Section: Dermatology

Original Research Article

# STUDY OF VESICULOBULLOUS DISORDERS IN NORTH KARNATAKA PATIENTS

**Guruprasad KY[1], Mohammed Waseem Javed[2], Sonali Revankar[3], Mohammed Abdul Samad[4]**

[1]Professor, Department of Dermatology, Venereology and Leprosy, Faculty of Medical Sciences Khaja Banda Nawaz University, Kalaburgi-585104, Karnataka, India.
[2]Associate Professor, Department of Dermatology, Venereology and Leprosy, Faculty of Medical Sciences Khaja Banda Nawaz University, Kalaburgi, Karnataka, India.
[3]Post-graduate, Department of Dermatology, Venereology and Leprosy, Faculty of Medical Sciences Khaja Banda Nawaz University, Kalaburgi-585104, Karnataka, India.
[4]Senior Resident, Department of Dermatology, Venereology and Leprosy, Faculty of Medical Sciences Khaja Banda Nawaz University, Kalaburgi-585104, Karnataka, India.

*Received* : 05/06/2025
*Received in revised form* : 22/07/2025
*Accepted* : 12/08/2025

*Keywords:*
*Immunofluorescence, histopathological, rotatory microtome, Michels medium, phosphate buffered saline (PBS).*

Corresponding Author:
**Dr. Guruprasad KY,**
Email: gprasadyel@rediffmail.com

DOI: 10.47009/jamp.2025.7.4.197

Source of Support: Nil,
Conflict of Interest: None declared

*Int J Acad Med Pharm*
2025; 7 (4); 1032-1035

## ABSTRACT

**Background:** Blistering disorders are alarming skin conditions. Autoimmune blistering diseases are a group of bullous disorders characterized by pathogenic antibodies directed at the antigens in the epidermis or dermoepidermal junction. These diseases can be viewed histopathologically and direct immunofluorescence. **Materials and Methods:** 50 (fifty) adult patients having vesiculobullous skin lesions were studied. Skin biopsies were done and processed with paraffin. Histological examination of H and E-stained sections was viewed. The level split lesions, mechanism of blistering, and nature of infiltration was noted. **Result:** The highest plane of separation was 22 (44%) suprabasal, followed by 14 (28%) sub-epidermal, and the least was sub-corneal + sub-epidermal, dermal + sub-epidermal, 1 (2%). The highest number of inflammatory infiltrates was 21 (42%), and the least was spongiosis + BMZ destruction, 2 (4%). The observation of the mechanism of inflammation had 18 (36%). Pemphigus vulgaris had the highest number, followed by 10 (20%) bullous pemphigoid, and the least number of patients were 1 (2%) with Daries disease, Hailey Hailey, and drug reaction. In immunofluorescence diagnosis, the highest number was 14 (28%) for pemphigus, followed by 8 (16%) for bullous pemphigoid. **Conclusion:** Histo-pathological and immune flourescene approach is an ideal technique to rule out types of vesiculobullous disease and treat efficiently.

## INTRODUCTION

Blistering disorders have been known to man since ancient times.[1] The first recorded episode of pemphigus disease was Hippocrates (460-370 BC), who described pemphigoid fever as pemphigoides pyretol, and Galen (AD 131 to 201) named a pustular disease of the mouth as febris pemphigoides. Vesiculobullous disorders represent a heterogeneous group of dermatoses with protean manifestations. They have a remarkable impact on the patients and their families with severe economic consequences. Five principal mechanisms that can result in blister formation are genetic derangement,[2] physical and immunological and inflammatory damage, and the drug reactions of these immunological reactions account for most of the vesiculobullous dermatological diseases.

The main pathogenic mechanism involved is the binding of antibody to the antigen, which may directly interfere with desmosomal function.[3] This results in spongiosis, acantholysis, reticular degeneration, cytolysis, and basement membrane zone destruction with blister formation. The plane of cleavage depends upon the antigen involved.[4] Hence, an attempt is made to evaluate histopathological and immunofluorescence staining patterns and establish clinico-pathological correlations in patients presenting with vesicobullous lesions.

## MATERIALS AND METHODS

50 (fifty) adult patients aged between 40 to 60 years regularly visited the dermatology department of Khaja Banda Nawaz Hospital, Kalaburgi, Karnataka-585104 were studied.

**Inclusion Criteria:** Patients aged above 40 years presenting clinically with vesiculobullous lesions suggestive of autoimmune. The patients who gave their consent in writing for studies that were selected.


ISSN (O): 2687-5365; ISSN (P): 2753-6556

**Exclusion Criteria:** Patients aged below 40 years, viral herpes simplex, varicella, hand-foot, mouth disease, herpes zoster. Fungi: candidiasis, Bacterial: Congenital syphilis, bullous impetigo, and staphylococcal scalded skin syndrome, pregnant and lactation mothers were excluded from the study.

**Method:** The skin biopsies were taken for histopathology and immunofluorescence study. A biopsy was taken from the site of the lesion, including an intact vesicle.

An elliptical piece of skin was taken from the site of lesions. The specimen was sent in 10% buffered formalin for routine histopathological analysis to the histopathology laboratory of the pathology department. It was processed, and paraffin embedding was done. Serial sections were taken using a rotatory microtome, which were then deparaffinized and stained with hematoxylin and eosin. Histologic examination was then done with the aid of a light microscope. The level of split lesions, the presence of acantholytic cells, and the nature of the infiltrate were noted.

For direct immunofluorescence study, a part of the biopsy material from the peri-lesional area was cut and put in Michel's medium (transport medium containing ammonium sulfate N-ethyl maleimide citrate buffer). The specimen was then sent for an immunofluorescence study.

Biopsy specimen was rinsed in Phosphate Buffered Saline (PBS) at PH 7.4 for 10 minutes. Snap freezing with embedding medium was carried out in the cryostat at 20°C, and a 3-4 micron section was obtained. A drop of specific reagent, fluorescein isothiocyanate (FITC)-labeled antihuman IgG, IgM, IgA, complement C3, and fibrinogen was used. Reading was done under the fluorescence microscope (Nikon model HB 1010AF). The pattern of distribution and type of immune reactants deposited in the intercellular space was noted.

The duration of the study was from June 2022 to January 2025.

**Statistical Analysis:** Types of blister separation in various diagnoses were classified with percentages. The statistical analysis was carried out using SPSS software. The ratio of male and female was 2:1.

## RESULTS

Table 1: Study of Blister Separation Plane:- 6 (12%) subcorneal, 22 (44%) suprabasal, 14 (28%) subepidermal, 4 (8%) subcorneal + suprabasal, 2 (4%) suprabasal + subepidermal, 1 (2%) subcorneal + subepidermal, 1 (2%) dermal + subepidermal.

Table 2: Study of the character of inflammatory infiltrate 10 (20%) spongiosis, 21 (42%) acantholysis, 14 (28%) BMZ destruction, 3 (6%) spongiosis + acantholysis, 2 (4%) spongiosis + BMZ destruction.

Table 3: Study of Mechanism of Inflammation: 18 (36%) pemphigus vulgaris, 10 (20%) bullous pemphigoid, 4 (8%) spongiotic dermatitis, 2 (4%) pemphigus foliaceous, 2 (4%) Subcorneal pustular dermatosis, 2 (4%) lichen planus pemphigoides, 1 (2%) drug reaction, 1 (2%) Hailey Hailey, 4 (8%) inconclusive descriptions, 5 (10%) other single cases.

Table 4: Study of Immo-fluorescence Diagnosis 14 (28%) pemphigus, 8 (16%) bulous pemphigoid, 1 (2%) Bullous Pemphigoid / Epidermolysis, Bullous Acquisto, 1 (2%) chronic linear IgABullousa dermatosis, 1 (2%) Epidermolysis Bullosa Acquista, 1 (2%) lichen Planus pemphisoides, 1 (2%) Bullous lupus erythumatous, 1 (2%) lupud Bond, 2 (4%) No features of Immuno bulbous disease.

**Table 1: Study of Blister Separation plane** Total No. of patients: 50

| Plane of separation | No. of cases | Percentage (%) |
|---|---|---|
| Sub corneal | 6 | 12 |
| Supra basal | 22 | 44 |
| Sub epidermal | 14 | 28 |
| Dermal | 0 | -- |
| Sub corneal + Supra basal | 4 | 8 |
| Supra basal + subepidermal | 2 | 4 |
| Sub corneal + sub epidermal | 1 | 2 |
| Dermal + sub epidermal | 1 | 2 |

**Table 2: Inflammatory infiltrate**

| Characters of inflammatory infiltrate | No. of patients (50) | Percentage (%) |
|---|---|---|
| Spongiosis | 10 | 20 |
| Acantholysis | 21 | 42 |
| BMZ destruction | 14 | 28 |
| Spongiosis + Acantholysis | 3 | 6 |
| Spongiosis + BMZ destruction | 2 | 4 |

**Table 3: Study of Mechanism of Inflammation**

| Diagnosis | No. of patients (50) | Percentage (%) |
|---|---|---|
| Pemphigus vulgaris | 18 | 36 |
| Bullous pemphigoid | 10 | 20 |
| Spongiotic Dermatitis | 4 | 8 |
| Pemphigus Foliaceous | 2 | 4 |
| Sub Corneal pustular Dermatosis | 2 | 4 |
| Lichen planus pemphigoides | 2 | 4 |


ISSN (O): 2687-5365; ISSN (P): 2753-6556

| | | |
|---|---|---|
| Drug Reaction | 1 | 2 |
| Dariers disease | 1 | 2 |
| Hailey Hailey | 1 | 2 |
| Inconclusive / Description | 4 | 8 |
| Other single cases | 5 | 10 |

**Table 4: Study of Immune fluorescence Diagnosis**

| Innume fluorescence Diagnosis | No. of Patients | Percentage |
|---|---|---|
| Pemphigus | 14 | 28 |
| Bulbous pemphigold | 8 | 16 |
| Bullous pemphogoid/Epidermolysis Bullosa Acquisita | 1 | 2 |
| Chronic Bullous Dermatosis of childhood | 1 | 2 |
| Linear IgA Bullous Dermatosis | 1 | 2 |
| Epidermolysis Bullosa Acquisita | 1 | 2 |
| Lichen planus pemphigoides | 1 | 2 |
| Bullous Lupus Srythematosus | 1 | 2 |
| Lupud Band | 1 | 2 |
| No Features of immune bulbous Disease | 2 | 4 |
| Total number of patients | 31 | 62 |

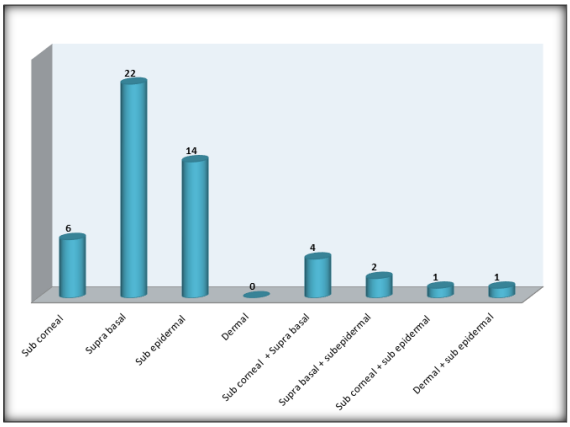


**Figure 1: Study of Blister Separation plane**

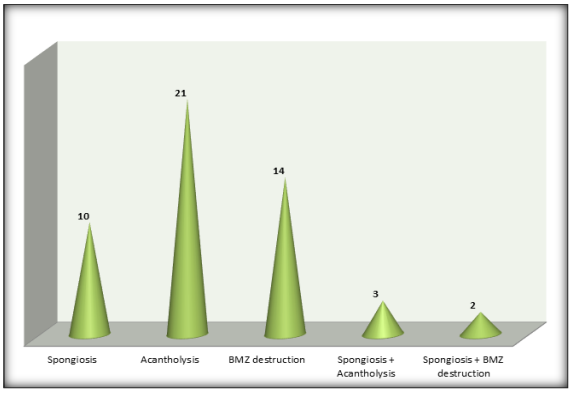


**Figure 2: Inflammatory infiltrate**

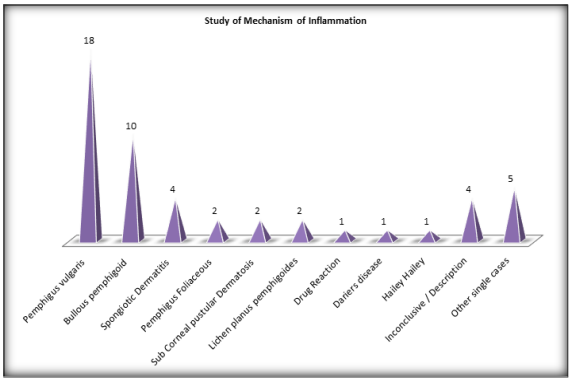


**Figure3: Study of Mechanism of Inflammation**

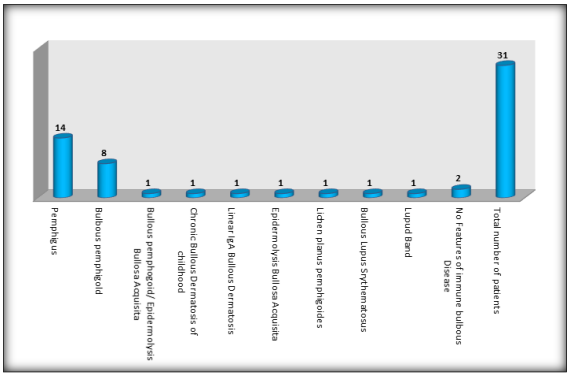


**Figure 4: Study of Immune fluorescence Diagnosis**

## DISCUSSION

Present study of vesicobulbous disorders. The blister separation plane had the highest at 22 (44%), followed by 14 (28%) subepidermal and 1 (2%) sub-corneal + subepidermal, and dermal + subepidermal (Table 1). In the study of inflammatory infiltrate characters, the highest was 21 (42%), followed by 14 (28%) BMZ destruction, and the least was 2 (4%) spongiosis + BMZ destruction (Table 2). The diagnosis of the mechanism of inflammation had 18 (36%) pemphigus vulgaris, followed by 10 (20%) bullous pemphigoid, and the least number, 1 (2%), were Darier's disease, Hailey-Hailey, and drug reaction (Table 3). The study of immunofluorescence diagnosis had the highest number, which was 14 (28%) pemphigus, followed by 8 (16%) bulous pemphigoid (Table 4). These findings are more or less in agreement with previous studies.[5,6,7]

Skin is the largest organ of the body. It represents a window to the internal well-being. Various diseases, along with their manifestations, can commonly involve the skin and mucous membranes, out of which vesiculobullous lesions form the predominant group.[8] These bullous diseases in some instances are fatal if untreated. Blisters occur at different levels within the skin in the various disorders, and histological assessment is essential for accurate


ISSN (O): 2687-5365; ISSN (P): 2753-6556

diagnosis, providing insight into the pathogenic mechanism.

Apart from its protective function, skin has an immune function also, protecting from non-self antigens without reacting with self antigens. Sometimes this is distorted and leads to autoimmune disorders. Vesico-bulbous lesions are mostly immune-mediated, and the immune pathogenesis is specific for each disease, which is of diagnostic importance. The immune complex locations are intraepidermal, dermoepidermal junction, dermal blood vessels, etc.[9] The nature of immune deposits usually used in DIF is IgG, IgA, IgM, and C3c.[10]

Significant insights into the regulations of desmosomal adhesion of skin demonstrated the role of autoantibodies in patients suffering from the autoimmune blistering skin diseases.[11] Autoantibodies against desmoglein cause the intraepidermal blistering seen in pemphigus, while autoantibodies against hemidesmosomes are the reason for subepidermal blistering seen in pemphigoid.[12] The clinical examination aided by light microscopy and immunofluorescence in definitive diagnosis and proper patient management.

## CONCLUSION

The present study of vesico-bulbous disorders represents a heterogenous group of dermatoses with protean manifestations. A punch biopsy of the skin is a simple, inexpensive, safe OPD procedure causing minimal discomfort to the patient. DIF is always a gold standard and sensitive test to finalize the diagnosis. DIF aids differentiate non-immune lesions from immune-mediated lesions, which pose a diagnostic dilemma both clinically and histologically.

**Limitation of study:** Owing to tertiary location of research centre, small number of patients lack of latest techniques we have limited finding and results.

- This research work was approved by the ethical committee of Khaja Banda Nawaz University Faculty of Medicine Kalaburgi-585104.
- No Conflict of Interest
- Self-Funding

## REFERENCES


1. Collier PM, Wojnarowska F: Blistering disorders Med. Int. 1997, 11; 51-3.
2. Deepti S, Sulakshana MS: A histomorphological study of bullous lesions of skin with special reference to immunofluorescence. Int. J. Current Research Aca. Rev. 2015, 3 (3); 29-51.
3. Khannon CK, Bhat R: A retrospective study of the clinical histopathological and direct immunofluorescence spectrum of immune bullous disorders. Int. J. Sc. Res. Pub. 2015, 5 (9); 1-6.
4. Kabir AKMN, Kamal M: Clinico-pathological correlation of blistering diseases of skin Bangladesh Med. Res. Coanc. Bull. 2008, 34; 48-53.
5. Selvary U, Ramamorthy M: Clinico-pathological study of autoimmune vesiculobullous disorders. Int. J. Sc. study 2016, 4 (4); 27-30.
6. Shamim T, Varghese VI: Pemphigus vulgaris in oral cavity clinical analysis of 71 cases. Med. Oral Pathol. Oral Cir. Bullous 2008, 13(10); 622-6.
7. Chandrashekar M, Leena JB, Vijay B: Clinico-pathological study of immune bullous lesion of skin Adv. Lab. Med. Int. 2012, 2 (2); 19-26.
8. Wojarowsk F, Veinning VA: Rooks Textbook of Dermatology, Immune Bullous Diseases, 8th edition, Caltron Blackwell, 2011, 389-92.
9. Cotran RS, Kumar V: Robbins and Cotran's Pathological Basis of Disease, 8th edition, Philadelphia: Saunders, Elsevier, 2010, 112-1128.
10. Arundati S, Raghuncth S: Cross-sectional study of clinical histopathological and direct immune fluorescence spectrum of bullous lesion of skin. J. Clin. Diagn. Res. 2013, 7 (12); 2788-92.
11. Shetty VM, Subramanram K, Rao R: Utility of immunofluorescence in dermatology Indian Dermatol. Online 2017, 8 (1); 1-8.
12. Vassileva S: Immune fluorescence in dermatology Int. J. dermatol. 1993, 32; 153-61.




ISSN (O): 2687-5365; ISSN (P): 2753-6556