

Non-neoplastic skin lesions - A histopathological study in a tertiary care hospital

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Abstract

Background: Skin diseases are common and divergent. Skin is the largest external organ of the body and it's repeatedly exposed to microbial and non-microbial antigens from environment. This leads to enormous number of diseases that can occur in skin. Skin lesions are categorized broadly as non- neoplastic and neoplastic diseases. Preponderance of skin lesions are non- neoplastic.

Aim: To determine the histopathological patterns of non- neoplastic skin lesions received at a tertiary care institute

Materials and Methods: A cross-sectional study conducted between November 2022 to October 2023. skin punch biopsy specimens received during the study period were submitted for processing. Tissue processing was done as per standard procedure and paraffin embedded blocks were made Special stains such as FiteFaraco stain were performed whenever required.

Results: A total of 126 cases of skin lesions were taken up for the study in which a conclusive diagnosis of non-neoplastic skin lesion were made. Out of these, 88 cases were male patients while 38 were female patients. Most cases belonged to 31-40 years age groups - 30 cases. In our study, Noninfectious vesiculobullous and vesiculopustular diseases constituted maximum number of cases 42 (33.3%).

Conclusion: Histopathology is an important diagnostic tool in skin lesions, despite advancement in molecular techniques in diagnosis and prognosis, morphology still remains the basis of diagnosis.

Keywords: Benign skin lesions, Noninfectious vesiculobullous and vesiculopustular diseases, Punch Biopsy

Introduction:

Skin diseases are common and divergent. Skin is the largest external organ of the body and it's repeatedly exposed to microbial and non-microbial antigens from environment. This leads to enormous number of diseases that can occur in skin^[1]. Skin is the dynamic organ with multiple functions^[2]. Skin is also known as barrier organ, protects against mechanical injury, prevents loss of body fluids, protects against infections, helps regulate body temperature, acts as a sensory organ, plays a role in vitamin D production, synthesis of androgens, several cytokines and growth factors, plays a role in immune and neoplastic surveillance. Skin acts as a two - way barrier to prevent inward or outward passage of water and electrolytes and protects the body against various external agents. Skin also protects against ultraviolet rays. Sun radiation is made up of infrared, visible, and ultraviolet light and after maximal by UV rays^[2].

In India, skin diseases are one of the most common health problems^[3]. But the skin diseases are not considered as significant problems because most of them are benign and not life threatening so less priority is given^[4]. Skin lesions are categorized broadly as non-neoplastic and neoplastic diseases. Majority of skin lesions are non- neoplastic^[5]. Due to the varied presentations numerous diseases are categorized under them. Thus, this study was undertaken to learn various cutaneous non-neoplastic lesions.

Aims and objectives of the study: To determine histopathological patterns of non-neoplastic skin lesions received at a tertiary care institute. To classify the skin lesions into major categories and to determine the incidence of its subcategories.

Materials and Methods:

A cross-sectional study conducted between November 2022 to October 2023. The present study is undertaken

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in Department of Pathology in a tertiary care hospital. This study included a total of 126 skin punch biopsy specimens over a period of one year. Cases with a conclusive diagnosis of non-neoplastic skin lesion were classified according to Lever's Histopathology of skin^[6]. The specimens were fixed in 10% Formalin. All the skin punch biopsy specimens received during the study period were submitted for processing. Tissue processing was done as per standard procedure and paraffin embedded blocks were made.

Tissue sections of 5 μ thick were cut, using rotary microtome and stained by Haematoxylin and Eosin followed by microscopic examination. Special stains such as FiteFaraco stain were performed whenever required. Detailed patient history, clinical examination findings were noted from the histopathological requisition form sent along with the specimen.

Inclusion criteria:All biopsies that showed definite signs of any specific non neoplastic pathology were included

Exclusion criteria:All skin biopsies that didn't show definite signs of any specific pathology or inadequate samples were excluded. Also skin biopsy specimens showing neoplastic etiology are excluded from this study.

Results:

A total of 126 cases were included in this study. Out of these, 88 cases (70%) were male patients while 38 (30%) were female patients. Male: Female ratio was 2.3:1 (Figure - 1). Patient's age ranged from 4 years to 80 years. Most cases belonged to 31-40 years age groups, 30 cases. (25.3%) (Table-1).

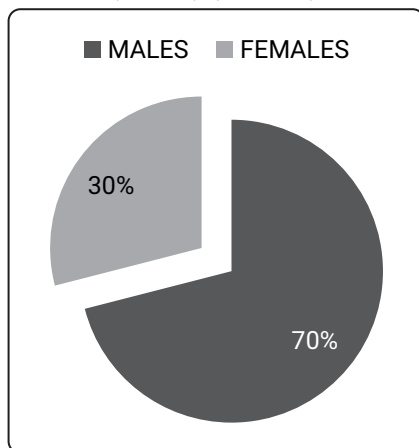
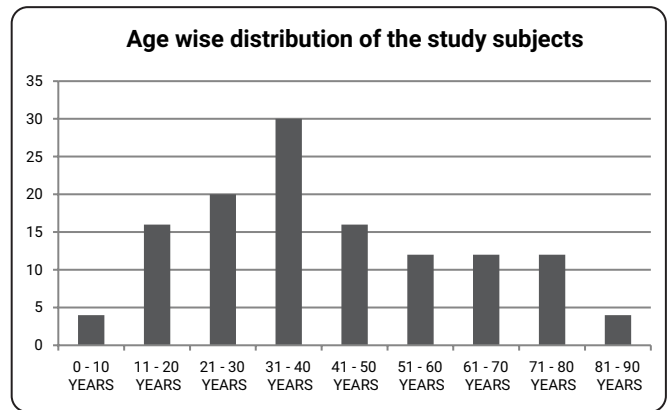


Figure 1: Sex wise distribution of non neoplastic skin lesions showing non neoplastic skin lesions were most common among males in our study



Graph 1: Age distribution of non-neoplastic skin lesions

Graph 1 shows that Out of 126 cases majority of the study participates belong to the age group of 31-40 years which is 30 individuals (23%), followed by the age group of 20-30 age group of 20 participants (15.8%). The overall mean age group is noted to be 28 \pm 2.

Table 1: Skin disease classification based on histopathology.

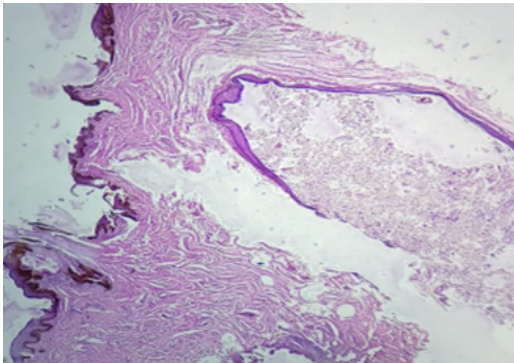
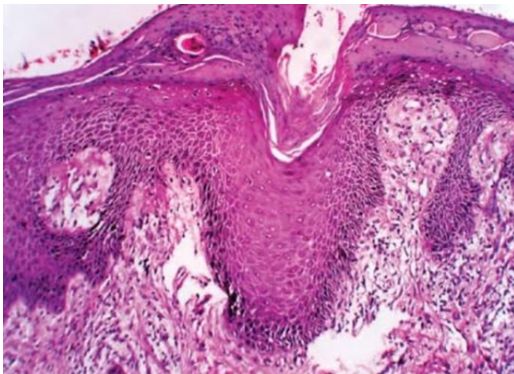
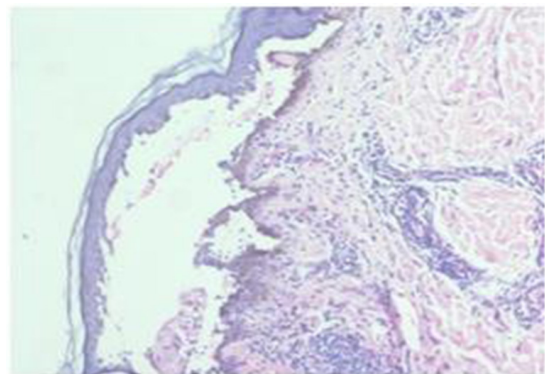
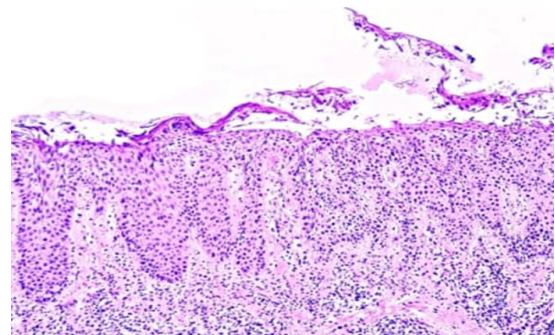
Name of Disease	Number of Cases	Percentage
Epidermoid Cyst	20	15.8%
Chronic non specific dermatitis	16	12.6%
PrurigoNodularis	14	11.1%
Pemphigusvulgaris	10	7.9%
Trichilemmal Cyst	8	6.3%
Pemphigusfoliaceus	8	6.3%
Lepromatous Leprosy	8	6.3%
Atopic eczema	8	6.3%
Photo allergic contact dermatitis	8	6.3%
Erythroderma secondary to psoriasis	8	6.3%
Polymorphous light eruption	4	3.1%
Lupus erythematosus	4	3.1%
Exfoliative dermatitis	4	3.1%
Ecematous dermatitis	4	3.1%
Airborne contact dermatitis	2	1.5%
Total	126	

Table 1 shows that Out of 126 cases, epidermoid cyst is the most common lesion in our study with 20 cases accounting for 15.8%, which is followed by the chronic non specific dermatitis 16 cases reported out of 126 cases with a prevalence of 12.6%.

Table 2: Sub categories of non neoplastic skin lesion showing non-infectious vesicobullous and vesiculopustular disorders are most common in our study.

Disease Category	Skin disease- Biopsy report	Number of cases	Percentage
1. Infectious diseases	Bacterial-Lepromatous leprosy	8	6.3%
2. Non infectious Vesico-bullous and vesiculopustular disorders	1. Pemphigus vulgaris	10	7.9%
	2. Pemphigus foliaceus	8	6.3%
	3. Atopic eczema	8	6.3%
	4. Photo allergic contact dermatitis	8	6.3%
	5. Erythroderma secondary to psoriasis	8	6.3%
3. Non-infectious erythematous papular and squamous diseases	1. Prurigo Nodularis	14	11.1%
	2. Exfoliative dermatitis	4	3.1%
4. Connective tissue disorders	Lupus erythematosus	4	3.1%
5. Photosensitivity reaction	Polymorphous light reaction	4	3.1%
6. Cutaneous cyst	1. Epidermoid Cyst	20	15.8%
	2. Trichilemmal Cyst	8	6.3%
7. Inflammatory diseases of nail	Eczematous dermatitis	4	3.1%
8. Miscellaneous	1. Chronic non specific dermatitis	16	12.6%
	2. Airborne contact dermatitis	2	1.5%

Table 2 shows that out of 126 study participants majority of the having the skin lesion of cutaneous cyst category in which 20(15.8%) are having epidermoid cyst , followed by chronic non specific dermatitis 16 cases out of 126 (12.6%). The least cases reported to noted in miscellaneous category report showed airborne contact dermatitis noted 2 cases (1.5%)

**Figure 2: Epidermoid cyst filled with keratin flakes****Figure 3: Prurigonodularis showing hyperkeratosis, irregular acanthosis****Figure 4: Pemphigus Vulgaris showing intraepidermal acantholytic blister in suprabasal plane****Figure 5: Pemphigus foliaceus showing sub corneal acantholytic blister**

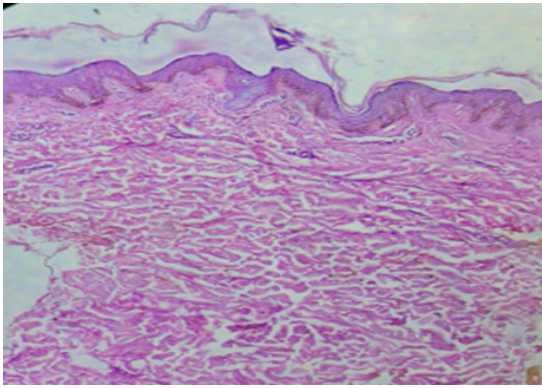


Figure 6: Lepromatous leprosy shows Grenz zone that separates dermis from epidermis and macrophages (foamy histiocytes) in the dermis

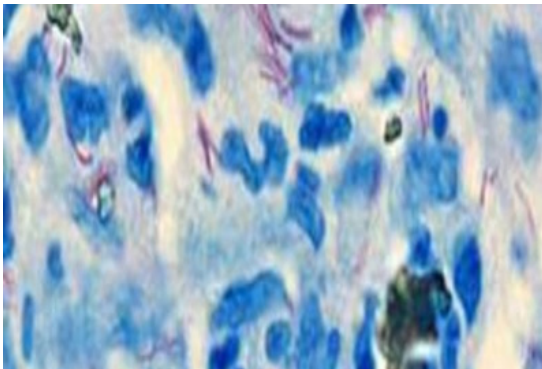


Figure 7: Lepra bacilli on Fite Faraco Stain

Discussion

In our present study, 126 skin biopsies of non-neoplastic skin lesions were received over a period of one year, in which conclusive diagnosis of non neoplastic skin lesion were made. Age group ranging from 4 years to 80 years were included. Out of this 126 cases, age groups 31-40 years showed highest number of cases, i.e., 30 cases (23.8%) which was similar to the study done by Reddy et al^[7] in that study they concluded that 31-40 years age group was commonly affected and also in Gupta et al^[8] study 31-40 years age group was most common age group. In both these studies, 30 – 40 years age group having highest number of cases. Where as in study done by SakthidasanChinnathambi P et al^[9] study most common age group was 21 - 30 years.

In our study, out of 126 cases, non neoplastic skin lesions are most common among male patients i.e., 88 cases (70%) while 38 (30%) were female patients with M:F ratio of 2.3:1. This was similar to study done by Singh et al^[10], Mehar et al^[11], Rajput JS et al^[12] and Veldurthy et al^[13]. In all these studies non neoplastic skin lesions were most common in males.

In our study, Non infectious vesiculobullous and vesiculopustular diseases constituted maximum number of cases 42 cases (33.3%). This was

similar to study done by Gireesh V. Achalkar et al^[14] and SanatChalise et al^[15]. In all these studies Non infectious vesiculobullous and vesiculopustular diseases constituted maximum number of cases. Where as in study done by SakthidasanChinnathambi P et al^[8] cutaneous infections was the most common clinical category, with Mycobacterial lesions as the prominent subcategory.

Recommendations

A detailed prospective cohort study will be advised to study the progress and changes in the skin lesions with large sample size, and also during our study there were not much studies was done on the skin lesions so need of more detailed studies on skin lesions.

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Conclusion:

Cutaneous non-neoplastic lesions include a enormous number of disease categories and studying them in a systematic approach, like understanding the various histopathological patterns and clinical categorizations helps in arriving accurate diagnosis. Despite advancement in molecular techniques in diagnosis and prognosis, morphology still remains the basis of diagnosis. So histopathology is the gold standard for diagnosis of non-neoplastic skin lesions.

References:

- Alexander J. Lazar. *The Skin*. In: Vinay Kumar, editor. *Robbins and cot ran pathological basis of diseases*, 10th edition. Philadelphia: Elsevier; 2021. p.1133-35.
- K.H.Satyanarayana Rao, S. Introduction; Venkataram Mysore. *Dermatological Diseases A Practical Approach*, 2nd edition. Wolters Kluwer; 2020. p.7-10.
- Narang S, Jain R. An evaluation of histopathological findings of skin biopsies in various skin disorders. *Ann Pathol Lab Med*. 2015;02(01):42-46.
- Kumar V, Goswami HM. Spectrum of non- neoplastic skin lesions- a histopathological study based on punch biopsy. *Int J Cur Res Rev*. 2018; 10(6):43-48.
- Nishal A, Bajaj H, Hathila R, Patel M, Shah P, Patel A, et al. *Histomorphological Study of Non Neoplastic Skin Lesions: A Retrospective Approach*. *International Journal of Current Research and Review*. 2022;14(13):77–85.
- Hong WU, Anee E, Allan, Terence J. *Noninfectious vesiculobullous and Vesiculopustular Diseases*: David E. Elder... *Lever's Histopathology of the skin*, 11th edition. Philadelphia: Wolters Kluwer; 2015. p.266-68
- Histopathological spectrum of dermatological lesions - a retrospective study*. Bharadwaj V, Sudhakar R, Srikanth Reddy K, Naidu SR. *J Evid Based Med Health*. 2020;7:1198–1202
- Gupta I, Kaira V, Gupta K, Bothale KA, Mahore SD. *Clinical profile of non-neoplastic skin lesions: A prospective cross-sectional study*. *Indian J*

ClinExpDermatol. 2019;8:53–7.

9. Chinnathambi P and Burra / IP *Indian Journal of Clinical and Experimental Dermatology* 2021;7(2):130–135
10. *Histopathological review of dermatological disorders with a keynote to granulomatous lesions: a retrospective study.* Agarwal D, Singh K, Saluja SK, Kundu PR, Kamra H, Agarwal R. *Int J Sci Stud.* 2015;3:66–69
11. *Histopathological study of dermatological lesions - a retrospective approach.* Mehar R, Jain R, Kulkarni CV, Narang S, Mittal M, Patidar H. *Int J Med Sci Public Health.* 2014;3:1082–1085
12. Rajput JS, Singh K, Singh S and Amarjeet S. *Clinicopathological study of non neoplastic skin disorders.* *MedPulseInt Med J.* 2014;1(8):367-372.
13. Veldhurthy VS, Shanmugam C, Sudhir N, Sirisha O, MotupalliCP,Rao N, et al. *Pathological study of non-neoplastic skin lesions by punch biopsy.* *Int J Res Med Sci.* 2015;3:1985–8.
14. Kumar V, Goswami HM. *Spectrum of Non-neoplastic Skin Lesions: Histopathological Study based on Punch Biopsy.* *Int J Cur Res Rev.*2018;10:43–8
15. Chalise S, Dhakhwa R, Pradhan SB. *Histopathological Study of Skin Lesions in a Tertiary Care Hospital: Journal of Nepal Medical Association.* 2020 Apr 30;58(224).

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