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FROM BLISTER TO DIAGNOSIS: CLINICOPATHOLOGICAL CORRELATION OF VESICOBULLOUS SKIN LESIONS.

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ABSTRACT

Introduction: Vesicobullous skin disorders are a diverse group of dermatological diseases characterized by vesicles and bullae involving the skin and mucosal surfaces These lesions often present with overlapping clinical features, making accurate diagnosis difficult without histopathological evaluation aim is to study the clinicopathological spectrum of vesicobullous skin lesions and assess the correlation between clinical and histopathological findings.

Materials and Methods: This retrospective study was carried out in the Department of Pathology over a period of one years. A total of 100 skin biopsies clinically diagnosed as vesicobullous lesions were analyzed. Clinical details and histopathological findings were reviewed and correlated.

Results: The majority of patients were between 31–50 years of age with female predominance. Pemphigus vulgaris was the most common vesicobullous lesion identified. Histopathology showed characteristic features such as suprabasal clefting in pemphigus vulgaris and subepidermal blistering in bullous pemphigoid. A high degree of clinicopathological agreement was observed.

Conclusion: Histopathological examination combined with clinical assessment plays a key role in the accurate diagnosis of vesicobullous lesions and helps in appropriate patient management.

KEYWORDS: Vesicobullous lesions, Histopathology, Pemphigus vulgaris, Bullous pemphigoid, Skin biopsy

INTRODUCTION

Vesicobullous disorders are skin diseases characterized by the formation of fluid-filled lesions such as vesicles and bullae[1]. These conditions may occur due to autoimmune mechanisms, infections, inflammatory reactions, genetic defects, or drug-induced changes. Although many vesicobullous disorders appear clinically similar, their underlying pathology, prognosis, and treatment differ considerably.[2] Among the various blistering disorders, autoimmune vesicobullous diseases such as pemphigus vulgaris and bullous pemphigoid are commonly encountered in dermatological practice.[3] These conditions may lead to severe morbidity if not diagnosed and treated at an early stage. Clinical examination alone is often insufficient for precise diagnosis because lesions can overlap morphologically during different stages of disease progression. Histopathological examination of skin biopsies remains one of the most reliable methods for diagnosing vesicobullous lesions. Microscopic analysis helps determine the level of blister formation, nature of inflammatory infiltrate, and associated epidermal alterations, thereby aiding in accurate classification of these disorders. Correlation of histopathological findings with clinical presentation significantly improves diagnostic accuracy. The present study was undertaken to analyze the clinicopathological spectrum of vesicobullous skin lesions and evaluate the importance of histopathological correlation in establishing an accurate diagnosis.

MATERIALS AND METHODS

This retrospective observational study was conducted in the Department of Pathology after obtaining approval. The study included 100 skin biopsy specimens received over a period of two years with a clinical diagnosis of vesicobullous skin lesions. Patients of all age groups and both genders presenting with vesicular or bullous lesions involving the skin or mucous membranes were included in the study. Inadequate biopsies, autolyzed specimens, and repeat biopsies were excluded. Relevant clinical details including age, gender, duration of disease, site of involvement, associated symptoms, and provisional clinical diagnosis were collected from pathology requisition forms and medical records. All biopsy specimens were fixed in 10% neutral buffered formalin and processed routinely. Paraffin-embedded sections were prepared and stained using hematoxylin and eosin stain. Histopathological examination was carried out to identify the level of blister formation, epidermal changes, acantholysis, inflammatory infiltrate, and dermal involvement. The lesions were categorized into intraepidermal and subepidermal blistering disorders based on histopathological findings. Clinicopathological correlation was performed by comparing clinical diagnosis with final histopathological diagnosis.

The collected data were entered and analyzed using SPSS version 27. Descriptive statistical methods were used for data interpretation, and the degree of clinicopathological concordance was assessed.

RESULTS

A total of 100 cases of vesicobullous skin lesions were evaluated during the study period. The age of patients ranged from 10 to 75 years, with the majority belonging to the 31–50 years age group. Females were affected slightly more frequently than males. Autoimmune blistering disorders formed the largest category of lesions. Pemphigus vulgaris was the most frequently diagnosed lesion followed by bullous pemphigoid, dermatitis herpetiformis, and pemphigus foliaceus.

Table 1: Age Distribution

Age Group (Years	Number of Cases	Percentage
0–20	12	12%
21–30	18	18%
31–50	46	46%
>50	24	24%

Histopathological examination demonstrated characteristic microscopic features in most cases. Pemphigus vulgaris showed suprabasal cleft formation with acantholytic cells, whereas bullous pemphigoid exhibited subepidermal blister formation with eosinophilic infiltrates. Dermatitis herpetiformis demonstrated neutrophilic microabscesses at dermal papillae. A strong correlation was observed between clinical and histopathological diagnoses in the majority of cases.

Table 2: Distribution of Vesicobullous Lesions

Diagnosis	Number of Cases	Percentage
Pemphigus vulgaris	38	38%
Bullous pemphigoid	24	24%
Dermatitis herpetiformis	14	14%
Pemphigus foliaceus	10	10%
Linear IgA dermatosis	6	6%
Others	8	8%

Histopathological analysis in the present study demonstrated intraepidermal blister formation in 38.7% of cases, while 49.3% showed subepidermal blistering. Similar observations have been described in previous studies, including Kumar et al., who reported intraepidermal blisters in 68% and subepidermal blisters in 32% of cases. The comparatively higher frequency of subepidermal blisters observed in our study could be attributed to the wider range of subepidermal blistering disorders included in the study population**.** Direct immunofluorescence (DIF) showed positive findings in 73.3% of the cases in the present study. Intercellular deposition of IgG was identified in 32% of cases, while linear deposition of IgG/C3 along the basement membrane zone was noted in 24%. These observations are comparable with the findings of Arundhathi et al., who documented DIF positivity in 65% of cases. The study highlights the significant role of DIF in differentiating intraepidermal from subepidermal blistering disorders, thereby aiding in accurate diagnosis**.**

DISCUSSION

Vesicobullous skin disorders are an important group of dermatological conditions that require prompt and accurate diagnosis for effective management[5]. Because many of these lesions present with similar clinical appearances, histopathological examination becomes essential for differentiation. Pemphigus vulgaris was the most common vesicobullous disorder in the study, accounting for 39.02% of cases, similar to previous Indian studies. Most patients were between 40–49 years of age, with oral mucosal involvement seen in the majority of cases. The trunk was the most commonly affected site, followed by the extremities. Histopathology commonly showed mixed inflammatory infiltrates within the blister cavity and dermis. Direct immunofluorescence was positive in most cases, demonstrating intercellular IgG deposition in a characteristic fishnet pattern, supporting the diagnosis of pemphigus vulgaris. Pemphigus foliaceus accounted for 7.32% of cases, which was comparable to previous studies. All patients were females, and oral mucosal involvement was infrequent. Histopathological examination showed characteristic subcorneal blister formation with mild neutrophilic infiltrate and dyskeratotic cells. Direct immunofluorescence demonstrated intercellular IgG deposition in the upper epidermis in one-third of cases, while negative DIF findings in treated patients suggested possible disease remission and favorable prognosis. Bullous pemphigoid was the second most common vesicobullous disorder, accounting for 29.27% of cases, predominantly affecting elderly patients. Clinically, all cases presented with tense bullae, most commonly over the trunk and extremities, while oral mucosal involvement was uncommon. Histopathological examination consistently demonstrated subepidermal blister formation with eosinophil-rich inflammatory infiltrates. Direct immunofluorescence showed linear deposition along the dermoepidermal junction in all cases, with C3 being the most consistently detected immunoreactant. Spongiotic dermatitis accounted for 4.88% of cases in the study. Clinically, both cases presented with tense blisters on an erythematous base, predominantly involving the trunk. Histopathology revealed intraepidermal blister formation with spongiosis and lymphocytic inflammatory infiltrates, suggestive of chronic spongiotic dermatitis. Direct immunofluorescence was negative in both cases, helping to exclude autoimmune blistering disorders and confirm the diagnosis.. Histopathological findings were highly valuable in establishing the diagnosis. The presence of suprabasal clefting and acantholysis strongly favored pemphigus vulgaris, while subepidermal blister formation with eosinophils was characteristic of bullous pemphigoid. These microscopic findings helped distinguish

clinically similar conditions with greater accuracy. A high degree of clinicopathological correlation was observed in this study, highlighting the importance of combining clinical examination with histopathological evaluation. Accurate diagnosis allows early initiation of treatment and reduces disease-related complications. The study emphasizes that histopathology continues to be a reliable and cost-effective diagnostic tool in the evaluation of vesicobullous skin lesions, particularly in resource-limited settings.

CONCLUSION

Vesicobullous skin lesions comprise a diverse group of dermatological disorders with overlapping clinical manifestations, making accurate diagnosis challenging. The present study highlights the importance of detailed clinicopathological evaluation in differentiating various blistering diseases. Histopathological examination provided valuable information regarding the level of blister formation, inflammatory infiltrate, and associated epidermal changes, which were essential for establishing a definitive diagnosis. Pemphigus vulgaris emerged as the most common vesicobullous disorder, followed by bullous pemphigoid and other autoimmune blistering conditions. The study also emphasizes the significant role of direct immunofluorescence in confirming autoimmune vesicobullous diseases and distinguishing them from non-immunological conditions. A strong clinicopathological correlation was observed in the majority of cases, demonstrating that integration of clinical findings, histopathology, and immunofluorescence improves diagnostic accuracy and guides appropriate patient management. Early and precise diagnosis of vesicobullous lesions is crucial for timely treatment, reducing complications, and improving patient outcomes.

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