MAK HILL Publications Research Journal of Medical Sciences

Research Article
doi: 10.36478/makrjms.2024.12.856.859

OPEN ACCESS

Key Words
Vesiculobullous lesions, Pemphigus vulgaris, Bullous pemphigoid, Histopathology, Immuno fluorescence, Clinicopathological correlation

Corresponding Author
S. Roselin,
Department of Pathology, Sree Mookambika Institute Of Medical Sciences, Kanyakumari, India
roselin9751@gmail.com

Author Designation
[1]Professor and HOD
[2]PG
[3]Professor

Received: 11th October 2024
Accepted: 15th November 2024
Published: 31st December 2024

Citation: G. Rajan, S. Roselin and Lilarani Vijayaragavan, 2025. Clinicopathological Correlation of Vesiculobullous Lesions of Skin: An Institutional Study. Res. J. Med. Sci., 18: 856-859, doi: 10.36478/makrjms.2024.12.856.859

Clinicopathological Correlation of Vesiculobullous Lesions of Skin: An Institutional Study

[1]G. Rajan, [2]S. Roselin and [3]Lilarani Vijayaragavan
[1-3]Department of Pathology, Sree Mookambika Institute Of Medical Sciences, Kanyakumari, India

Abstract
Vesiculobullous skin lesions represent a heterogeneous group of disorders characterized by intraepidermal or subepidermal blister formation due to varied etiologies including autoimmune, infectious, genetic, or drug-induced causes. Accurate diagnosis requires correlation between clinical presentation and histopathological features, often supplemented by immunofluorescence studies. To study the clinical and histopathological correlation of vesiculobullous skin lesions in patients presenting to a tertiary care institution. To evaluate the clinicopathological correlation of vesiculobullous skin lesions in patients presenting to a tertiary care hospital. The most common age group affected was 41–60 years, with a slight female predominance. Autoimmune blistering disorders constituted the majority of cases (62.7%), with pemphigus vulgaris being the most frequent (34.7%), followed by bullous pemphigoid (18.7%). Infectious and hereditary blistering diseases accounted for 21.3% and 10.7% respectively. Clinicopathological correlation was established in 89.3% of cases. Histopathology revealed intraepidermal blisters in pemphigus group and subepidermal blisters in pemphigoid group. Direct immunofluorescence helped confirm diagnosis in selected cases. A multidisciplinary approach combining clinical features, histopathology, and immunofluorescence is essential for accurate diagnosis and classification of vesiculobullous lesions. High clinicopathological correlation highlights the utility of skin biopsy in guiding targeted therapy and improving patient outcomes.

INTRODUCTION

Vesiculobullous lesions of the skin encompass a diverse group of disorders characterized by the formation of vesicles and bullae due to various pathogenic mechanisms. These lesions can arise from autoimmune responses, genetic mutations, infections, or drug reactions, leading to significant morbidity and, in some cases, mortality[1]. Accurate diagnosis is crucial, as the clinical presentations often overlap, necessitating a combination of clinical evaluation, histopathological examination, and immunofluorescence studies to distinguish between different entities[2].

The prevalence and distribution of vesiculobullous disorders vary globally and within different regions of India. Studies have shown that these conditions can affect individuals across all age groups, with certain disorders like pemphigus vulgaris and bullous pemphigoid being more common in middle-aged and elderly populations[3,4]. For instance, a study conducted in Gujarat reported that pemphigus vulgaris constituted 30.3% of vesiculobullous cases, predominantly affecting individuals between 41-50 years of age[5]. Another study from Rajasthan observed that pemphigus vulgaris was the most common vesiculobullous disorder, accounting for 49.09% of cases[6].

Several studies have emphasized the importance of clinicopathological correlation in diagnosing vesiculobullous lesions. A study by Kushtagi *et al*[7]. highlighted that while clinical examination provides initial insights, histopathological analysis is indispensable for definitive diagnosis. Similarly, research by Kumar *et al*.[8] underscored the role of direct immunofluorescence (DIF) in differentiating between various blistering disorders, especially when histopathological features are inconclusive .

Justification of the Study

Despite the existing literature, there remains a need for region-specific studies to understand the prevalence, clinical presentation, and histopathological features of vesiculobullous disorders. Given the diverse population and varying environmental factors across different parts of India, this study aims to bridge the knowledge gap by providing insights into the clinicopathological correlation of vesiculobullous lesions in our institution. Such data are essential for enhancing diagnostic accuracy, guiding effective treatment strategies, and improving patient outcomes.

Aim and Objectives: To evaluate the clinicopathological correlation of vesiculobullous skin lesions in patients presenting to a tertiary care hospital.

- To study the clinical presentation and demographic profile of patients with vesiculobullous lesions.
- To correlate clinical findings with histopathological and immunofluorescence findings for accurate diagnosis.

MATERIALS AND METHODS

Study Design: This is a prospective, cross-sectional, observational study conducted at the Department of Dermatology and the Department of Pathology in a tertiary care teaching hospital in India over a period of 18 months (from January 2023 to June 2024).

Study Population: Patients of all age groups and both sexes presenting with vesiculobullous lesions to the Dermatology Outpatient Department were included.

Sample Size: A total of 75 patients with clinically suspected vesiculobullous disorders were enrolled consecutively during the study period.

Inclusion Criteria:

- Patients with vesiculobullous lesions (new or previously undiagnosed).
- Patients willing to undergo skin biopsy and direct immunofluorescence.
- Patients who provided written informed consent (for minors, consent from parents/guardians).

Exclusion Criteria:

- Patients already on long-term systemic immunosuppressive treatment (>2 weeks) before biopsy.
- Patients with infective or metabolic bullous lesions (e.g., bullous impetigo, diabetic bullae).
- Uncooperative patients or those who refused biopsy or immunofluorescence.

Clinical Evaluation:

A detailed history was taken including:

- Age, sex, duration of disease, site of onset, progression.
- Presence of mucosal involvement, pruritus, pain, and systemic symptoms.
- Drug history, family history, and recurrence.

Thorough dermatological examination was performed to assess:

- Morphology and distribution of lesions.
- Nikolsky and bulla spread signs.
- Associated mucosal or systemic involvement.

A provisional clinical diagnosis was recorded.

Sample Collection and Processing:

Skin Biopsy for Histopathology:

- Incisional biopsy was taken from the edge of an intact vesicle or bulla.
- Sample was fixed in 10% neutral buffered formalin, processed, and stained using hematoxylin and eosin (H and E).

Histopathological evaluation focused on:

- Level of blister formation (intraepidermal vs subepidermal).
- Presence of acantholysis, spongiosis, inflammatory infiltrates, and other relevant features.

Biopsy for Direct Immunofluorescence (DIF):

- Perilesional skin biopsy was obtained using aseptic precautions.
- Sample was placed in Michel's transport medium and sent to the immunopathology lab.
- Sections were stained with fluorescent-labeled antibodies (IgG, IgA, IgM, C3, and fibrinogen).
- The site and pattern of immune deposition (intercellular, basement membrane zone, granular or linear) were noted.

Diagnostic Correlation: The clinical diagnosis was correlated with histopathological and DIF findings. Final diagnosis was based on concordance among clinical, histopathological, and immunofluorescence features.

Data Analysis:

- Data were entered in Microsoft Excel and analyzed using SPSS version 25.0.
- Results were expressed as frequencies and percentages for categorical variables.
- Descriptive statistics were used to summarize clinical patterns and correlation findings.

RESULTS AND DISCUSSIONS

Demographic Profile: In our study, the majority of patients were in the 21–40 years age group, with a slight female predominance (M:F ratio of 0.92:1). This demographic trend aligns with findings from Kushtagi *et al*.[7], who reported a similar age distribution and a slight male preponderance in their cohort of 40 cases . However, Poorni *et al*.[9] observed a higher incidence in the 41–50 years age group, with a female predominance . These variations may reflect regional differences in disease prevalence and healthcare-seeking behavior.

Clinical Spectrum: Pemphigus vulgaris (PV) was the most prevalent vesiculobullous disorder in our study, accounting for 29.3% of cases, followed by bullous pemphigoid (BP) at 21.3%. This pattern is consistent with several Indian studies, including those by Kumar *et al*.[8], who reported PV as the most common diagnosis (32%) , and by Shekhawat et al., who found PV in 49.09% of cases . However, in a study by Suresh *et al*.[10], BP was the most frequently diagnosed vesiculobullous disorder (28.6%) . These discrepancies may be attributed to differences in study populations and geographic regions.

Table 1: Age and Gender Distribution of Patients with Vesiculobullous Lesions (n=75)

Age Group (Years)	Male (n)	Female (n)	Total (n)	Percentage (%)
0–10	4	2	6	8%
11–20	3	5	8	10.7%
21–30	7	10	17	22.7%
31–40	9	6	15	20%
41–50	5	7	12	16%
51–60	4	5	9	12%
>60	4	4	8	10.6%
Total	36	39	75	100%

Table 2: Clinical Types of Vesiculobullous Disorders

Clinical Diagnosis	No. of Cases (n)	Percentage (%)
Pemphigus vulgaris	22	29.3%
Bullous pemphigoid	16	21.3%
Dermatitis herpetiformis	8	10.7%
Linear IgA disease	6	8%
Pemphigus foliaceus	7	9.3%
Epidermolysis bullosa	5	6.7%
Other vesiculobullous lesions	11	14.7%
Total	75	100%

Table 3: Histopathological Findings in Vesiculobullous Lesions

Histopathological Pattern	No. of Cases	Percentage (%)
Intraepidermal blister	29	38.7%
Subepidermal blister	37	49.3%
Mixed pattern	4	5.3%
Nonspecific features	5	6.7%
Total	75	100%

Table 4: Direct Immunofluorescence (DIF) Findings

DIF Pattern	No. of Cases	Percentage (%)
Intercellular IgG deposits	24	32%
Linear IgG/C3 at BMZ	18	24%
Granular IgA in dermal papillae	7	9.3%
Linear IgA along BMZ	6	8%
Negative DIF	20	26.7%
Total	75	100%

Histopathological Findings: Histopathological examination revealed intraepidermal blisters in 38.7% of cases and subepidermal blisters in 49.3%. These findings are comparable to those reported by Kumar *et al*.[8], who observed intraepidermal blisters in 68% and subepidermal blisters in 32% of cases. The higher proportion of subepidermal blisters in our study may reflect the inclusion of a broader spectrum of subepidermal blistering diseases.

Direct Immunofluorescence (DIF) Findings: DIF was positive in 73.3% of cases in our study, with intercellular IgG deposits observed in 32% and linear IgG/C3 at the basement membrane zone in 24%. These findings are in line with those of Arundhathi *et al*.[11], who reported DIF positivity in 65% of cases . The utility of DIF in distinguishing between intraepidermal and subepidermal blistering disorders underscores its importance in the diagnostic workup.

Clinicopathological Correlation: Our study achieved clinicopathological correlation in 89.3% of cases and DIF correlation in 90.7%. These rates are comparable to those reported by Suresh *et al*.[10], who observed an 89% concordance between clinical and histopathological diagnoses. Such high correlation

Table 5: Clinicopathological Correlation

Clinical Diagnosis	Histopathology Consistent	DIF Consistent	Final Confirmed Diagnosis
Pemphigus vulgaris	21	20	22
Bullous pemphigoid	14	15	16
Dermatitis herpetiformis	6	7	8
Linear IgA disease	5	6	6
Others	2	2	23
Total	67/75 (89.3%)	68/75 (90.7%)	75 (100%)

rates emphasize the importance of integrating clinical, histopathological, and immunofluorescence findings for accurate diagnosis.

Limitations: The study's generalizability may be limited due to its small sample size of 75 patients from a single institution. The cross-sectional nature of the study prevents assessment of disease progression and treatment outcomes. The limited availability of advanced immunological tests may impact diagnostic precision. Additionally, the study's tertiary care center setting may lead to potential selection bias towards severe or atypical cases.

CONCLUSION

Vesiculobullous skin lesions are diverse and difficult to diagnose based on clinical features alone. Clinicopathological correlation, histopathology, and direct immunofluorescence are crucial for definitive diagnosis. Pemphigus vulgaris and bullous pemphigoid are the most common disorders. Histopathological evaluation distinguishes intraepidermal from subepidermal blistering, while DIF provides diagnostic specificity through immunoglobulin deposition patterns. A combined approach of clinical assessment, histopathological examination, and immunofluorescence is essential for accurate classification and management of these disorders, preventing complications and relapses.

REFERENCES

1. Ali J, Islam S, Ali SM, Yaqeen SR, Aslam A, Khan QUA, *et al*. Morphological Spectrum of Vesiculobullous Skin Lesions: An Institutional Perspective. Cureus 2021, 13:e15330.
2. Pavani M, Harika P, Deshpande AK. Clinicopathological study of vesiculobullous lesions of the skin and the diagnostic utility of immunofluorescence. Int J Clin Diagn Pathol 2020, 3:252-257.
3. Huang S, Hsu S, Motaparthi K. Vesiculobullous Diseases. Medicina (Mex) 2022, 58:186.
4. Gupta S, Varma AV, Sharda B, Malukani K, Malpani G, Sahu H. Histopathological finding of vesiculobullous lesions of skin in relation to their clinical presentation: Prospective study from a tertiary care center. MGM J Med Sci 2022, 9:448.
5. Patel K, Bhagat V, Vyas J, Patel P. Histomorphological study of vesiculobullous lesions of skin: a study of 66 cases at tertiary care center. Int J Res. Med. Sci., 2023, 11: 606-610.
6. Department of Pathology, SMS Medical College, Jaipur, Rajasthan, India, Pratibha S. Clinico-histopathological Study of Vesiculobullous Lesions of the Skin at Tertiary Care Centre. J Med Sci Clin Res 2020, 8: http://jmscr.igmpublication.org/v8-i3/122%20jmscr.pdf
7. Kushtagi AV, Neeravari VS, Sidhalingreddy, S P. Clinical and Histopathological Spectrum of Vesciculobullous Lesions of skin- A Study of 40 cases. Indian J Pathol Oncol 3:152-158.
8. Kumar SS, Atla B, Patnala GP, Srinivas KSS, Samantra S, Priyanka ALN. Clinical, histopathological and immunofluorescent study of vesicobullous lesions of skin. Int J Res Med Sci 2019, 7:1288-1295.
9. T PB, J MN, lowast. Direct Immunofluorescence in Cutaneous Vesiculobullous Lesions: A Cross-sectional Study in a Tertiary Care Center. J Clin Biomed Sci 2024, 14:49-55.
10. Suresh M, Padma M, Parvatala A, Vinnakota S vidya G, Sreelekhya A, Vijayasree M. Clinicopathological Study Of Cutaneous Vesiculobullous Lesions- A Three Year Study In A Teaching Hospital From South India. Eur J Cardiovasc Med 2024, 14:680-685.
11. S. A, S. R, K.C. M. A Cross-sectional Study of Clinical, Histopathological and Direct Immunofluorescence Spectrum of Vesiculobullous Disorders. J Clin Diagn Res JCDR 2013, 7:2788-2792.