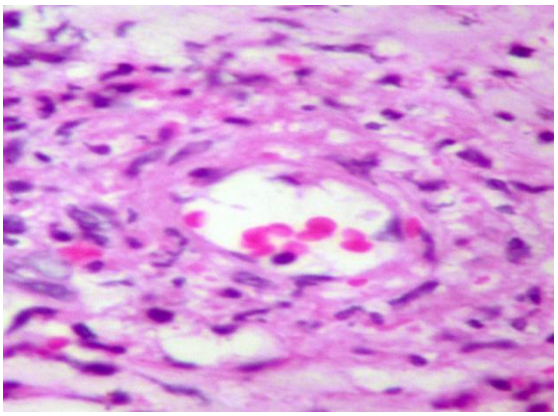
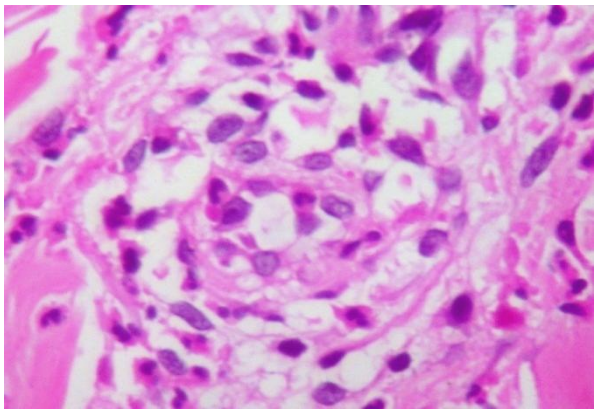
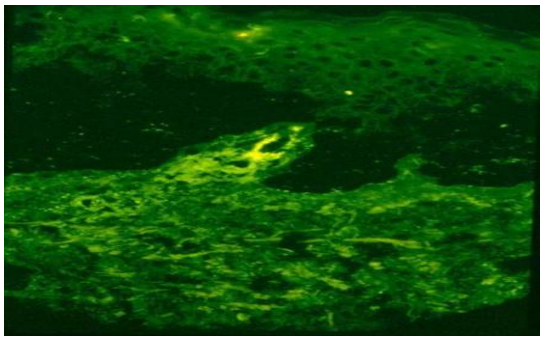



Figure 5: Direct Immunofluorescence: perivascular IgA deposition in HSP



Conclusion

This study shows that histopathology plays a major role in the diagnosis and typing of cutaneous vasculitis. There was good clinicopathologic correlation. (chi square=333.5, p< 0.001).DIF acts as an adjunct investigation in cases suspected to be immunologically mediated.

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Conflict of Interest: None declared.

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