HISTOMORPHOLOGICAL SPECTRUM OF SKIN LESIONS AT A TERTIARY CARE CENTER – A RETROSPECTIVE STUDY

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ABSTRACT:

BACKGROUND: The skin, being the greatest sensory organ of the body, serves as a defensive shield against a wide range of harmful environmental substances. Consequently, it is implicated in a broad range of illnesses, including both inflammatory and neoplastic conditions. A skin biopsy, together with histological analysis, is necessary to achieve a precise diagnosis, thus aiding clinicians in determining the most suitable treatment.

AIMS: This study aims to provide a comprehensive description of the histopathological range of all skin lesions, establish their distribution by age and sex, and identify the most prevalent skin lesions in a tertiary care hospital.

MATERIALS & METHODS: A retrospective, cross-sectional, non-interventional study was carried out on 255 skin biopsies received in the department of pathology at Government Medical College, Ananthapuram, Andhra Pradesh, for a period of four years, from January 2019 to June 2023.

RESULTS: Among the 255 skin biopsies analysed, the demographic most significantly impacted were those aged 31 to 70 years, with a male preponderance in all the categories of skin lesions. 63 (24.7%) were non-neoplastic, and 192 (75.3%) were neoplastic. Among the neoplastic cases, 84.9% were classified as benign.

CONCLUSION: Dermatological lesions exhibit a wide spectrum of clinical presentations, with a wide age distribution and histopathology. The significance of specific histomorphological characteristics lies in differentiating various skin lesions and is crucial in establishing the definitive diagnosis of these heterogeneous skin lesions. This underscores the significance of conducting a histopathological study to ensure proper patient management.

KEYWORDS: Skin lesions, Biopsy, Inflammatory, Neoplastic, Histopathology

INTRODUCTION:

Skin is the largest organ of the integumentary system, along with its accessory parts like hair, nails, and glands. The prevalence of skin diseases in the general population in different geographic regions of India varies from 7.9% to 60% [1–3]. The range of skin illnesses is extensive, and they require long-term treatment, which can be expensive; however, the majority of these conditions are identified through visual inspection and analysis of the patient's medical background. Skin biopsy is an essential diagnostic technique for verifying the clinical diagnosis in situations of diagnostic uncertainty [4]. Although molecular approaches have made incremental progress in diagnosis and prognosis, it is noteworthy that morphology remains the primary basis for diagnosing numerous inflammatory skin disorders and neoplasms [5].

Understanding the normal histology of the skin is central to defining cutaneous pathology. The skin is comprised of two distinct yet interconnected layers, namely the epidermis and dermis, which are composed of cells with myriad functions [5]. Interpreting skin specimens can be complex and challenging, as most inflammatory skin diseases exhibit a similar underlying inflammatory pattern. A conclusive diagnosis necessitates the expertise of a clinician and the linkage of clinical and pathological data [6].

A histopathological analysis of a skin biopsy is necessary to identify the etiological agents, offer a precise diagnosis, and help a clinician decide on the optimal treatment plan [7]. The current study intends to ascertain the frequency of various skin lesions in our tertiary care hospital, the function of histopathology in the diagnosis of various neoplastic as well as non-neoplastic skin lesions, and the classification of these lesions under various histopathological categories in order to improve patient management.

MATERIALS & METHODS:

A retrospective, cross sectional, non interventional study was carried out on 255 skin biopsies received in the department of Pathology, Government Medical College, Ananthapuram, Andhra Pradesh, for a period of four years from January 2019 to June 2023.

Specimen Processing:
Following tissue processing, all skin biopsies were preserved in 10% buffered formalin. The tissue blocks were produced, embedded in paraffin wax, and then sliced into 5 mm thin sections using a microtome. Standard hematoxylin and eosin stain was applied to each segment. When it's required to confirm the diagnosis, special stains including Masson trichome stain, Ziehl-Neelson, Periodic acid-Schiff stain, and Fite-Faraco stain were used.

Inclusion criteria:
All skin biopsies that were received in the histopathological section during the study period regardless of age, gender, or clinical diagnosiswere included.

Exclusion criteria:

Insufficient, poorly fixed or autolyzed skin biopsy specimens were excluded from the study. Final diagnosis was given after histopathological examination and special stain wherever necessary. All collected data were recorded and tabulated.

Ethical consideration
Ethical approval was obtained from the Institutional Ethics Committee of Government Medical College & Hospital, Ananthapuramu.

Statistical analysis:
Data was collected comprehensively and the results were organised systematically in a tabular format on excel sheet. Descriptive statistical analysis was used to calculate the number and percentage of incidence in various age groups, genders, types of lesions, and in comparison to other studies.

RESULTS:
Out of the 255 skin biopsies received, most common age group affected was between 31 to 70 years of age, with males most commonly affected with all categories of lesions. 192 (75.3%) had neoplasia and 63 (24.7%) had non neoplastic lesions and among the cases of neoplasms, 84.9% were deemed benign as shown in Tables 1 and 2.

Table 1: Histopathological distribution of lesions:

Type of Skin lesions	Number of cases	Percentage (%)
Non-neoplastic	63	24.7%
Neoplastic	192	75.3%
Total	255	100%

Table 2: Histopathological distribution of Neoplastic lesions:

Skin lesions	Number of cases	Percentage (%)
Benign	163	84.9%
Malignant	29	15.1%
Total	192	100%

Table 3: Distribution of Non-neoplastic skin lesions

S. No	Type of Lesion	No. of cases (%)
1	Dermoid cyst	24 (38.09%)
2	Calcinosis cutis	15 (23.8%)
3	Pemphigus vulgaris	3 (4.8%)
4	Psoriasiform dermatitis	2 (3.2%)
5	Photodermatitis	2 (3.2%)
6	Balanitis xerotica obliterans	2 (3.2%)
7	Others	15 (23.8%)

As seen in Table 3, dermoid cyst was the most common non-neoplastic skin lesion with 24 cases (38.09%), followed by calcinosis cutis with 15 cases (23.8%), and under others, 15 cases (23.8%) of erythema nodosum leprosum, implantation dermoid, vitiligo, erythroderma, dermatitis, prurigo nodularis, alopecia areata, lichenoid dermatitis, epidermolysis bullosa simplex, erythema multiforme, pemphigus foliaceous, subcorneal pustular dermatitis, bullous pemphigoid, and scleroderma with a single case of each of them were observed.

Table 4: Distribution of Benign skin lesions

S. No	Type of lesion	No. of Cases (%)
1	Epidermal cyst	83 (50.3%)
2	Fibroepithelial polyp	16 (9.6%)
3	Verruca vulgaris	12 (7.2%)
4	Trichilemmal cyst	8 (4.8%)
5	Cavernous hemangioma	7 (4.2%)
6	Pyogenic granuloma	7 (4.2%)
7	Capillary hemangioma	4 (2.4%)
8	Nodular hidradenoma	3 (1.8%)
9	Proliferating trichilemmal cyst	2 (1.2%)
10	Nevus sebaceous of Jadassohn	2 (1.2%)
11	Melanoacanthoma	2 (1.2%)
12	Keloid	2 (1.2%)
13	Keratoacanthoma	2 (1.2%)
14	Hidradenomapapilliferum	2 (1.2%)
15	Seborrheic keratosis	2 (1.2%)
16	Pilomatricoma	2 (1.2%)
17	Others	9 (5.52%)

Epidermal cyst was the most common benign lesion, found in 83 cases (50.3%), fibroepithelial polyp 16 cases (9.6%), Verruca vulgaris 12 cases (7.2%), and one each of melanosis, trichoepithelioma, chondroidsynringoma, congenital melanocytic nevus, cutaneous epithelioid angiomatous nodule, cutaneous horn, pseudoepitheliomatous hyperplasia, eccrinespiradenoma, and cutaneous Langerhans cell histiocytosis.

Table 4: Distribution of Malignant neoplastic skin lesions

S. No	Type of lesion	No. of Cases (%)
1	Squamous cell carcinoma	15 (55.6%)
2	Basal cell carcinoma	4 (14.8%)
3	Malignant melanoma	3 (11.1%)
4	Sebaceous carcinoma	1 (3.7%)
5	Cutaneous epithelioid angiosarcoma	1 (3.7%)
6	Metastasis	2 (7.4%)

DISCUSSION:

Skin lesions arise due to various causes like infections, nutritional deficiencies, stress, auto-immune causes, and disruptions in homeostasis, leading to a range of disorders such as wrinkles, hair loss, hives, blisters, and potentially fatal malignancies [8]. Though most of the

skin conditions can be diagnosed by the naked eye, some of them require a deeper analysis of the cutaneous pathology by histopathological examination of a skin biopsy.

In this study, skin diseases are more frequent in the age group of 31 to 70 years, in contrast to studies done by Chalise et al. [8], Bezbaruah R et al. [9], Abubaker SD et al. [10], and Adhikari RC et al. [11], where the frequent age groups affected were 41–50 years, 21–30 years, and 31–40 years, respectively. This difference in our study might be observed due to the higher number of neoplastic skin conditions (192 out of 255) that are more common in elderly age groups.

There was male preponderance in all the categories of skin lesions, similar to the study done by Goswami et al. [12] and Sushma et al. [13]. There were 134 males (53%) and 121 females (47%) in our study.

Our study showed 75.3% of the skin lesions to be neoplastic, which is much higher than the non-neoplastic lesions (24.7%). This finding is similar to the studies of Bezbaruah R et al. [9], i.e., 81.42%; Abubaker SD et al. [10], 67.1%; however, Chalise et al. [8] and Sushma et al. [13] showed a higher number of non-neoplastic skin lesions, i.e., 67.7% and 58.1%, respectively. A study by Adikari Rc et al. [11] showed only 19.7% of neoplastic lesions out of the 1040 cases they studied.

Dermoid cyst was the most common non-neoplastic skin lesion in our study, whereas Chalise et al. [8] and Goswami et al. [12] found spongiotic dermatitis and pemphigus to be most common in their studies, respectively.

Among neoplastic lesions, epidermal cyst (50.3%) was the most common benign lesion found, similar to Bezbaruah R et al. [9] and seborrhoeic keratosis [2] by Chalise et al. and Goswami et al., respectively.

Squamous cell carcinoma (40.7%) was the most common malignant lesion in our study, which was the same as the study by Chalise et al. [8], Thapa et al. [14], and Rauniyar et al. [15].
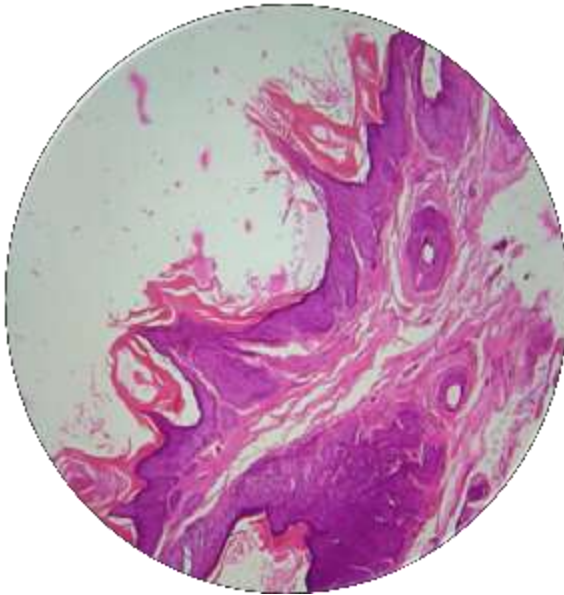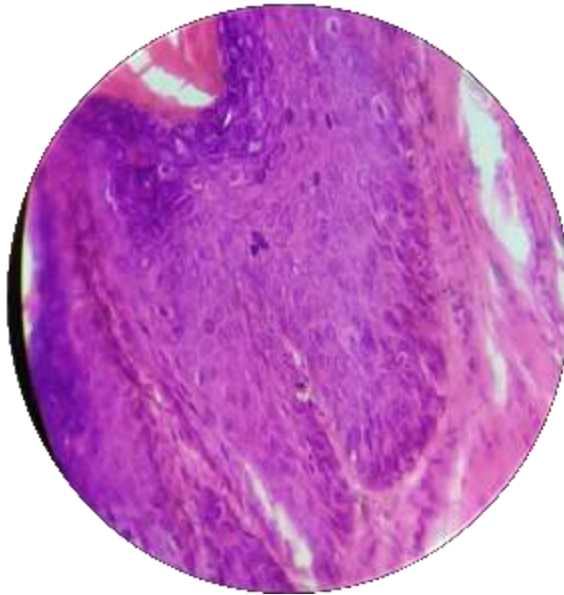
Figure 1 A, B Nevus Sebaceous of Jadassohn
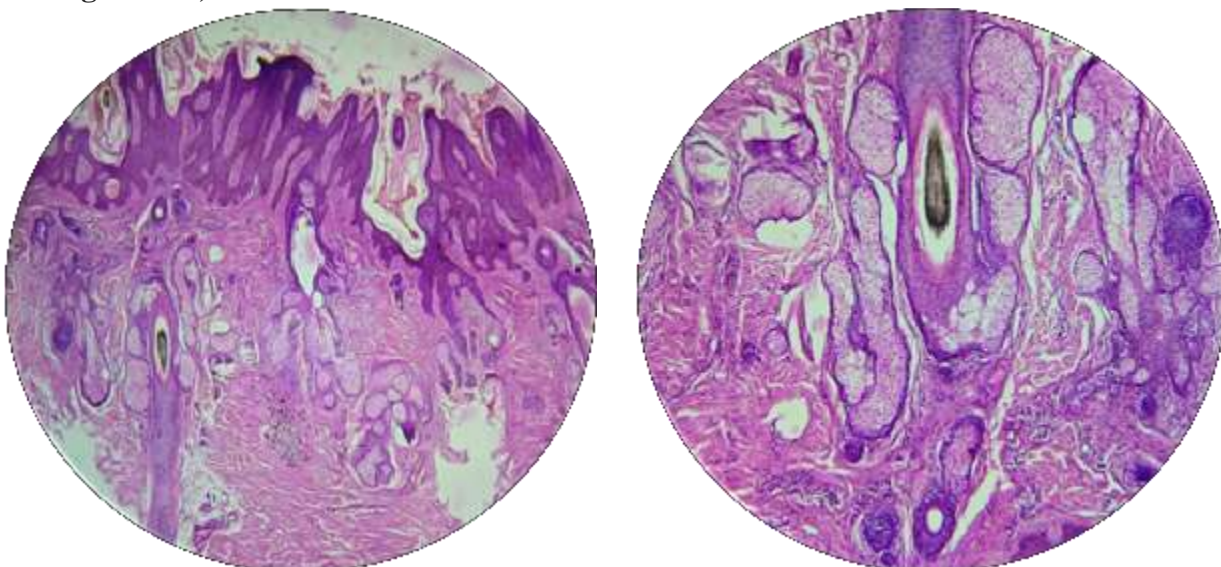
1A: H&E- 4X   1B: H&E- 10X
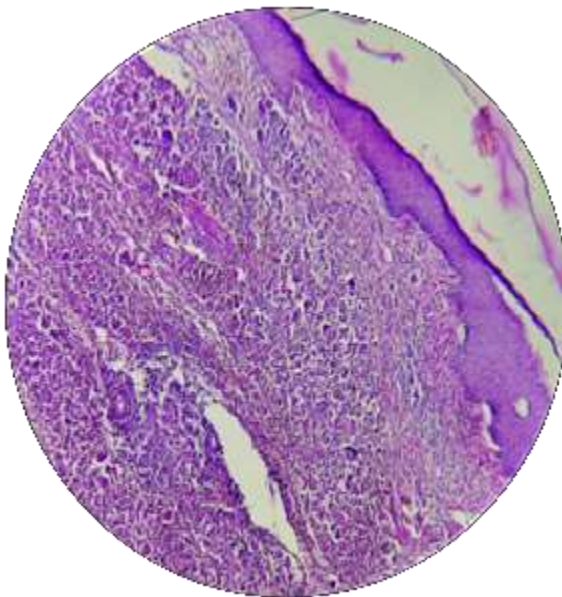
Figure 2 A, B Keratoacanthoma

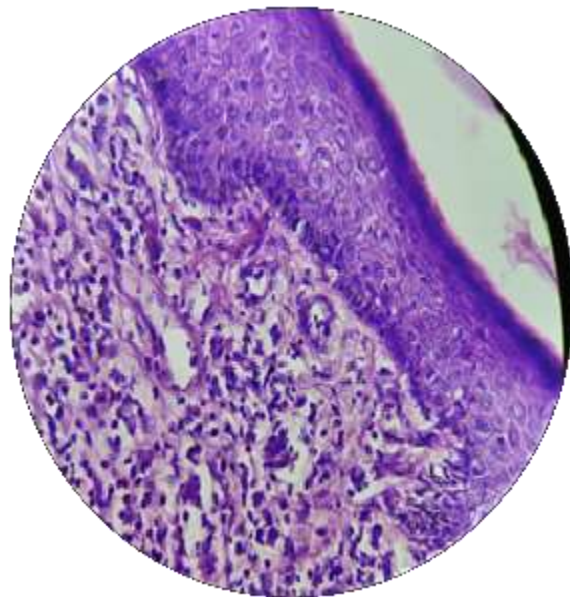2A: H&E 4X   2B: H&E 10X

Figure 3 A, B Langerhans Cell Histiocytosis

3A: H&E 4X   3B: H&E 10X

CONCLUSION:

Our investigation observed a wide range of skin lesions, ranging from non-specific inflammatory lesions to malignant diseases. Neoplastic lesions were the predominant lesions, with epidermal cysts being the most dominant ones. The predominant malignant condition was squamous cell carcinoma. The histopathological evaluation is crucial and aids in the classification of the lesions. However, in order to thoroughly examine and categorise the range of abnormalities, a more comprehensive investigation, including bigger studies, is required. These studies contribute to the detection of developing skin abnormalities and the

creation of precise criteria for the appropriate classification, diagnosis, and treatment of both non-cancerous and cancerous skin abnormalities.

REFERENCES:

1. Grover S, Ranyal RK, Bedi MK. A cross section of skin diseases in rural Allahabad. *Indian J Dermatol.* 2008;53:179–81.

2. Rao GS, Kumar SS, Sandhya Pattern of skin diseases in an Indian village. *Indian J Med Sci.* 2003;57:108–10.

3. Dogra S, Kumar B. Epidemiology of skin diseases in school children: A study from Northern India. *PediatrDermatol.* 2003;20:470–3.

4. JhaHK ,Pokharel A. The Histopathological Spectrum and Clinico-Pathological Concordance in 85 Cases of Skin Biopsy: A Single Center Experience. J Pathol Nepal 2019;9(1):1434-40.

5. Elder, D.E.. (2014). Lever's histopathology of the skin: Eleventh edition.

6. Narang,& Jain. An evaluation of histopathological findings of skin biopsies in various skin disorders. *Annals of Pathology and Laboiratory Medicine*, 2(1), A-42-46.

7. Rajaratnam R, Smith AG, Biswas A, Stephens M: The value of skin biopsy in inflammatory dermatoses. Am J Dermatopathol. 2009, 31:350-3.

8. Chalise, Sanat & Dhakhwa, Ramesh & Pradhan, Sailesh. (2020). Histopathological Study of Skin Lesions in a Tertiary Care Hospital: A Descriptive Cross-sectional Study. Journal of Nepal Medical Association. 58. 218-222. 10.31729/jnma.4799.

9. Bezbaruah R, Baruah M. Histopathological spectrum of skin lesions-A hospital based study. Indian J Appl Res. 2018;8:51-2.

10. Abubakar SD, Tangaza AM, Sahabi SM, Legbo JN. Histopathological pattern of skin lesion in Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria. Afr J Cell Path. 2016;6:10-5.

11. Adhikari RC, Shah M, Jha AK. Histopathological spectrum of skin diseases in a tertiary skin health and referral centre. J Pathol Nep. 2019 Apr 3;9(1):1434–40.

12. Goswami P, Parekh M, Goswami A. Histopathology spectrum of skin lesions in teaching institution. J Family Med Prim Care. 2022 Aug;11(8):4610-4613.

13. Sushma C et al. Histomorphological motif of skin lesions – A model analysis in a tertiary care teaching hospital. IOSR-JDMS. 2018;17: 70-6.

14. Thapa R, Gurung P, Hirachand S, Shrestha SB. Histomorphologic profile of skin tumors. J Nepal Med Assoc. 2018;56(214):953–7.

15. Rauniyar SK, Agarwal A. Histomorphologic pattern of skin lesions in Kathmandu valley: a retrospective study. Nepal Med Coll J. 2003 Jun;5(1):22–4.