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A Histopathological Spectrum Of Dermatological Lesions With Special Stains, Immunofluorescence & Immunohistochemistry Correlation In A Tertiary Care Center In Western Gujarat

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Abstract
Background: *Prevalence of skin diseases are common in developing countries. Accurate diagnosis is needed for proper management of different skin disorders. Histopathological examination is a valuable tool in the diagnosis of different skin lesions.*
Material and Methods: *A retrospective and prospective study was carried out for a period of 12 months. Relevant clinical data was collected. Formalin fixed biopsies were processed and stained with H&E stain, Special stains & Immunofluorescence were done whenever required.*
Result: *A total of 100 cases were included, amongst which 54 were males & 46 were females. The biopsies received were divided into neoplastic and non-neoplastic lesions. Vesico-bullous being the most common lesion. The various lesions included – vesico-bullous lesion, lichen planus, various types of leprosy, wart, psoriasis, lupus lesion, hamartomas, Basal cell carcinoma, malignant melanoma, tinea infection, Squamous cell carcinoma & nonspecific inflammation.*
Conclusion: *Histopathology is a gold standard in the diagnosis of various skin lesions. When coupled with special stains, Immunofluorescence and Immunohistochemistry in case of any doubt, most appropriate diagnosis can be established for further adequate management of patient.*
Keywords: *Skin biopsy; vesico-bullous lesions, histopathological examination, Squamous cell carcinoma*

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I. Introduction:

Skin is largest and most important organ of the body which protects the many internal structures of our body. The skin is not just a passive, dull body covering. It is a vitally important organ, is most visible and accessible, has a complicated structure and serves many functions. Clinically, many skin lesions mimic one another so closely that an exact diagnosis is often very difficult, though not impossible.

From a non-neoplastic vesico-bullous lesions & other lepromatous lesions to benign & malignant lesions, skin is a house of several types of lesions which poses a diagnostic challenge at many times. Improper diagnosis may lead to inadequate treatment & hence morbidity to the patients.

A detailed histopathological study of such cases helps in confirming or ruling out the clinical suspicion. In equivocal or doubtful histopathological results further special stains, Immuno florescence (IF) & Immunohistochemistry (IHC)studies can be done for confirmation.

Skin is easily accessible for biopsy. In this study, skin punch biopsy is employed for diagnosis. Punch biopsy is a simple, inexpensive, safe OPD procedure, causing minimal discomfort to the patient and no scarring**.**

Histopathological spectrum of skin lesions in saurashtra region is less explored topic with only few research available, hence we have under taken this study to guide the clinician and society for appropriate management of various skin lesions.

II. Materials And Methods:

- **Type of Study**: Retrospective and Prospective study.
- **Study location**: tertiary care center, M.P.Shah government medical college, jamnagar
- **Study Duration**: 12 months
- **Sample size**- 100
- **Ethical Approval** - Study was approved by Institutional Ethical Committee

Inclusion criteria

- All patients presenting clinically with dermatological lesion.
- Patients of all age group & both genders.
- Patients presenting with any skin lesion from head to toe.

Exclusion criteria

- Any cystic lesion.
- Lesion with extensive hemorrhages and necrosis
- Patients already on steroid treatment for some lesion

Procedure methodology

- **Method**- Punch biopsy of skin lesion was taken at skin department and specimen were sent in 10% formalin with necessary clinical details to histopathology section of Pathology department.
- **Processing**- Specimen were then processed in histokinette machine, paraffin wax blocks were prepared and tissue were taken on glass slides and were stained by Hematoxylin and Eosin stain and observed under light microscope. Special stain, Immunofluorescence (IF) & Immunohistochemistry (IHC) were done whenever required according to the standard protocol.

III. Results:

This study was conducted in the department of Pathology in a tertiary care center. A total of 100 cases were included in the present study, amongst which 54 were males & 46 were females. The age ranged from 05 to 60 years. The involved site was mostly according to the lesion. The biopsies received were divided into neoplastic and non neoplastic lesions. Special stains, Immunofluorescence & IHC were done in some cases to conclude the diagnosis.

Tables:

Table no.1: Showing age group and gender distribution (n=100)

Age distribution	Male	Female	No. of cases
<10 years	**02**	**02**	**04**
10-20 years	**04**	**05**	**09**
20-30 years	**08**	**04**	**12**
30-40 years	**08**	**09**	**17**
40-50 years	**12**	**11**	**23**
50-60 years	**10**	**06**	**16**

>60 years	**10**	**09**	**19**
Total	**54**	**46**	**100**

Above table shows that maximum no of cases was in 40-50 years of age group, followed by >60-year age with male predominance**.**

Figure With Legends :

Fig 1.1 Showing supra basal split of epidermis layer- Pemphigus vulgaris (10x, H&E)

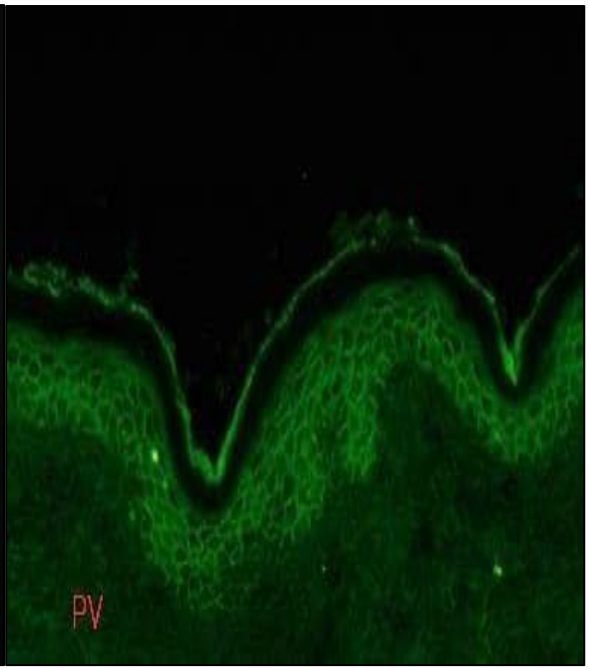


Fig 1.2 Showing Immunofluorescence in Pemphigus Vulgaris

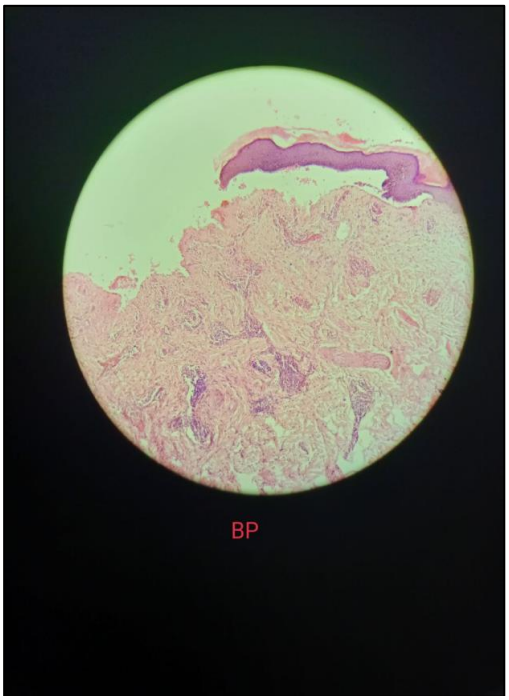


Fig 1.3 Showing sub corneal split along with inflammatory infiltrates seen in Bullous pemphigoid (10x, H&E)

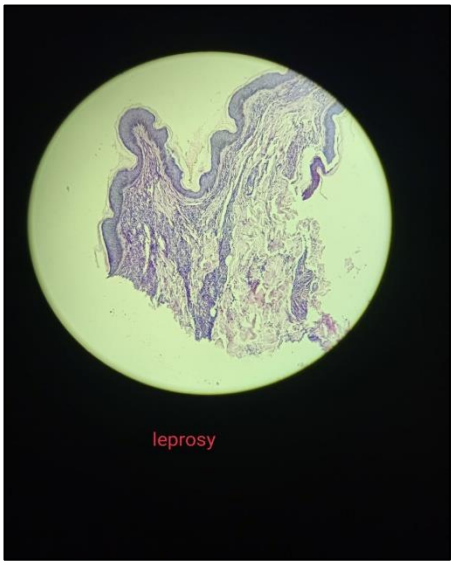


Fig 1.4 Showing lepromatous Leprosy (10x, H&E)

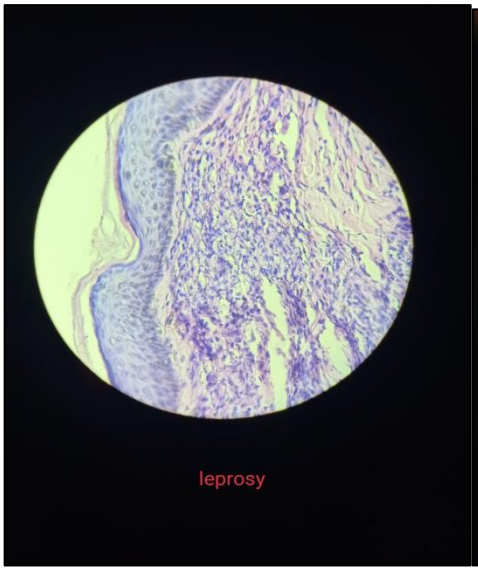


Fig 1.5 Showing foamy macrophage & grenz zone.

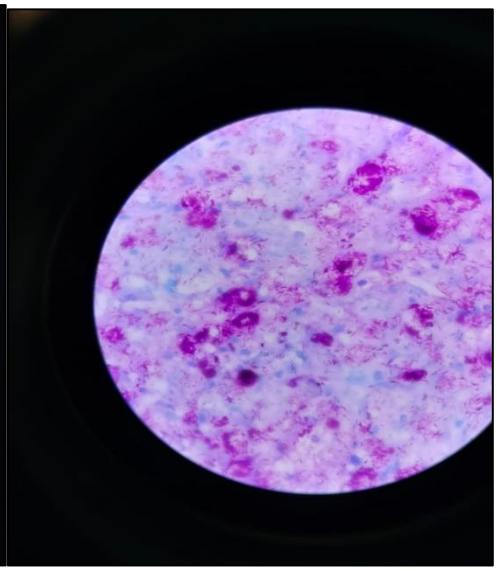


Fig 1.6 Showing multiple globii Shaped bacilli (40X, Fite Ferraro stain) seen in lepromatous leprosy (40x, H&E)

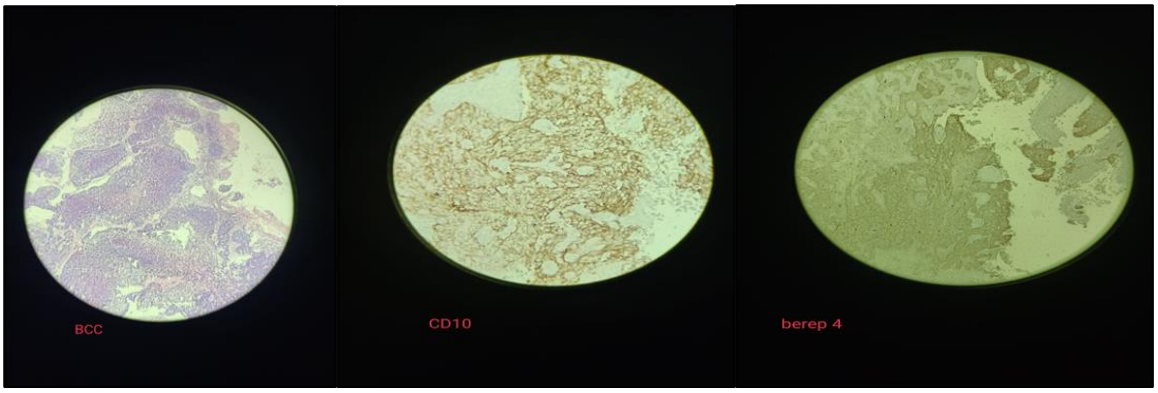
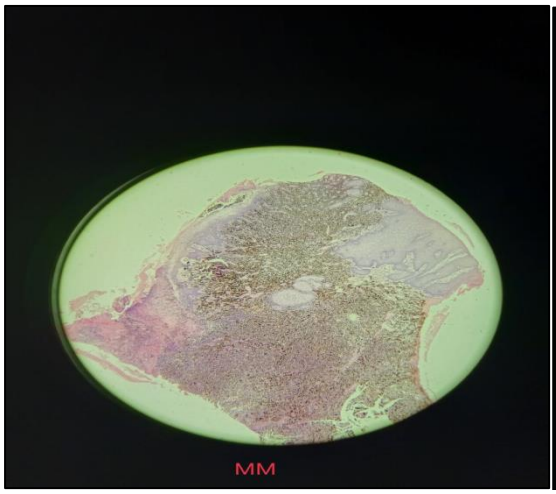


Fig 1.7 BCC showing nest of basaloid cell with peripheral palisading (10x, H&E)
Fig 1.8 & 1.9 Showing immunohistochemistry markers-Ber Ep4 positive (cytoplasm)& CD10 positive in tumor cells(cytoplasm) (40x)



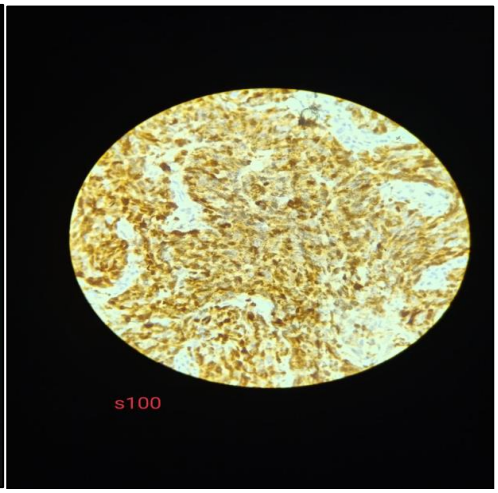


Fig 1.10 Showing melanin pigment with. prominent macronuclei in Malignant Melanoma(MM) (10X, H&E) Fig 1.11 Showing Immunohistochemistry marker S100 positive (nuclear & cytoplasmic,40X)

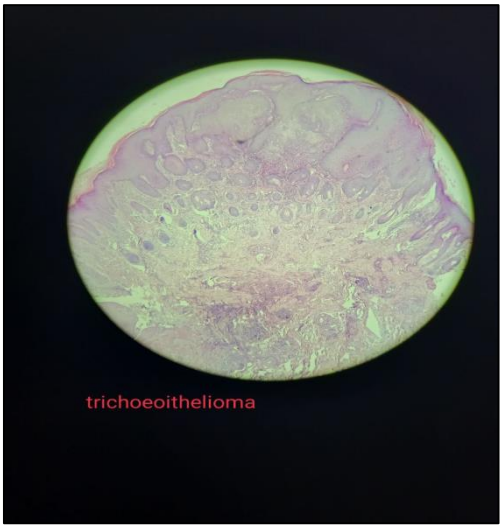


Fig 1.12 Showing superficial dermal tumor with nest of basaloid cell with keratin horn cyst in trichoepithelioma

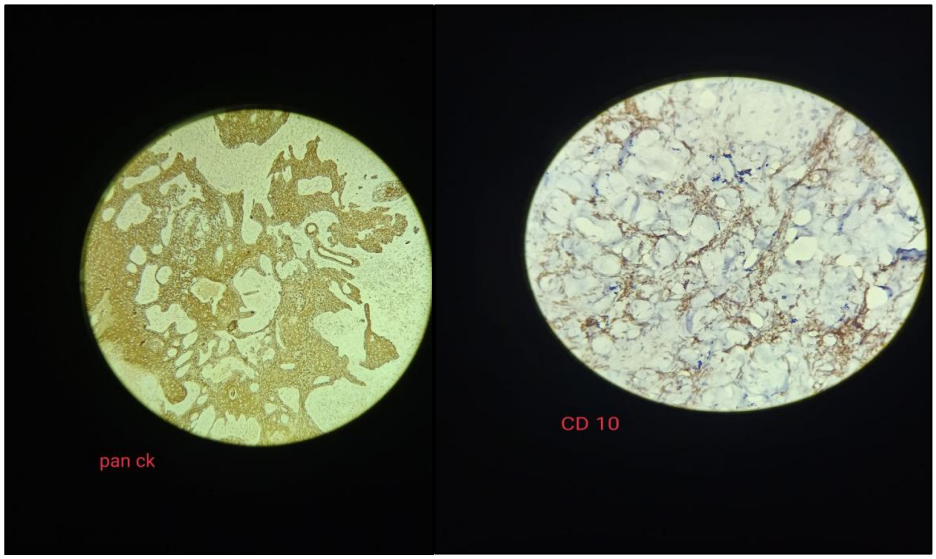


Fig 1.13 &1.14 Showing Immunohistochemistry markers -Pan CK positive in tumor cells (cytoplasmic,10X) & CD 10 positive in stromal component(40X)

IV. Discussion:

Our study was comparable with most of other studies conducted on skin lesions but geographical variations were seen.

In our study, highest frequency of skin disease was in the age group between 40 to 50 years. In contrast to Bezbaruah R et al [7] and Abubakar S.D et al [8] where highest frequency was in 21 to 30 years whereas Adhikari R.C et al. [6] and Barman D.D et al [10] found the highest frequency of cases between 31 to 40 years and 20 to 40 years respectively.

Our study showed Male predominance which was similar to Abubakar S.D et al [8] and Sushma C et al [9] and in contrast to female predominance in Bezbaruah R, et al [7], Adhikari R.C et al [6] and Barman DD et al [10].

In our study most common lesion was non neoplastic (82 cases) in which vesico-bullous lesions (31cases) was most frequent, followed by neoplastic lesion (18 cases), which is similar to Adhikari R.C et al [6], Abubakar S.D et al [8], Barman D.D et al [10] and Sushma C et al [9] study. However, in Bezbaruah R et al [7] study neoplastic lesions were observed as a major skin entity in comparison to non neoplastic lesion.

Pemphigus vulgaris was the commonest vesico-bullous non neoplastic lesion in our study, which is similar to Adhikari R.C et al [6] study in which vesicobullous lesion was most common non neoplastic lesion. In contrast to our study, in Bezbaruah R et al [7] Squamous cell carcinoma was the most common neoplastic lesion. In other study like Abubakar S.D et al [8] chronic inflammatory dermatosis was most common non neoplastic lesions, while in Barman D.D et al [10] lichen planus was the commonest non neoplastic lesion and in Sushma C et al [9], epidermal cysts were the most common non neoplastic lesion found. These three studies were similar to our study.

Squamous cell carcinoma was the most common neoplastic skin lesion in our study. which was similar to Bezbaruah R et al [7] and Sushma C et al [9]. In contrast to our study Adhikari R.C et al [6] showed Basal cell carcinoma as the commonest Neoplastic lesions.

The above comparative study shows concordance with many studies with some variations.

The significance of particular histomorphological characteristics lies in differentiating distinct skin lesions and is crucial in formulating the ultimate diagnosis of all these varied skin lesions. This emphasizes the importance of a histopathological analysis for appropriate patient care.

Table no.3 Showing comparative study of various authors

	Adhikari RC et al [6]	Bezbaruah R et al [7]	Abubakar SD et al [8]	Sushma C, et al [9]	Barman DD, et al [10]	Present study [2024]
Geographical area	Kathmandu, Nepal	india	Sokoto,nigeria	Andhraprades h, india	Benguluru, india	Western Gujarat, india
Total no. of cases	1040	114	329	234	50	100
Time period	2 years	1.5 years	7 years	2 years	1 year	1 year
Most common Age group	31 to 40 years	21 to 30 years	20 to 29 years	Under 50 years	20 to 40 years	40 to 50 years
Predominant gender	Female	Female	Male	Male	Female	Male
Most common lesion	Non neoplastic lesion (vesicobullous lesion)	neoplastic lesion (squamous cell carcinoma)	Non neoplastic lesion (chronic inflammatory dermatosis)	Non neoplastic lesion (epidermal cyst)	Non neoplastic (lichen planus)	Non neoplastic lesion (vesico-bullous lesion)

V. Conclusion:

It is important to be aware of the broad histologic spectrum of skin lesions. Community education in understanding the prevention of certain infectious skin diseases and early diagnosis of certain malignant skin lesions will improve the overall health of the society as far as skin diseases are concerned.

Histopathology is a **Gold Standard** in the diagnosis of various skin lesions. When coupled with Special stains, Immunofluorescence & IHC in case of any doubt, most appropriate diagnosis can be established for further adequate management of patient.

We suggest such type of study in different geographical area to plan preventive strategy to reduce morbidity due to various skin lesions.

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