Section: Pathology

Original Research Article

A CLINICO PATHOLOGICAL STUDY OF NON-INFECTIOUS SKIN LESIONS

Annapurna Parvatala[1], M Rajani[2], Sk Salma[3], M. Vijayasree[4], Nadella Renuka Kathyani N R[5], A. Sai Kundana Sree[6]

[1]*Associate Professor, Department of Pathology, Govt. Siddhartha Medical College, Vijayawada, Andhra Pradesh, India.*
[2]*Professor, Department of Pathology, Govt. Siddhartha Medical College, Vijayawada, Andhra Pradesh, India.*
[3]*Assistant Professor, Department of Pathology, Govt. Siddhartha Medical College, Vijayawada, Andhra Pradesh, India.*
[4]*Professor & HOD, Department of Pathology, Govt. Siddhartha Medical College, Vijayawada, Andhra Pradesh, India.*
[5]*Final year Post graduate, Department of Pathology, Govt. Siddhartha Medical College, Vijayawada, Andhra Pradesh, India.*
[6] *Second year Post graduate, Department of Pathology, Govt. Siddhartha Medical College, Vijayawada, Andhra Pradesh, India.*

Received *: 11/03/2024*
Received in revised form *: 03/05/2024*
Accepted *: 22/05/2024*

Corresponding Author:
Dr.Annapurna Parvatala
Associate Professor, Department of Pathology, Govt. Siddhartha Medical College, Vijayawada, Andhra Pradesh, India
Email: drpurna66@gmail.com

DOI: 10.5530/ijmedph.2024.2.103

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

Int J Med Pub Health
2024; 14 (2); 533-538

ABSTRACT

Background: The skin is a complex organ and has many functions. If there is imbalance in this skin functions, it will result in various skin diseases. Skin diseases are common in developing countries, prevalent among all age groups. Histopathological examination of skin biopsy is necessary for accurate diagnosis and to guide dermatologist for deciding appropriate management.
Aims and Objectives: Present study was carried out to understand Histopathological analysis of various Non-Infectious Skin Lesions. In relation with age and sex distribution. To correlate with clinical diagnosis. Time period-From April 2022 to March 2024.
Materials and Methods: Inclusion Criteria-All Non-Infectious skin lesions irrespective of age and sex diagnosed via histopathological study Exclusion Criteria-Infectious skin lesions and neoplastic lesions of the skin. Attaining Skin punch biopsy specimen's formalin fixed, Paraffin embedded, Staining with eosin andhematoxylin.
Results: In the present study, a total of 86 biopsies were taken from the study group of patients and studied in the Department of Pathology. Various parameters were tabulated and compared with other studies.
Conclusion: In this study, Papulosquamous diseases are the most common skin diseases encountered followed by Vesicobullous diseases.The most common of these groups being Psoriasis followed by lichen planus and pemphigus vulgaris followed by Pemphigus Foliaceous respectively. This study showed a definite male preponderance with maximum patients in their fourth decade (31-40 years). Overall clinico-histopathological correlation found in the present study is 100%.
Keywords: Histopathological study, skin biopsies, Non infectous, Papulosquamous diseases, vesiculobullous lesions, Connective Tissue Diseases.

INTRODUCTION

The skin is a complex organ and has many functions. The skin, being the largest and most exposed organ of the body, it contributes 16% of the total weight of the body.[1]Because of the continuous exposure to different environmental factors, it is susceptible to a broad spectrum of disorders including inflammatory, infectious, non infectious and neoplasticlesions.

Skin diseases are common in developing countries like India.[2]They are prevalent in all age groups. Inspite of different pathological stimuli, the skin shows limited patterns of reactions. Histopathological examination of skin biopsy is mandatory and gold standard test for accurate diagnosis and to guide dermatologist to proceed towards appropriate management.[3]

Papulosquamous group of non infectious lesions present clinically as hypo or hyper pigmented macules, papules, nodules and patches. As this papulosquamous group is the most common among non infectious category, histopathological examination is important in correlation with each clinical presentation.[4] This group characterized by similar morphology, include Psoriasis, Lichen planus, lichenoid reactions, Lichen planopilaris, Lichen nitidus, Prurigo nodularis, Parapsoriasis, Seborrheic dermatitis and Erythema annulare centrifugum.

Next common group among the non infectious variety is vesiculobullous diseases, characterized by primary lesions as vesicle or bulla on skin or mucous membrane or on both.

Vesicles and bullae (blisters) are the lesions seen within or beneath the epidermis as fluid filled cavities, differing in size(vesicles are less than 10mm and bullae are larger than 10 mm). In majority of the cases, like Pemphigus, these blisters are due to the primary disease. But these blisters may also occur in many other conditions as secondary phenomenon, known as Vesicobullous disorders.[5]

Next group consists of connective tissue diseases (CTD) with common feature of autoimmunepathogenesis. Out of a many number of CTDs, common and significant ones with cutaneous manifestations are mainly Dermatomyositis, Lupus erythematosus and Scleroderma. Clinically these may present as only localized cutaneous lesions or may be with systemic involvement. Dermatomyositis (DM) is an idiopathic and inflammatory myopathy of autoimmune etiology, presenting with cutaneous eruptions. DM is subdivided into amyopathic, clinically amyopathic or classic DM. Lupus Erythematosus also may be cutaneous (CLE) or systemic (SLE). Scleroderma is characterized by excessive fibrosis. Again this may be systemic or cutaneous, which is called as localized scleroderma or Morphea.

Very few studies are available regarding total spectrum of non infectiouslesions of the skin. Most of the studies focused on the papulosquamous group of non infectious lesions only.[6]. Hence, this present study was done to highlight the non infectious lesions of the skin. Distribution of the studied lesions analysed according to age, sex, frequency and histopathological typing which will help us in diagnosis and management also.[7]

MATERIAL AND METHODS

Study Design: Hospital-based, prospective and observational study

Study Area: Government Siddhartha Medical College and Government General Hospital, Vijayawada, Andhra Pradesh, India

Study Period: From May 2022 to April 2024 (Two years)

Study population: The skin biopsies of patients, presenting with noninfectious skinlesions received in the Department of Pathology are microscopically analysed and evaluated.

Inclusion Criteria: All Non-Infectious skin lesions, irrespective of age and sex diagnosed via histopathological study

Exclusion Criteria: Infectious skin lesions, neoplastic skin lesions and those not willing for biopsy.

AttainingSkin punch biopsy specimens,[8] formalin fixed,Paraffin embedded,Staining with Hematoxylin and Eosin

Sampling method and Sample size: During the two-year study period (May 2022 to April, 2024), all patients attending to Dermatology OPD with clinical presentation ofnon infectious skin lesions of any duration were registered for the study after applying the inclusion and exclusion criteria. Sample size wasaccording to thepatients attending the Dermatology OPD within the study period.

Informed consent: The participants were recruited for the study only after obtaining their written informed consent in local language. The purpose and objectives of the study were clearly explained in the local language to them before recruiting.

Data collection: Clinical Data: After obtaining the informed consent from the patient, the patient was examined by the dermatologist to identify the site, size, colour and distribution of the lesion/lesions. After the clinical examination and data collection in the department of Dermatology, punch or excision biopsy of the skin lesion was done on the patient, who wasclinically diagnosed to have skin lesion of non-infectious etiology. Procedure of the Biopsy: It is a technique used to get the material for microscopic evaluation to arrive at the diagnosis, from the lesion under study. The common biopsy techniques are Punch biopsy, Superficial and deep shave biopsy, Deep incision biopsy, Complete excision and Curettage. Out of all, Punch biopsy is the standard procedure for obtaining samples of non infectious skin lesions. Specimen material obtained with a 4-mm biopsy punch is adequate for histological study. A punch biopsy specimen can be squeezed gently out of its socket or carefully speared with the syringe needle. Immediately after removal it was placed in fixative, to prevent autolysis. The skin specimen biopsied is fixed in 10% formalin and sent to the department of Pathology. Gross Examination: The skin specimen received wasgiven a complete gross description whichincluded tissue size, presence or absence of epidermis, color, presence and absence of hair and alterations to the epidermal surface. The tissue was then thinly sliced, processed and embedded in paraffin blocks, after which full sections were cut and affixed on glass slides. The tissue sections were then stained with hematoxylin and eosin, followed by mounting andlabeling of the slides. The slideswere then studied under microscopeby the reporting pathologist. Tissue staining procedure on

skin biopsies:: Routinely, Haematoxylin and Eosin staining is done on the processed skin biopsy sections. The procedure is as follows:, Chemical composition: Erhlich's hematoxylin and Eosin. Hematoxylin and Eosin Stain – Procedure 1. Deparaffinise the tissue sections in xylene for about 5 – 10 min 2. Subject the tissue section to water through reducing grades of alcohol (100% to 50%) 3. Keep it in hematoxylin for 15 to 20 minutes 4. Rinse it in tap water 5. Differentiate with 1% acid alcohol 6. For bluing - place in tap water for about 10 minutes 7. Counter stain by eosin 1-2 minutes 8. Rinse in water 9. Dehydration followed by clearing and mount it.

RESULTS

In the present prospective study, 86 skin biopsy cases were diagnosed as non infectious lesions. These 86 cases were examined and furtherdivided into three broad categories as Papulosquamous lesions, Vesicobullous lesions and Connective tissue diseases. Considerable male preponderance was observed as 54 male cases (62.8%)and 32 females cases (37.2%) were there in the present study. Male to female ratio was 1.69 (Graph 1). Age wise distributionwas widely varied with youngest case recorded was of 4yrs and the oldest case was of 76yrs (Graph 2) Maximumnumber of cases (23 cases with 26.8%) were seen in the age group of 31 to 40 years, followed by 21 to 30 years group (19 cases with 22.1%) as shown in Table No 1.

Out of 3 major groups of non infectious lesions diagnosed, Papulosquamous lesions contributed major share with 37 cases (43%). Next group, consisiting Vesicobullous lesions scored 29 cases (34%) and the third group with connective tissue disorders with cutaneous manifestations comprised 20 cases (23%). Among papulosquamous lesions of 37 cases, Lichen Planus cases were more common with 21 cases (24% of total skin lesions and 57% of Papulosquamous lesions). Remaining 16 cases of Papulosquamous variety diagnosed as Psoriasis(19% oftotal skin lesions and 43% ofPapulosquamous lesions). Major part of Vesicobullous lesions, holding 15 out of 29 cases (18% of total skin lesions and 52% of Vesicobullous cases) were of Pemphigus Vulgaris type. Two other varieties of Vesicobullous lesions included Pemphigus Folacious and Bullous Pemphigoid with 7 cases each (8% of total skin lesions and 24% of Vesicobullous lesions). Third group of the non infectious skin lesions was the Connective tissue disorders of the skin, which included only one type of cases, that was Morphea with 20 cases (25% of total skin lesions and 100% of connective tissue disorders).

Important histopathological features were shown in Fig 1 to 6. Fig 1 shows microscopy of Lichen planus, where epidermis is hyperkeratotic with irregular acanthosis and wedge shaped hypergranulosis. Pigment incontinence. Max joseph spaces at dermoepidermal junction. Upper dermis has band like infiltrate of lymphocytes causing dermoepidermal junction indistinct(H & E,10X). Clinical picture of Lichen planus is shown as inset picture. Fig 2 shows Psoriasis histopathological picture with regular acanthosis, parakeratosis and elongation of rete ridges with perivascular lymphocytic infiltrate in upper dermis(H&E; 10X). Fig 3 shows photomicrograph of Pemphigus Vulgaris with suprabasal blisters, acantholytic cells and tomb-stone appearance (H &E, 10X). Inset picture shows classic clinical feature of flaccid bullae in Pemphigus Vulagaris. Fig 4 shows Photomicrograph of Pemphigus Foliaceus with subcorneal blister and acanthocytes (H &E-scanner view,10X). Inset clinical picture shows characteristic Crusted superficial erosions. Fig 5 is the Photomicrograph of Bullous Pemphigoid showing subepidermal blister with eosinophils (H &E, Scanner view,10X). Clinical picture in the inset shows tense bullae on erythematous base. Fig 6 shows histopathology microscopy of Morphea shows dense collagen bundles within papillary and reticulardermis along with perivascular lymphocytic infiltrations (H&E; 10X). Inset picture shows characteristic clinical feature of Morphea, mask like stiffness.

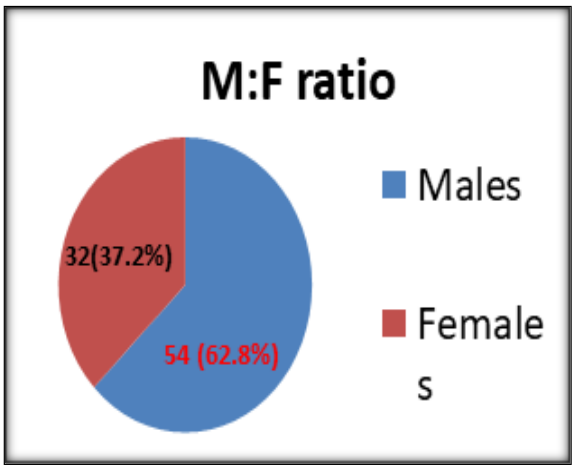

Figure 1: Male to Female ratio – Pie diagram

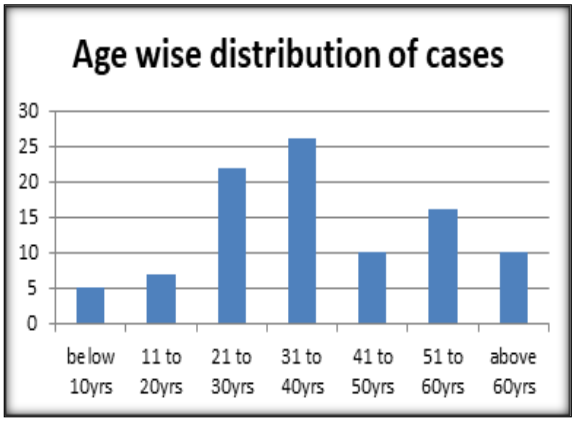

Figure 2: Histogram showing age wisedistribution of the cases

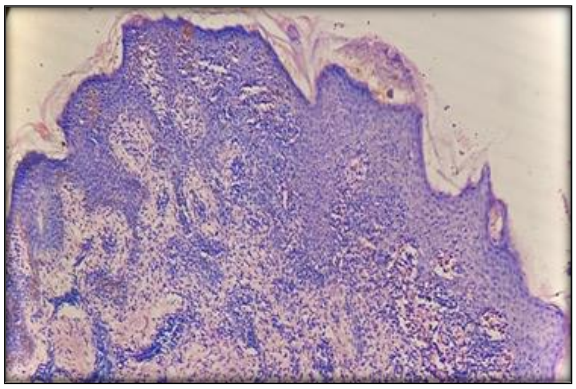

Figure 3: Lichen Planus-Histopathology & clinical picture (inset)

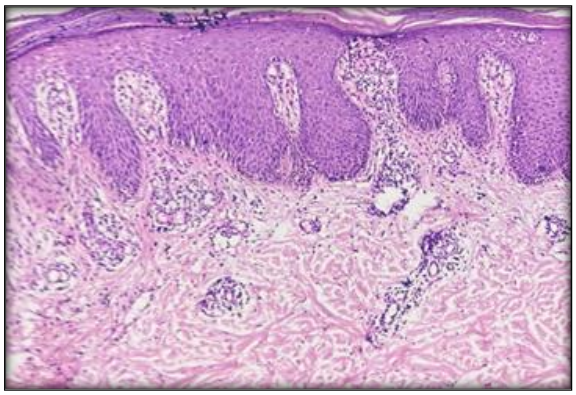

Figure 4:Photomicrograph of Psoriasis(H&E; 10X) & clinical picture (inset)

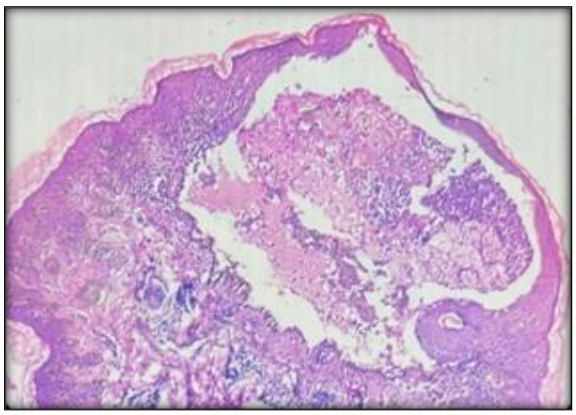

Figure 5: Pemphigus Vulgaris -Histopathology & clinical picture (inset)

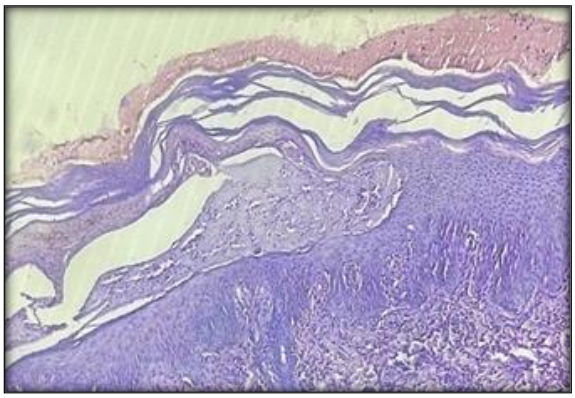

Figure 6:Pemphigus Foliaceous -Histopathology & clinical picture (inset)

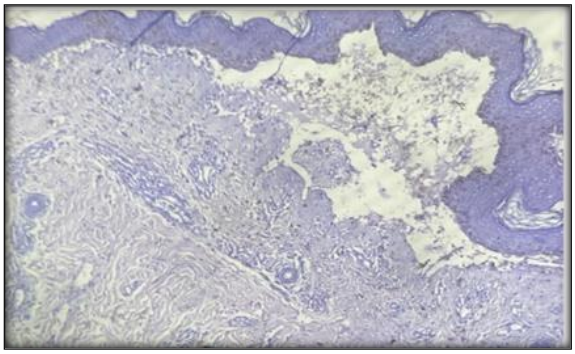

Figure 7:Bullous Pemphigoid -Histopathology & clinical picture (inset)

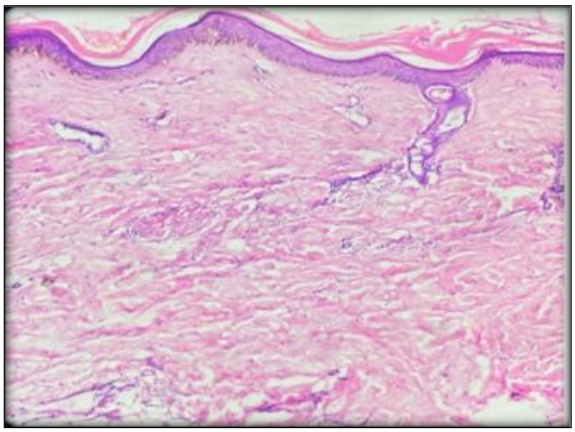

Figure 8: Morphea -Histopathology & clinical picture (inset)

Table 1: Age wise distribution of the cases with percentage

Age inyears	Frequency	Percentage
≤10	5	5.8
20-Nov	6	7
21-30	19	22.1
31-40	23	**26.8**
41-50	8	9.3
51-60	15	17.4
>60	10	11.6
TOTAL	86	100

Table 2: Histopathological distribution of the cases

s.no	Histopathological Diagnosis	frequency	percentage
I	**Papulosquamous Diseases**	37	**43%**
	Lichen Planus	21	**24%**
	Psoriasis	16	19%

II	**VesicobullousDiseases**	29	34%
	Pemphigus Vulgaris	15	18%
	Pemphigus Foliaceous	7	8%
	Bullous Pemphigoid	7	8%
III	**Connective Tissue Diseases**	20	23%
	Morphea	20	23%
	TOTAL	86	100%

Table 3: Comparison with different studies

	Common age group	M:F ratio	Common clinical type	Clinico histo pathological correlation
Ramachandra Adhikari et al	31 to 40 yrs	1.44	Papulo squamous lesions	89.60%
Chowdhury et al	21 to 30 yrs	0.9	Papulo squamous lesions	86.60%
Bhargavi Mohan et al	31 to 40 yrs	1.56	Papulo squamous lesions	91.30%
D'Costa et al	21 to 30 yrs	1.26	Papulo squamous lesions	92.50%
Preethi Dinesh et al	31 to 40 yrs	1.54	Papulo squamous lesions	100%
Present study	**31 to 40 yrs**	**1.69**	**Papulo squamous lesions**	**100%**

DISCUSSION

Clinical picture and histopathological findings of non infectious lesions of the skin are widely variable and affect both males and females.[9]It is easy, simple and cost effective to take the skin biopsy as an out patient procedure, with which we can get adequate material to confirm the diagnosis and to proceed further to proper management. The present prospective study included all the 86 cases, which were diagnosed as non infectious type of skin lesions. those 86 cases were analyzed and further categorized into three main types, based on clinical picture and morphology –Papulosquamous lesions, Vesicobullous lesions and Connective tissue disorders with cutaneous manifestations, as shown in Table No 2. More common age group is 31 to 40 yrs, with 20 cases (23%) and next common age group is 21 to 30yrs, with 17 cases (21%). This is correlated with Ramachandra Adhikari et alas shown in Table No.3 with peak age of 31 to 40 years age group.[10]Second common age group of the present study (21 to 30 years age group) is the most common age group of the study by Chowdhury et al.[11]Male predominance is seen in the present study among all the types of lesions, with 54 (62.8%) male cases and 32 (39.2%) female cases. This is in complete concordance with the study by Bhargavi Mohan et al,[12] (males 61% and females 39%), but differed with the study by Chowdhury et al (males 47.23% and females 52.77%). Of all the three major groups of non infectious skin lesions in the present study, Papulo squamous lesions group consists more number of cases than the other two groups with 37 cases (43%). This is correlated with Preethi Dinesh et al.[13]Next common group of Vesico bullous lesions comprises 29 cases (34%), and this is also correlated with the study of Chowdhury et al. Most of the studies are of non neoplastic lesions,[14]or non infectious papulo squamous lesions.[15]So, third group of non infectious lesions of collagenous tissue diseases, which incuded Morphea is not compared with other studies. It has 20 cases of Morphea with 23% of total 86 cases.

CONCLUSION

In this study, Papulo squamous type of lesions are the most common non infectious skin lesons encountered in the present study. In the group, again Lichen Planus is the more common variety. Next to Papulo squamous lesions, it is the group ofVesicobullous diseases with more in number of cases andin this group, Psoriasis is the common variety. Though wide range of age groups are involved, commonest age group is 31 to 40 years age group. Clear male preponderance is observed with M:F ratio of 1.69:1. Clinical features andhistopathological examination of the punch biopsy are the essential factors to confirm the diagnosis. Immunoflourescence or Immunohistochemistry will be helpful in confirming the diagnosis in uncertain cases. Overall clinico-histopathological correlation found in the present study is 100%.

REFERENCES

1. Drake R, Vogl AW, Mitchell AW. Gray's Anatomy for Students E-Book. 2nd ed. Netherlands: Elsevier Health Sciences; 2009. p. 26-7
2. Narang S, Jain R. An evaluation of histopathological findings of skin biopsies in various skin disorders. Ann Pathol Lab Med 2015; 2:42-6.
3. Goyal N, Jain P, Malik R, Koshti A. Spectrum of non neoplastic skin diseases-a histopathology based clinicopathological correlation study. Sch J App Med Sci 2015; 3:444-9
4. Hosamane S. Clinicopathological Study of Non-Infectious Erythaematous Papulosquamous Skin Diseases. J Clin Diagn Res. 2016;10(6):EC19
5. Arundhathi S., Ragunatha S., Mahadeva K.C.A Cross-sectional Study of Clinical, Histopathological and Direct Immunofluorescence Spectrum of Vesiculobullous Disorders. J Clin Diagn Res. 2013 Dec; 7(12): 2788–2792. Published online 2013 Dec 15. doi: 10.7860/JCDR/2013/7019.3760.
6. Agrawal S, Mishra KB, Gupta CM. Histopathological spectrum of non-infectious erythematous, papulo-squamous lesions: At a teritary care institute. Int J Res Med Sci. 2018; 6:2072–5
7. The histopathological spectrum of skin diseases with emphasis on clinicopathological correlation: a prospective study. Gupta P, Karuna V, Grover K, Rathi M, Verma N. IP J Diagn Pathol Oncol. 2018; 3:91–95.

8. ElderDE, Elenitsas R, JohnsonJr. BL, MurphyGF, editors. Lever's histopathology of skin. 11th ed.Philadelphia: Lippincott Williams and Wilkins: 2005.p.179-214 H.
9. Mathur K, Vijayvargiya M. Clinico-pathological study of nonneoplastic skin lesions. Int J Med Res Prof 2017; 3:198-204.
10. Adhikari, R. C., Shah, M., & Jha, A. K. (2019). Histopathological spectrum of skin diseases in a tertiary skin health and referral centre. Journal of Pathology of Nepal, 9(1), 1434–1440
11. Mahmud, M. M. ., Al Mamun, M. A., Hazra, S. C. ., Habib, R. B. ., & Chowdhury, M. M. H. (2021). Clinico-Histopathological Consistency in Dermatological Diseases. Bangladesh Medical Journal, 49(3), 29–34.
12. Mohan B, HK Manjunatha, V Geethamani, TA Sushma, MU Thejaswini,MJ Thej. Histopathological pattern analysis in non-neoplastic skin biopsies a prospective study of 142 cases. IJPRP.2018; 7(3):299-303.
13. Dinesh P, Raj JA, Kumar YH. Inflammatory Dermatoses of the Superficial Cutaneous Reactive Unit—Study of Morphological Features with Clinical Correlation. J Med Sci 2019; 5(1):1–6.
14. Histopathological study of non-neoplastic lesions of skin. Italia S, Purohit A, Gohel A, Prajapati H. Asian J Pharm Clin Res. 2022;15:180–84
15. D'Costa, Bharambe BM. Spectrum of non-infectious erythematous, papular and squamous lesions of the skin. Indian J Dermatol 2010; 55:225–228. DOI: 10.4103/0019-5154.70666.