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Original Research Article

Clinico-Pathological Study of Non-Neoplastic Skin Lesions in Tertiary Care Centre, Jaipur

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ABSTRACT

Introduction: Skin disorders, presenting clinically, have wide spectrum of distributions with some of them diagnosed quickly by their clinical features, while other requires detailed investigational work up like skin biopsy. In our study we focused on the clinico-pathological pattern of various non-neoplastic lesion and find out the consistency between clinical diagnosis and histopathological examination.

Methods: A total of 102 cases of non-neoplastic skin leisons were studied. Clinical diagnosis was correlated by histopathological examination with H and E stain. Special stains were used when required.

Results: Maximum number of cases showed infectious disease consisting 36 cases of all non-neoplastic skin biopsies followed by 27 cases of non-infectious erythematous, papular and squamous disease, 10 cases of connective tissue disorders, 7 cases of non-infectious vesiculobullous and vesiculopustular disease, 5 cases of genodermatoses, 4 cases of panniculitis/ folliculitis and 13 cases having non-specific histology.

Conclusions: In establishing a diagnosis, investigational work up and clinicopathological correlation is always desired; skin biopsy remains the cornerstone for aforementioned.

Keywords: Biopsy, Histopathology, Infectious Disorders, Skin Lesions.

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INTRODUCTION

Skin is outer covering of body. In human it is the largest organ; provides protection against a wide variety of external threats including physical, biological, and chemical.

Disorders of skin are divided into two group- neoplastic skin disorders and non-neoplastic disorders.

Non-neoplastic skin disorders are much more common than neoplastic skin disorders. In non-neoplastic skin disorders following are include: Infectious diseases, Non-infectious erythematous, papular and squamous disorders, Connective tissue diseases, Non-infectious vesiculobullous and vesiculopustular disorders, Genodermatoses, Folliculitis / panniculitis and Nonspecific dermatoses.

Many non- neoplastic skin disorders can be quickly diagnosed by clinical features; need no investigations. At the other extreme some patients need detailed investigational work up to confirm the diagnosis.[1,2]

Skin biopsy is the single most important diagnostic technique used for the management of patients with skin disorders. Various skin biopsy techniques are punch biopsy, shave biopsy, excision biopsy & incision biopsy.[3-5]

The interpretation of many skin biopsies requires the identification & integration of two different morphological features: The tissue reaction pattern & the pattern of inflammation.[6]

There are different types of tissue reaction patterns:

Lichenoid reaction pattern, Psoriasiform reaction pattern, Spongiotic reaction pattern, Vesiculobullous reaction pattern, Granulomatous reaction pattern (further divided into Sarcoidal, Tuberculoid, Necrobiotic, Suppurative, Foreign body granuloma)

Vasculopathic reaction pattern (i.e. Neutrophilic vasculitis Granulomatous vasculitis, Neutrophilic dermatoses).

Various patterns of inflammation can be seen in biopsies characterized on the basis of distribution of inflammatory cells within the skin. These are superficial perivascular inflammation, superficial & deep dermal inflammation & panniculitis.

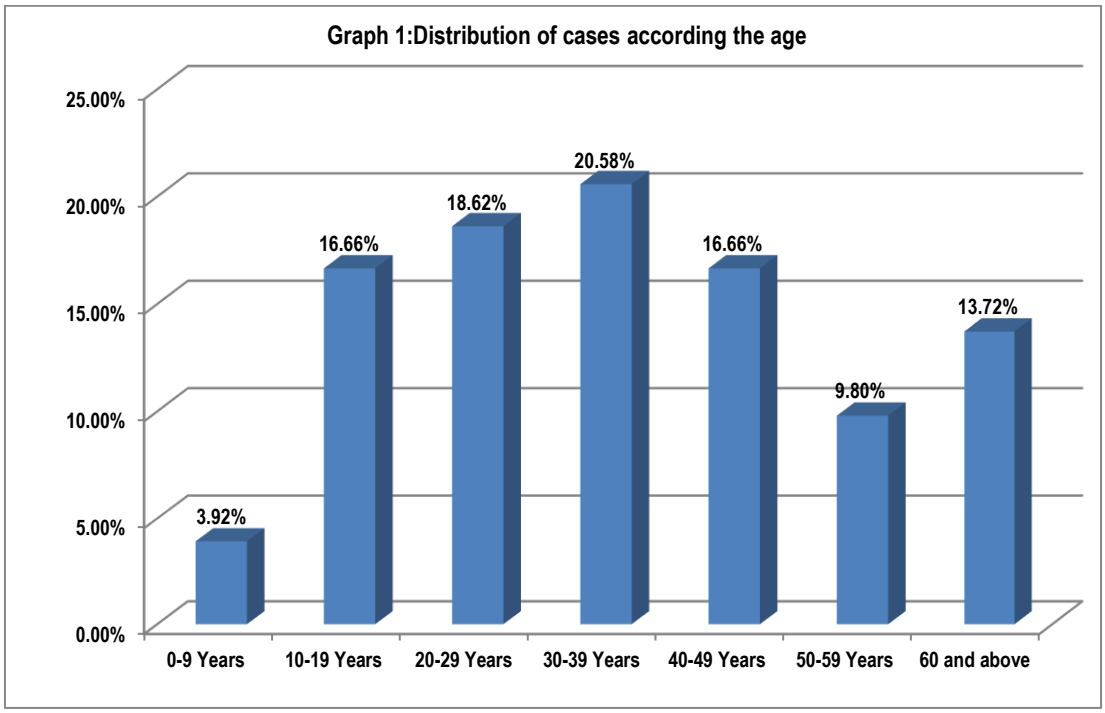
AIMS AND OBJECTIVES

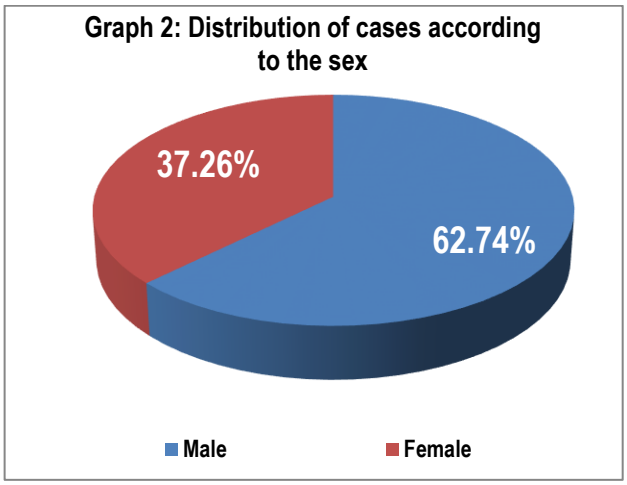
- To find out the pattern of various nonneoplastic skin biopsies submitted for histological examination.
- To find out the agreement between clinical diagnosis and histopathological examination of the biopsy submitted.

MATERIAL AND METHODS

This was a Laboratory based descriptive type of observational study, done in department of pathology S.M.S Medical College, Jaipur from March, 2015 till sample size of total 102 skin punch biopsies attained. In the study detail patient's clinical history was recorded with particular reference to age, sex, duration of symptoms, mode of onset, characteristics and anatomic distribution of the lesions and associated symptomatology. Then biopsy was taken according to inclusion criteria. Histological section fixed in formalin and processed, stained with H and E stain, Special stain such as RS, ZN, GIEMSA, MC, PAS, GMS and Gram stains used if required.[7,8]

A systematic analysis of the biopsy was done starting form keratin layer, epidermis, dermoepidermal junction, the superficial and deep dermis, the fat and finally the blood vessels. Histomorphological observations were recorded and histopathological diagnosis was made wherever possible. These findings were then correlated with clinical diagnosis.





OBSERVATIONS AND RESULTS

The following observations were made of 102 cases studied. Histomorphological observations were recorded and Histopathological diagnosis was made wherever possible. These findings were then correlated with clinical diagnosis.

Out of 102 cases maximum number of cases were in the age group of 30-39 yrs (20.58%) closely followed by age group of 20-29 yrs (18.62%). Least number of cases was from the age group of 0-9 yrs i. e. 4.90% of total cases. The youngest patient was 5 year old while the oldest patient was 72 years old.(Graph 1)

The sex distribution pattern revealed maximum number of cases were males 64(62.74%) and females 38(37.26% cases)(Graph 2).

Distribution of Cases According to Group of Disorders

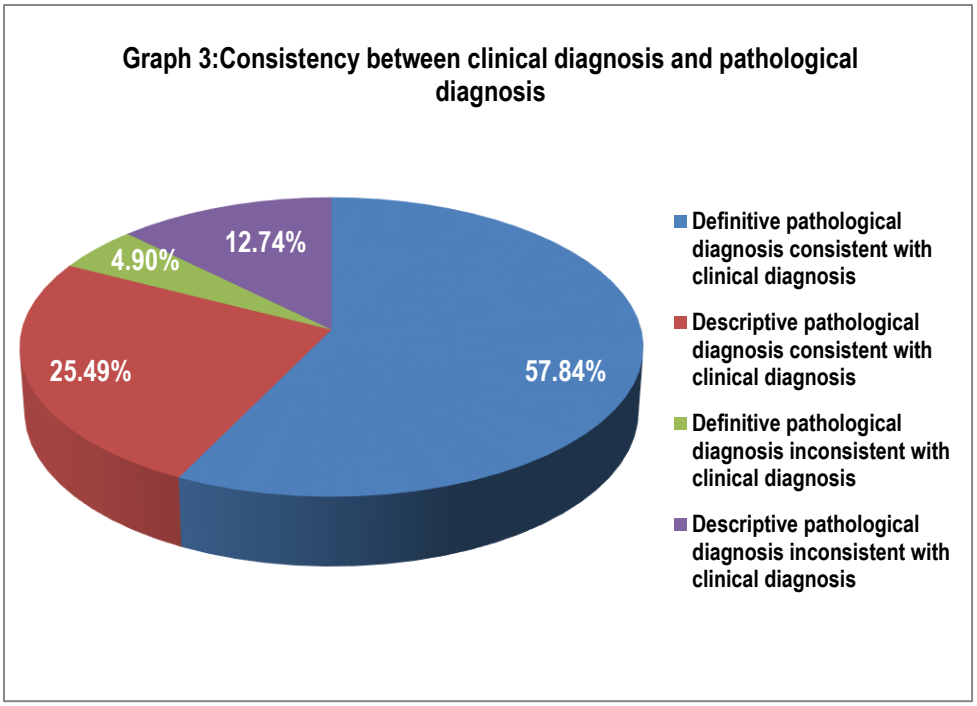
Maximum number of cases showed infectious diseases i.e. 36cases (35.29%) of all non-neoplastic skin biopsies followed by non-infectious erythematous, papular and squamous diseases consisting of 27 cases (26.47%), connective tissue diseases having 10 cases (9.80%), Non-infectious vesiculobullous and vesiculopustular diseases had 7 cases (6.86%) while 5 cases (4.90%) were of genodermatoses. 4 case each from the group of Folliculitis/panniculitis and 13 cases from non-specific dermatoses (Table 1)

Clinicopathological Correlation

Out of 102 cases examined, 59 cases (57.84%) cases were given definite pathological diagnosis consistent with the clinical diagnosis, whereas 26 cases (25.49%) had a descriptive pathological diagnosis consistent with the clinical diagnosis, 5 (4.90%) cases had a definite pathological diagnosis inconsistent with clinical diagnosis while 13 cases (12.74%) had a descriptive pathological diagnosis that was inconsistent with the clinical diagnosis. Overall clinicopathological consistency occurred in 83.33% cases (Graph 3). Most cases presented with more than 12 months duration of lesions 44(43.13%) while cases with duration less than 6 months were 38 (37.25%) and from 6-12 months were 20 cases (19.60%). (Graph 4)

Table 1: Distributions of cases according to Histopathological diagnosis group

Group	Number of cases	Percentage
Infectious disease	36	35.29
Non –infectious erythematous, papular and squamous disorders	27	26.47
Connective tissue disorders	10	9.80
Non-infectious vesiculobullous and vesicopustular disorders	07	6.86
Genodermatoses	05	4.90
Folliculitis/panniculitis	04	3.92
Non- specific dermatoses	13	12.74
Total	102	



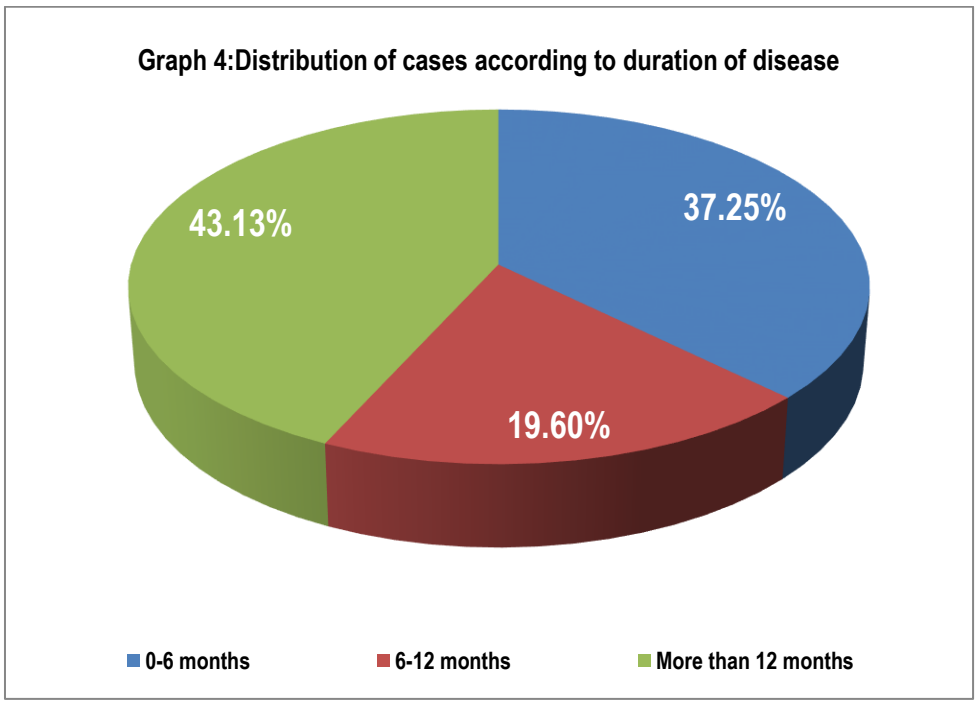


Table 2: Distribution of cases of infectious disorders

Type	Number of cases	Percentage
Leprosy	27	75%
Cutaneous tuberculosis	03	8.33%
Fungal infections	03	8.33%
Viral infections	02	5.55%
Actinomycosis	01	2.77%

Table 3: Distributions of cases of non-infectious erythematous, papular and squamous disorders

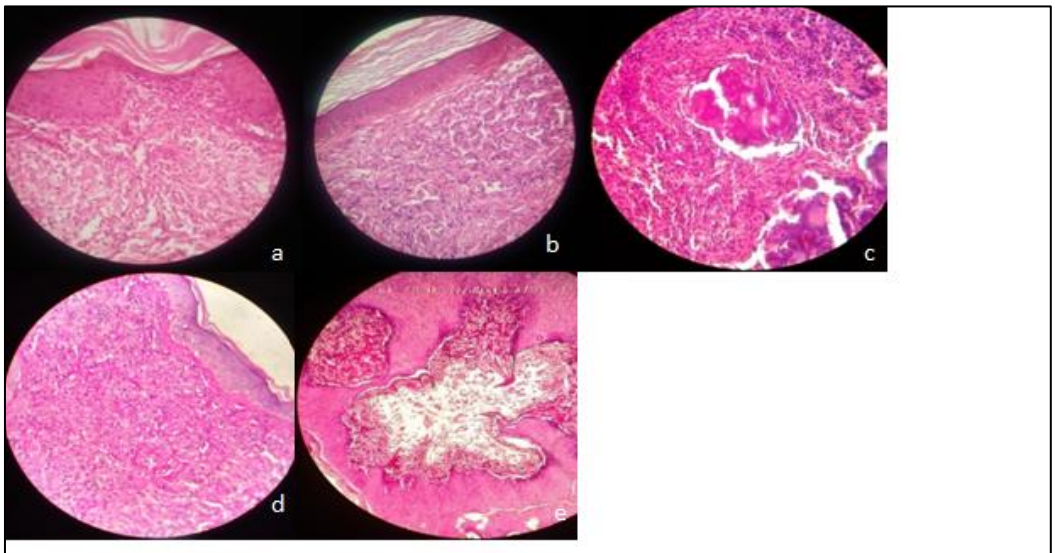
Types	Number of cases	Percentage
Psoriasis	6	22.22%
Pustular psoriasis	1	3.70%
Psoriasiform dermatitis	2	7.40%
Lichen planus	6	22.22%
Lichen nitidus	2	7.40%
Lichen planus pigmentosus	3	11.11%
Lichenoid dermatitis	3	11.11%
Lichen planus hypertrophicus	3	11.11%
Pityriasis lichenoid chronicus	1	3.70%

Cases with less than 6 months duration of lesions showed higher clinico-pathological consistency as compared to cases presenting with longer duration of illness.

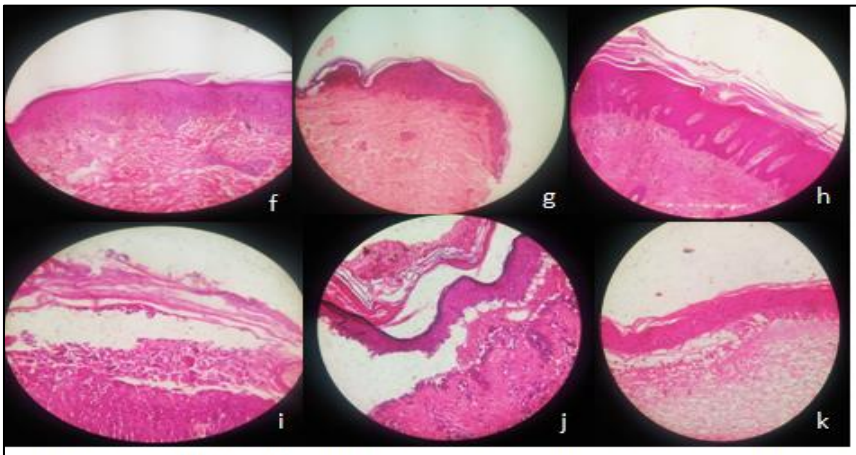
Most cases had single clinical diagnosis 74 cases (72.54%) whereas 28 cases (27.45%) had more than one clinical diagnosis. Cases having single clinical diagnosis showed consistency in 82.43%, while cases having multiple diagnoses showed consistency in 78.57 % cases. In the present series, the most common type of biopsy performed was punch biopsy.

Out of 36 cases of infectious cases overwhelming majority of cases constituted of leprosy comprising of 27 cases (75%). 3 cases of cutaneous tuberculosis and 3 cases of fungal infection 2 cases of viral infection and one was of actinomycosis were observed. (Table 2)

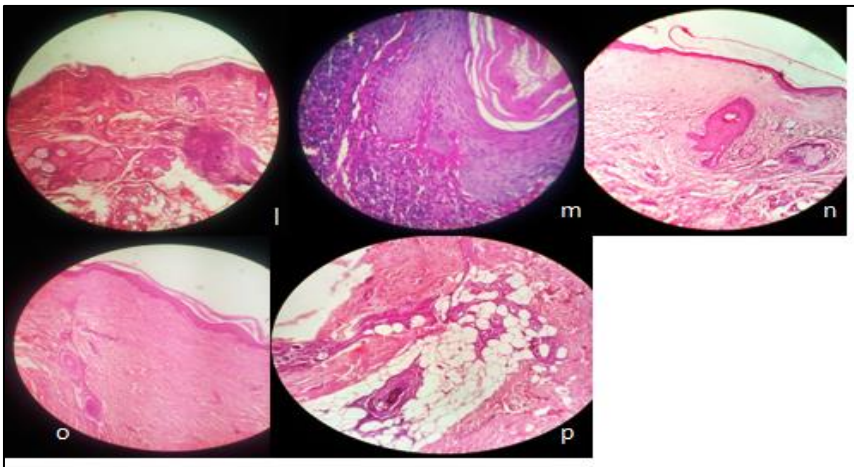
The most frequently encountered leison among non-infectious erythematous papular squamous disorders was lichenoid lesions consisting of 18 cases out of 27 cases(66.66%) followed by psoriasiform lesions like psoriasis, pustular psoriasis and psoriasiform dermatitis consisting of 9 cases out of 27 cases(33.33%).(Table 3)



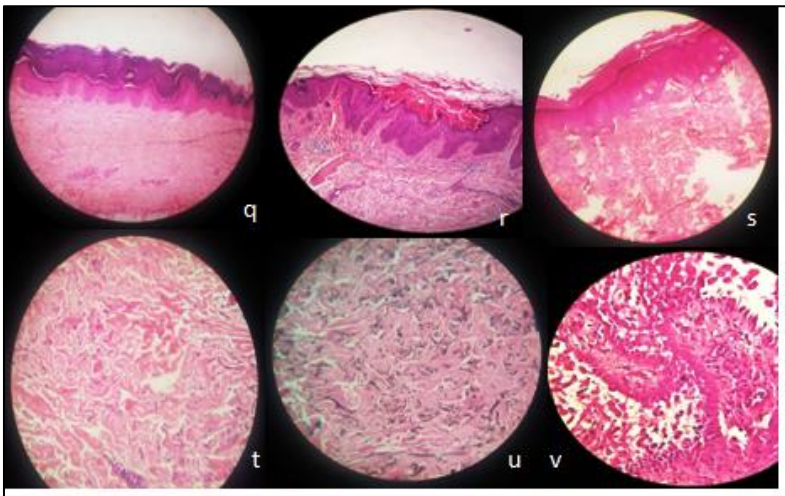
a. Tuberculoid leprosy: Epithelioid cells arranged in compact granulomas with dense peripheral lymphocyte accumulation, reaching upto the epidermis.
b. Lepromatous leprosy: Mass of macrophages in the dermis (no granuloma formation), leaving a clear grenz zone under the epidermis
c. Actinomycosis: Bacterial colony with hemat oxyphilic filamentous bacteria
d. Cutaneous histoplasmosis: Tiny 2- to 4-µm spores within the cytoplasm of macrophages
e. Molluscum contagiosum: Numerous intracytoplasmic inclusion bodies, molluscum bodies, increases in size as they move toward the surface



f. Lichen planus: Bandlike infiltrate of lymphocytes at dermo-epidermal junction, vacuolar alteration of the basal layer, necrotic keratinocytes, irregular acanthosis, wedge-shaped hypergranulosis, and compact orthokeratosis
g. Lichen nitidus: Dense infiltrate of lymphocytes and histiocytes in an expanded dermal papilla
h. Psoriasis: Mounds of parakeratosis with neutrophils, absent granular layer, moderate acanthosis, focal spongiosis and dilated blood vessels at the tip of the dermal papillae
i. Pemphigus foliaceus: Subcorneal blister with acantholytic cells and neutrophils in the cavity.
j. Pemphigus vulgaris: Intraepidermal acantholytic blister has a suprabasal cleavage plane
k. Bullous pemphigoid: Subepidermal blisters formation with few inflammatory cells.



l and m. lupus erythematosus: The epidermis has lost its rete ridge pattern and shows follicular plugging, brisk mononuclear inflammatory infiltrate near the dermal–epidermal junction and around appendages; a thickened and tortuous basement membrane zone on PAS stain
n .Lichen sclerosus atrophicus: Compact hyperortho-keratotic scale and atrophic epidermis, a pale dermis and subjacent, variably dense interstitial lymphocytic inflammatory infiltrate
o. Scleroderma: Collagen bundles become thickened, hypocellular and swollen in dermis
p. EN: septal panniculitis: Subcutaneous septa associated with a mixed infiltrate of lymphocytes, neutrophils, and eosinophils



q. Acrokeratosis verruciformis of Hopf: Hyperkeratosis and papillomatosis; associated with elevations of the epidermis resembling church spires
r. Darier's disease: Hyperkeratosis, papillomatosis, lacunae and elongated papillae lined by a single layer of cells, so-called villi. Corps ronds are present in the granular layer, and grains are seen in the horny layer.
s. Huriez syndrome: Marked hyperkeratosis, acanthosis and hypergranulosis
T, u. Pseudoxanthoma elasticum: Calcified altered elastic fibers in the mid-reticular dermis.
v. Hailey –hailey disease: Bulla is largely in a suprabasal position; detached epidermis in the appearance of a dilapidated brick wall

DISCUSSION

Skin biopsy is the most common diagnostic tests in dermatology. To achieve accurate and rapid diagnosis, it is important to incorporate clinical knowledge of the disease. Skin diseases in general population in various studies varies from 6.3% to 11.16%. The present study was prospective study carried out on 102 untreated cases of non-neoplastic skin disorders presenting in the outpatient department of a tertiary care hospital, Jaipur.

Maximum number of cases were found in the age group of 30-39 yrs i. e. 21 cases (20.58%) followed by 20-29yrs i. e. 19 cases (18.62 %).The youngest patient in the present series was 5 year old while the oldest patient was 72 years both of them being males.

Amarjeet singh et al[2] in their study on 60 untreated cases of non-neoplastic skin lesions, found same results, as maximum number of cases 30-39 yrs (16 cases) followed by 20-29 yrs (14 cases). The youngest patient in their study was 8 yrs old and oldest was 68 yrs old. Aslan et al[9] in their study found mean age of their patients to be 46 ± 20 yrs. Grace D costa et al[10] found maximum cases in 30-40 yrs age groups in their study.

In the present series there were 64 males (62.74%) and 38 females (37.26%). The male to female ratio was 1.68:1. Similarly Amarjeet singh et al[2] there was 38 males and 22 males and male to female ratio was 1.72:1. Similarly D' Costa et al[10] also found male preponderance in their study; they found that males constituted 57.94% while females were 42.06 % of total cases. Rakesh mehar et al[11] found 63 cases males and 49 cases females in their study. Aslan et al [9] found 63.33% males and 36.67% females in their study.

An analysis of broad spectrum of the dermatological lesions revealed that maximum number of lesions were of infectious nature constituting 36 cases (35.29%) of all the cases followed by non-infectious papulosquamous disorders constituting 27 cases (26.47%).

Amarjeet singh et al[2] found same result as maximum numbers of lesions were of infectious nature 38.33% followed by non-infectious erythematous papular squamous disorders 25%. D 'Costa et al[10] also found that most number of cases in their study were of infectious nature comprising of 24.29% cases followed by papulosquamous disorders comprising of 20.56% of the total cases. Rakesh mehar et al[11] found in males maximum number of cases related to granulomatous lesions followed by non-specific dermatoses and in female maximum number of cases related to non-specific dermatoses followed by granulomatous lesions.

Out of 36 cases of infectious cases overwhelming majority of cases constituted of leprosy comprising of 27 cases (75.00%). 3 cases of cutaneous tuberculosis and 3 cases of fungal and viral infections each.

Amarjeet singh et al[2] found that out of infectious cases 78.26% leprosy, 8.69% cutaneous tuberculosis and 4.35% viral, fungal and actinomycosis each. D 'Costa et al[10] also observed leprosy to be single largest category of all dermatoses and also single largest group among infectious disorders. This may be due to the fact that distribution of various skin disorders vary from country to country and even across different parts within the same country.

The second largest group of disorders in the present study was of papulosquamous disorders constituting 26.47% of all the cases. Amarjeet singh et al[2] found that second largest group was non-infectious erythematous papulosquamous disorders (25%). Similarly D 'Costa et al[10] also found these to be commonest after infectious disorders. In contrast Bin Yap[12] found papulosquamous disorders to constitute 7.7% of total cases.

In our study out of broad category of non-infectious erythematous, papular and squamous disorders, majority of cases were from lichenoid consisting of 18 cases out of 27 cases , comprises 66.67% of non-erythematous papulosquamous disorders and 17.64% of all cases. Out of 18 cases 6 cases were of lichen planus, 3 cases of each lichen planus pigmentosus, lichenoid dermatitis and lichen planus hypertrophicus, 2 cases of lichen nitidus and 1 case of pityriasis lichenoid chronicus. In psoriasiform lesions, 6cases of psoriasis vulgaris, 2 cases of psoriasiform dermatitis and 1 case of pustule psoriasis.

In contrast Amarjeet singh et al[2] found that non-infectious erythematous, papular and squamous disorders majority of cases were from psoriasiform dermatitis consisting of 10 cases out of 15 cases (66.67%), rest of the cases showed lichenoid pattern. In psoriasiform lesions out of 10 cases, 9 cases were of psoriasis vulgaris while one case of pustule psoriasis. And in lichenoid lesions out of 5 cases, 4 were of classical lichen planus and 1 was of lichen planus hypertrophicus. Similarly D' Costa et al[10] also found psoriasis to be the most common group among papulosquamous disorders followed by lichenoid pattern.

The third largest group of skin dermatoses comprised of connective tissue disorders constituting 10 cases (9.80%) of total cases.

Similarly Amarjeet singh et al[2] found that third largest group of skin dermatoses comprises of connective tissue disorders constituting 7 cases (11.67%)of total cases. D 'Costa et al[10] also found this group to comprise 6.54% of total cases while Bin Yap[12] found them to constitute 6.0 % of their total cases.

Out of ten cases 7 cases were of lupus erythematous, 3 cases of scleroderma and one case of lichen sclerosis atrophicus. Seven cases out of ten cases of connective tissue disorders were of discoid lupus erythematosus. 5 were females while two were male. In contrast to study by Pandhi et al[13] who also found male preponderance. Amarjeet singh et al[2] found same male predominance.

The next group of disorders seen was from the group of non-infectious vesiculobullous and vesiculopustular disorders constituting of 7 cases (6.86%) similar to study by Amarjeet singh et al[2], also found that these disorders constituted 6.66% cases. While in the study carried out by D' Costa et al[14] it constituted 3.72% of the total cases and Bin Yap[12] found this group to constitute1.5% of total cases.

Out of 7 cases, 3 cases of pemphigus vulgaris and 2 case of pemphigus foliaceous, one case of each bullous lupus erythematous and bullous pemphigoid. Amarjeet singh et al[2] found that, out of 4 cases, 2 were of pemphigus vulgaris and 2 were of subepidermal blisters (pemphigoid and herpes gestations). Collier and Wojnarowska[15] and Salmanpour et al[16] also found pemphigus vulgaris to be the most common blistering disorder.

The next group composed of 5 cases (4.94%) of genodermatosis out of total 102 cases similar to study by D 'Costa et al[10] who also found this group in 3.73% of cases and to study by Amarjeet singh et al[2] who also found this group in 3.33% cases. Out of five cases, there were of atrophoderma, huriez syndrome, pseudoxanthoma elasticum, Darrier's disease and acro keratoderma verruciformis of HOPF.

Four cases each from broad groups of Folliculitis/panniculitis and no from cutaneous manifestations of gastrointestinal diseases were also observed. In Folliculitis/ panniculitis group, one case from Erythema nodosum, one from Erythema induratum, one from keratosis pilaris and one from lobar panniculitis. Similarly D' Costa et al[10] and amarjeet singh et al[2] also found a single case of keratosis pilaris in their study.

Overall in 87.25% cases histopathological examination was able to give diagnosis in the present series while Amarjeet singh et al[2] in their study found that histopathology was able to give diagnosis in 88.33% cases. And D 'Costa et al[10] in their study found that histopathology was able to give diagnosis in 82.33% of cases, Rajaratnam et al[17,18] were able to give a working diagnosis in 78% of cases when detailed clinical information was available to them and Bin Yap[12] was able to achieve overall correlation in 92% cases. Thus a high level of clinicopathological correlation can be achieved when detailed clinical examination along with clinical diagnosis is available to the pathologist.

CONCLUSION

Our study was conducted on skin biopsies of 102 clinically diagnosed cases of non-neoplastic skin disorder. The analysis of cases revealed that maximum number of cases were from the broad group of infectious diseases followed by group of non-infectious erythematous, papular and squamous disorders, followed by connective tissue disorders. Out of infectious disorders the largest numbers of cases seen were of leprosy, followed by cutaneous tuberculosis. Out of the broad group of papulosquamous disorders most cases were of lichen planus followed by psoriasis. Of the connective tissue disorders most cases were of lupus erythematosus and rest were of scleroderma and lichen sclerosus atrophicus. Of the 7 cases of non-infectious vesiculobullous and vesiculopustular disorders 4 cases were of intraepidermal bullae while 3 cases were of subepidermal bullae. Five cases of congenital disorders were also seen; there were of hailey- hailey disease, huriez syndrome, acrokeratosis verruciformis of hopf, pseudoxanthoma elasticum and Darrier's disease. One case each of keratosis pilaris, lobar panniculitis, Erythema nodosum and Erythema induratum were seen. A proportion of cases constituting 12.74% of all the cases did not show a specific histological picture to be able to classify into a disease group. In large number of cases in the present study a definite pathological diagnosis consistent with the clinical diagnosis was possible. Along with the cases where descriptive pathological diagnosis consistent with the clinical diagnosis the present study was able to achieve a good overall clinicopathological consistency.

Few of the cases had definite pathological diagnosis inconsistent with the clinical diagnosis, thus overall in a large number of cases histopathology was able to give a final diagnosis and in few cases histopathology was not able to provide a diagnosis.

Overall in 87.25 % cases histopathology was able to provide a final diagnosis.

Based on the results, the following conclusions can be drawn:

1. Infectious diseases comprised of overwhelming diseases of non-neoplastic disorders.
2. Providing sufficient clinical descriptive knowledge increases the probability of an accurate diagnosis. The correlation between the pathologist and the dermatologist was high at 80%.

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