



## HISTOPATHOLOGICAL ANALYSIS OF VESICULOBULLOUS SKIN LESION FROM A TERTIARY CARE HOSPITAL

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### ARTICLE INFO

#### Article History:

Received 13<sup>th</sup> April, 2019

Received in revised form 11<sup>th</sup>

May, 2019

Accepted 8<sup>th</sup> June, 2019

Published online 28<sup>th</sup> July, 2019

#### Key words:

Vesiculobullous Skin Lesion

### ABSTRACT

**Introduction:** Vesiculobullous lesions are one of the predominant groups of skin lesions. Various types of pathologic processes can lead to the development of vesiculobullous eruptions over the body. Each entity in this group has distinct clinical features which help in their categorisation.

**Methodology:** This retrospective analytical study was conducted in the department of pathology from January-2018 to December-2018 where 16 patients were diagnosed with vesiculobullous lesion of skin. These cases were clinically and histopathologically analysed.

**Results:** Majority of the patients presented in the age group of 52 years. Female patients exceeded the male patients. In this study, there were 9 cases of non infectious bullous pemphigoid group of disease comprising the largest group (56.25%), 4 cases of pemphigus vulgaris (25%), 1 case of pemphigus foliaceus (6.2%) and 2 cases of pustular psoriasis (12.5%).

**Conclusion:** From this study we conclude that the histopathological features of vesiculobullous skin lesions form the primary diagnostic modality in the management, where the facility for immunofluorescence techniques is unavailable.

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## INTRODUCTION

Vesiculobullous diseases are one of the most important primary morphological patterns of skin reaction to various external and internal pathologic stimuli. A wide variety of pathologic processes can lead to development of vesiculobullous eruptions over the body. They may occur in many dermatoses, which include various inflammatory, infective, autoimmune, drug induced as well as genetic<sup>1</sup>.

Vesicles and bullae are defined as fluid filled cavities intra or sub-epidermally. Vesicles are less than 0.5cm in diameter and bullae are blisters greater than 0.5 cm in diameter<sup>2,3</sup>.

Blistering of skin is an obvious sign of disease & can be encountered in a wide variety of clinical settings in which vesicles or bulla are formed during the course of the disease e.g. dermatitis, burns, bullous impetigo, lichen planus etc. Some of these have an immunological mechanism. It is therefore necessary to diagnose & treat the condition early.

For diagnosis of vesiculobullous lesions Punch biopsy is most commonly employed technique. Punch biopsy is a simple, inexpensive, safe OPD procedure without any major complications, causing minimal discomfort to the patient and no scarring<sup>4,5</sup>. In present study punch biopsies are used for diagnosis of lesions. Present study was carried out to study histopathological changes by light microscopy in vesiculobullous disorder of the skin.

## MATERIALS AND METHODS

A histopathological study of vesiculobullous lesions of skin of 16 cases was carried out on skin biopsies received from the department of Department, SBMCH. Only the lesions which showed vesicles and bullae clinically have been included in this study. A detailed history with particular reference to the mode of onset, characteristics and distribution of the lesions was taken.

All the patients were examined by dermatologist thoroughly before biopsy was performed. Biopsies were carried out under aseptic conditions under local anaesthesia with or without sedation.

All tissues were sent in 10% buffered formalin immediately after procedure to histopathology section. Each was kept for 24 hours for proper fixation and subsequently dehydration, clearing and embedding in paraffin wax were carried out. Blocks were made and sections of 3µm thickness were cut and stained with H & E stain. All slides were examined microscopically and diagnosed.

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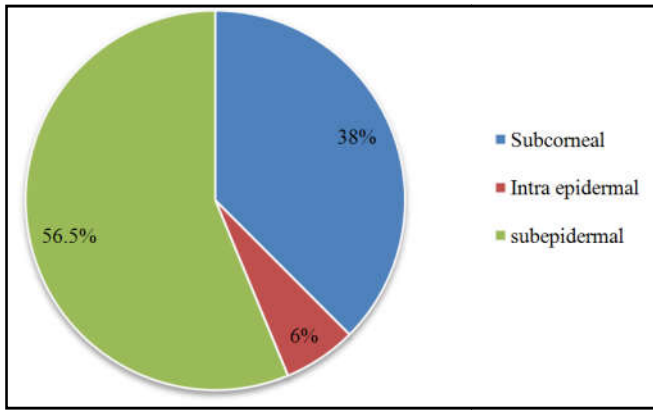


Fig 1 Biopsy finding with respect to level of separation

## RESULTS

In our study, out of the 16 skin biopsies obtained from the patients, who were clinically known to be non-infectious, the bullous pemphigoid group of diseases comprised the largest group of 9 cases (56.25%) with 4 cases of pemphigus vulgaris (25%), 1 case of pemphigus foliaceus (6.2%) and 2 cases of pustular psoriasis (12.5). Bullous pemphigoid was the first most common type and was detected in 9 biopsies.

In the present study, there was a slight female predominance with 10 (62.5%) females and 6 (37.5%) males with overall female to male ratio 1.66:1. Bullous pemphigoid and pemphigus vulgaris were found most commonly in females whereas cases of pustular psoriasis and pemphigus foliaceus were common in males.

Of all the patients biopsied for vesiculo bullous lesions more than half were in their adulthood. Bullous pemphigoid were detected most commonly in third decade of life. Bullous pemphigoid predominated in the late adulthood and old age. Upper limb was the most common over all site involved in all lesions whereas oral mucosa involvement was mostly seen in pemphigus vulgaris (15 out of 31 cases). In Pemphigus vulgaris, bullous pemphigoid and pemphigus foliaceus, skin involvement was mostly generalized. On histopathological examination 50% of the lesions were found to be intraepidermal 6%, whereas sub epidermal blisters were encountered in 56.5% cases and subcorneal blisters were 38% (Fig 1).

## DISCUSSION

The vesiculobullous lesions are the alarming skin condition where blister formation occur at various levels and clinically present as blisters. Histopathological examination is an important tool in the diagnosis of this group of skin disorders. Clinical correlation with histopathological examination is sufficient for the diagnosis though immune-fluorescence helps in confirmation<sup>6</sup>.

In our study 16 cases were examined. Of these, 10 (62.5%) were male and 6 (37.5%) were female with majority of cases presenting in adulthood which is comparable with study of Thejaswi Krishnamurthy *et al*<sup>7</sup>.

Bullous pemphigoid is observed to be the commonest and largest group of vesiculobullous lesion in present study comprising of 31 cases which accounts for 43.1% of the cases followed by Bullous Pemphigoid comprising of 10 cases which accounts for 13.9% of the cases which is comparable

with the studies of Khan W A *et al.*, Khannan C K *et al.*, Arundhati S *et al.* with the frequency of 60% and 16.6%, 38% and 26%, 38.2% and 16.2% respectively.<sup>8-10</sup>

Distribution of lesions in the present study was seen mainly in upper limb, back and chest, followed by lower limbs. Lesions in upper limbs were seen in 58 cases. Back lesions were seen in 57 cases and chest lesions in 55 cases. Lower limbs showed lesions in 54 cases. The least common site of lesions was in genitals which were present only in 8 cases.

In our study, 5 cases of Pemphigus were diagnosed, 4 (80%) of which were of pemphigus vulgaris, 1 (10%) were of pemphigus foliaceus and similar to the study conducted by Arya *et al*<sup>11</sup> showing 70 cases of pemphigus out of which pemphigus vulgaris was the predominant type with 43 cases (61.4%) followed by 25 cases (35.7%) of pemphigus foliaceus and 2 cases (2.9%) of pemphigus vegetans.

### Bullous Pemphigoid

This was the most common group in the present study with the number of cases being 9 of them were in 52 years age group which was similar to that of Korman *et al*<sup>11</sup>.

Remaining were evenly distributed between 21 to 70 years. The cases showed a female predilection, with 7 patients being males and 3 females. Lesions were seen mainly in upper and lower limbs, back, chest and abdomen. Genital and oral lesions were seen in 1 patient. This finding is in contrast to that of Laskaris *et al*, who said that oral mucous membrane involvement is never a presenting feature.<sup>12</sup>

Histologically these lesions were characterised by sub epidermal bulla with infiltration rich on erythematous base and poor on non erythematous base as reported by Korman and Fisler *et al*<sup>13, 14</sup>. Bulla contained few eosinophils with fibrin net as was seen by Varigos<sup>15</sup>. The type of inflammatory cells seen was predominantly eosinophils in 60% and neutrophils with eosinophils in 20% and neutrophils and lymphocyte in other 20%. The mechanism of separation could not be assessed as the basement membrane cannot be visualized by light microscopy accurately (Fig 2).

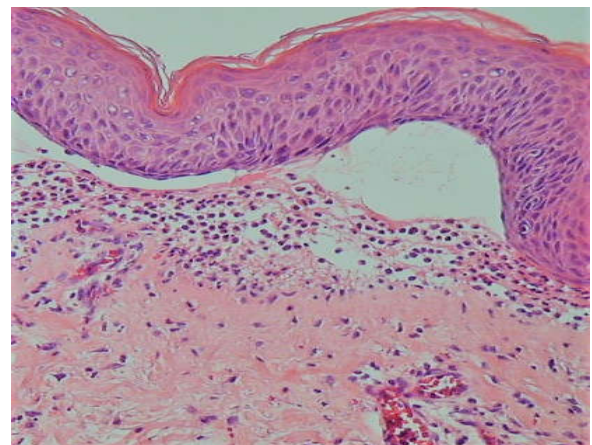


Fig 2 Subepidermal blister in bullous pemphigoid containing few eosinophils with fibrin (100 x magnification, H&E Stain)

### Pemphigus Vulgaris

Of the 4 cases of pemphigus vulgaris in the present study, 3 were in males and 1 in females which is comparable with the study conducted by Arya *et al*<sup>16</sup>. Showing male preponderance in the ratio of 1.4:1 (25 males and 18 females).

The age distribution of pemphigus vulgaris was wide and varied between 21 to 70 years, with maximum number of cases in third decade, which is similar with study by Rosenberg *et al*<sup>17</sup>, Sehgal V N<sup>18</sup> and Arya *et al*<sup>16</sup>.

Acantholysis was seen in 87.1% cases as groups of cells or single cells within the bulla cavity. Dyskeratosis, basal layer budding and pseudo-epitheliomatous proliferation was not seen in any of the cases (Fig 3).

An inflammatory infiltrate was present in the bulla cavity in 18 cases (58.1%). Neutrophils and eosinophils were seen in 6 cases (19.3%) and lymphocytes and neutrophils in 6 cases (19.3%). 6 cases showed chronic inflammatory infiltrate. Similar results were reported by Arya *et al*.<sup>16</sup>

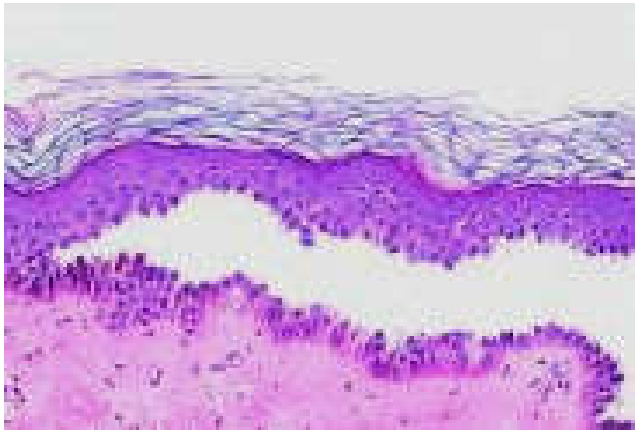


Fig 3 Suprabasal intraepidermal separation in pemphigus vulgaris (100 X magnification, H&E Stain)

### Pemphigus Foliaceus

Pemphigus foliaceus was diagnosed in 1 case only, with upper limbs, chest and lower limbs being involved. No oral lesions were seen. In the study by Arya *et al* there were lesions in trunk in 4 cases (56%) and involvement of extremities in 12 cases (48%). In their study, 4% cases showed mucosal involvement. The gender distribution in the present study was 1:1 with 75% of the cases being in between 21 to 50 years, which is comparable with the study by Arya *et al*, who reported 80% cases of pemphigus foliaceus in the age group of 21-60 years.<sup>16</sup>

Of the 4 cases of pemphigus foliaceus studied, all showed acantholysis. Sub corneal bulla was seen in 3 cases (75%), one showed separation in upper epidermis. Dyskeratosis, basal layer budding and pseudo epitheliomatous proliferation was not seen in any of the cases. An inflammatory infiltrate was present in the bulla cavity in 2 cases (50%). Neutrophils and eosinophil was predominant inflammatory cell in 2 cases (50%). The observation were similar with the study conducted by Arya *et al*.<sup>16</sup> who reported acantholysis in 96% cases of pemphigus foliaceus, sub corneal bulla in 60% cases, sub granular cleavage from middle epidermis in 24% cases and inflammatory infiltrate in the bulla cavity in 53.5% cases. Neutrophils were predominant in 9 cases (20.9%) and eosinophils in 11 cases (25.6%).<sup>1</sup> (Fig 4)

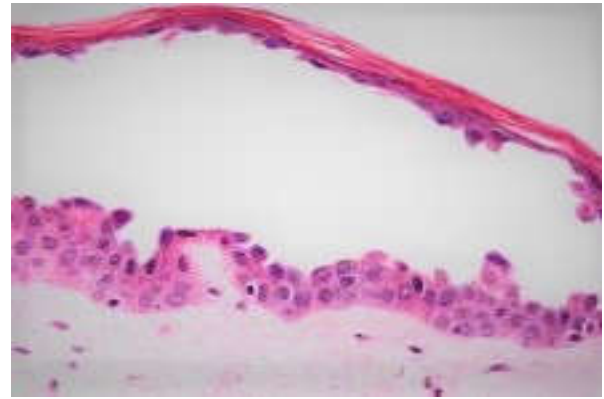


Fig 4 Pemphigus foliaceus with intact bulla, few acantholytic cells and eosinophilic spongiosis (40 X magnification, H&E Stain)

### Pustular psoriasis

In our study 2 cases of pustular psoriasis were diagnosed, both of palmoplantar variant.

This entity was first described by Crocker in 1888 under the name “dermatitis repens”<sup>19</sup>. This variant presence clinically as sterile pustules with erythema, hyperkeratosis and scaling on the palm and soles<sup>20</sup>, just as noted in our cases. Study conducted in Japan comparing the clinical and epidemiological characteristic of palmoplantar pustular psoriasis(PPP) showed a significant female predominance of 67%<sup>21</sup>, confirming with our study where both the cases were females<sup>21</sup>. According to Takahara, tonsillectomy in patients resulted in subjective improvement of the disease in 94% of patients with palmoplantar pustular psoriasis<sup>22</sup>. Koebner phenomenon can also be associated with new lesions in palmoplantar pustular psoriasis<sup>23</sup>. Yamamoto discussed the relationship between PPP and psoriasis with evidence of eruption of plaque like lesions on the trunk of individuals diagnosed with PPP<sup>24,25</sup>, as seen in one of our cases.(Fig 5).

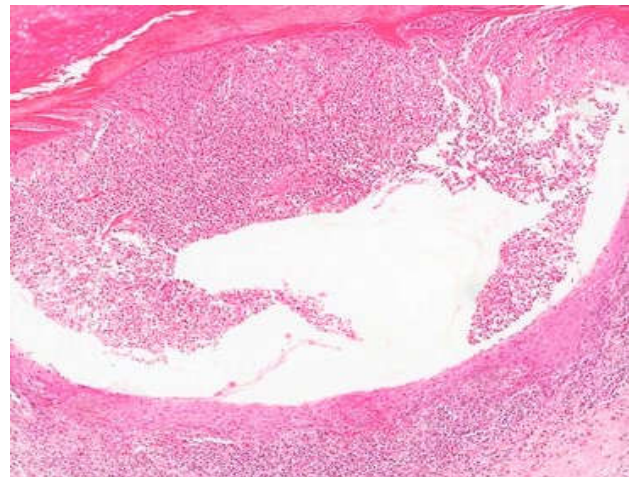


Fig 5 Subcomeal separation of pustular psoriasis (40 X magnification, H&E Stain)

### CONCLUSION

Punch biopsy of the skin is a simple, inexpensive, safe OPD procedure, causing minimal discomfort to the patient. Histopathological features are conclusive in most of the primary cases of vesiculobullous lesions of skin. Analysis of morphological features in addition to the clinical features is useful to reach at a conclusive diagnosis in most of such lesions. Clinical examination along with histopathological examination of skin forms primary diagnostic modality in the

management of patients with vesiculobullous lesions of skin where the facility for immunofluorescence technique is not available.

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### How to cite this article:

Sajitha Begum A *et al* (2019) 'Histopathological Analysis of Vesiculobullous Skin Lesion from A Tertiary Care Hospital', *International Journal of Current Medical and Pharmaceutical Research*, 05(07), pp 4351-4354.

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