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ORIGINAL RESEARCH

Histopathological spectrum of various cutaneous lesions in Tertiary care Hospital

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ABSTRACT

Introduction: Histopathology of cutaneous lesions plays an important role in the diagnosis of many skin diseases. Dermatologists are able to recognize most skin disease based on their appearances, anatomic distributions and behaviour. However, in some criteria do not allow a conclusive diagnosis to be made and a skin biopsy is taken and its histopathological description and diagnosis with differential may aid to certainty to the specific outcome. **Aims & Objectives:** To study the histopathological findings in various skin disease and to correlate the clinical findings with histopathological features of various lesions of the skin and to aid in the diagnosis. **Material and Methods:** This was a prospective study conducted for a period of two years in department of pathology were consecutive skin biopsies in 133 patients were received from department of Dermatology of G K General Hospital, Gujarat Adani institute of medical sciences, Bhuj. Gross examination done and H&E stained section were studied and analysed according to published protocol. **Results:** Histopathological correlation was found in 95 (71%) out of 133 cases. Most common clinical presentation was papulosquamous disease(36%) and commonest Histopathologic diagnosis was lichenoid reaction in 23%, patients with overall male to female ratio of 3:2. Maximum cases belonged to age group of 21-30 years. Leprosy was found in 6% patients. In the bullous lesion most common finding was Hailey Hailey disease found in 2% patients. In 38 patients clinical diagnosis was not proved by microscopy. **Conclusions:** Despite the fact that a plethora of modern techniques have been developed and utilized in the diagnosis of skin disease, dermatologists still rely vastly on biopsy for diagnostic purpose as it was performed and selected skin biopsy taken in order to confirm their suspected diagnosis, and the histological perspective proves to be both helpful and reliable in the majority of cases.

Keywords: Cutaneous lesion, skin biopsy, histopathological correlation.

INTRODUCTION

The histological diagnosis helps with the management of the diseases and the most accurate diagnosis is the one which correlates most closely with clinical outcome and helps to aid the most appropriate clinical intervention. The management of skin diseases requires a pertinent diagnosis, which in many occasions constitutes an intricate process. Skin biopsy is an established diagnostic procedure which connects clinical diagnostic methodology with the invisible to the unaided eye microscopic field of skin pathology.

The skin consists of the superficial layer, the epidermis and the deep layer, dermis. the epidermis is derived from the ectoderm. The skin is complex organ which covers entire external surface of the body with many functions and with three components- epidermis and skin adnexa, melanocytic system and dermis and subcutis, and it is continuous with the mucosae of alimentary, respiratory and urogenital tracts where the specialized skin of mucocutaneous junction is present. Its thickness ranges from 1.5-4 mm, these variations reflect maturation, aging and regional specialization.[1,2]

Skin biopsy is relatively simple, but essential procedure in the management of the skin disorders. Properly performed, it may confirm a diagnosis and provide definitive treatment for a number of skin conditions. Commonly used skin biopsies are punch biopsy, superficial and deep shave biopsy, deep incisional biopsy, complete excision and curettage. Punch biopsy is the standard procedure for obtaining

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samples of inflammatory dermatoses but is often used for neoplastic lesions as well.

Classification of cutaneous lesions depending on the location and site, vesicular or pustular, benign or malignant.[3]

Clinically papulosquamous disease is commonly seen in our study and lichen planus histologically.

Lichen planus is a subacute or chronic dermatosis involving skin, mucous membrane, nails and hair follicles. It is a small purple, painless, pruritic, polygonal, papule that can coalesce into plaque.Histopathologically it shows Orthokeratosis, wedge shaped hypergranulosis, irregular acanthuses, vacuolar alteration of the basal layer, band like dermal lymphocytic infiltrate saw tooth appearance of the rete ridges.[4,5,6]

Psoriasis is a common chronic inflammatory condition characterized by pink to red scaly papule and plaque. Well developed lesion histologically shows marked elongation and clubbed shaped rete ridges, absent granular layer, supra basal mitoses, acanthosis, parakeratosis, infiltration by neutrophils, dilated tortuous vessels in dermal papillae.[7,8]

Tuberculosis- One of the commonest disease in the developing world. Mostly in the industrialized nations. **Primary tuberculosis-** Children or adult may acquire it following minor trauma or contact with infected material- mouth to mouth artificial respiration, inoculation during autopsy, needle stick injury, inoculation during tattooing.arly phase- acute neutrophilic reaction, with areas of necrosis resulting in ulceration. Numerous tubercle bacilli are present particularly in the areas of necrosis. After 2 weeks monocytes, lymphocytes and macrophages predominate. 3 to 6 weeks after onset, epitheloid cells and giant cell granulomas develop. With time necrosis and number of bacilli lessens.[3]

Lupus vulgaris - Granulomas of lupus vulgaris, which is a form of cutaneous tuberculosis due to hematogenous spread, are usually nonnecrotizing. [9]

Histopathology- In lupus vulgaris, tuberculoid granulomas is composed of epithelioid cells and giant cells. Caseation necrosis within the tubercles is slight or may be absent.[10]

Leprosy- It is also known as Hansen's disease, caused by Mycobacterium lepre, mainly affecting skin and peripheral nerves. Has 5 types from tuberculoid to lepramatous leprosy. **Histopathology** Tuberculoid leprosy has large epithelioid cells arranged in compact granulomas along with neurovascular bundles, with dense peripheral lymphocyte accumulation.[11] Langerhans giant cells, dermal nerves are typically absent. Acid-fast bacilli are rarely found, even in nerves. **Histoid leprosy**- It shows the highest number of bacterial loads. And arranged in clumps of sheave of wheats. The macrophages frequently become a spindle shaped and arranged in storiform pattern.[12]

Basal cell carcinoma tend to share some same morphological features in almost all types with peripheral arrangement of tumor cell nuclei, a specialized stroma, an artefact of clefting around the tumor cells, variable degree of atypia and mitotic activity.[13]

Squamous cell carcinoma- shows Irregular masses of epidermal cells that proliferate downwards into dermis. The invading tumor masses are composed of normal squamous cells and atypical cells.The high or poor grade have more bizarre looking cells, more hyper-chromatism, more mitotic activity, more pleomorphism and atypia and degree of keratinization.[14]

The aim of the present study was to classify the various skin disorders prevalent in the surrounding community and to determine their demographic distribution.

If the pathologist doesn't suspect the infection and order the specific test, then the diagnosis can never be made. In some case the histology is more "suggestive of" rather than "diagnostic off" especially in common lesions like psoriasis and lichen planus. The other difficulty the pathologists face these days is the lack of information which is required for the diagnosis at some or many levels. There are no such standard criteria for some diseases.

The best goal to improve the diagnostic specificity can be achieved by co-ordination of clinical history, gross morphological findings, histopathological study and molecular studies.

MATERIAL AND METHODS

The present prospective study was conducted in the department of pathology, G K General Hospital, Gujarat Adani institute of medical sciences, Bhuj during for a period of 2 years,wherein consecutive skin biopsies were received from department of Dermatology of G K General Hospital.

Sample size- 133 patients with skin biopsy taken.

Sample for study- The specimen for histopathological evaluation was preserved in 10% formalin. Entire skin biopsy was processed for paraffin embedded tissue sections. 5-micron thick tissue sections were stained with Harris Hematoxylin and Eosin stain, special stains such as Fitefaraco, ZeihlNeelsen and Periodic Acid Schiff stains were used as and when required.[15]

Inclusion criteria- Each skin biopsy received in department of Pathology was subjected to systematic and interpretative assessment to evaluate various skin diseases.

Exclusion criteria- None

RESULTS

1. A total of 133 cutaneous lesions were studied histopathologically and analysed for the correlation..
2. The study included 78 (59%) males and 55 (41%) females with the male female ratio of 3:2.
3. Maximum numbers of patients, 42 (32%) out of 133 were observed in age range of 21-30 years, followed by 27 (20%) of 133 in age group of 31-40 years and 23 (17%) of 133 in age group of 41-

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50 years. The youngest patient was 2 years old boy and oldest patient was 79 years old male.

4. Cutaneous lesions in 133 patients were studied by histopathological examination; in all these patients clinical diagnosis / differential diagnosis were recorded in requisition forms. Clinical diagnosis was proved by histopathological examination in 95 (71%) out of 133 patients. The clinical diagnosis of 95 patients recorded on requisition form is shown in table 1 . The maximum number of clinical diagnosis were Papulosquamous diseases found in 35 (36%) of 95 patients followed by infective disorders in 15 (16%) of 95 patients and autoimmune diseases in 11(11%) of 95 patients.

Table 1 shows spectrum of clinical diagnosis (N=95)

Family	Diseases	Number of disease	Total number	%
1.Papulosquamous Diseases	A. Lichenplanus B. Psoriasis	23 12	35	37
2.Infectivedisorders Bacterial	A.Tuberculosis	7	15	16
	B. Leprosy	8		
Viral	A.Molluscumcontagiosum B.Condylomaaccuminata C.Varicellazoster D.Verruca vulgaris E.Pityriasisrosea	1 1 1 1 1	5	5
3.Autoimmune Diseases	A.Morphea B.PityriasisrubraPilaris C. DLE D.Vasculitis	8 1 1 1	11	12
4.Hereditarydisorders	A.DowlingDegosdisease B.Neurofibroma C.Lipoidproteinosis	1 1 1	3	3
5.Vesicobullouslesion	A. HaileyHailey Disease B.Pemphigusvulgaris C.Pemphigusfoliaceous	2 1 1	4	4
6.Disorderof Hyperpigmentation	A.ILEN B.Ashydermatosis	1 1	2	2
7.Keratinizationdisorder	A.Darier's disease	1	1	1
8.Non-specific Inflammation	A.Tattooreaction B.Prurigonodularis C. Photo dermatitis D.Non-specificdermatitis	2 2 3 3	10	11
9.Exfoliative dermatitis	A.Eczema B.Erythroderma	1 1	2	2
10.Tumors	A.BCC B.SCC C. Pilomatricoma	3 3 1	7	7
Total Number		**95**	**95**	**100**

5. Spectrum of diseases identified after microscopic examination of cutaneous biopsies is shown in table 2. Maximum numbers of cases were in the category of lichenoid tissue reaction; it was observed in 22 (23%) out of 95 patients (figure 1). The other diseases identified were infectious diseases in 20 (21%) out of 95 patients, followed by psoriasiform tissue reaction in 13 (14%) out of 95 patients (figure 2).

Table 2- shows spectrum of histopathological findings in 95 patients

Family	Diseases	Total no.	%
1.Lichenoidtissue reaction	Lichenplanus	22	23
2.Infectious diseases Bacterial	A.CutaneousTuberculosis B. Leprosy	8 7	21
Viral	A.Molluscumcontagiosum B.Condylomaaccuminata C.Verrucus hyperplasia D.Varicella zoster	1 1 1 1	

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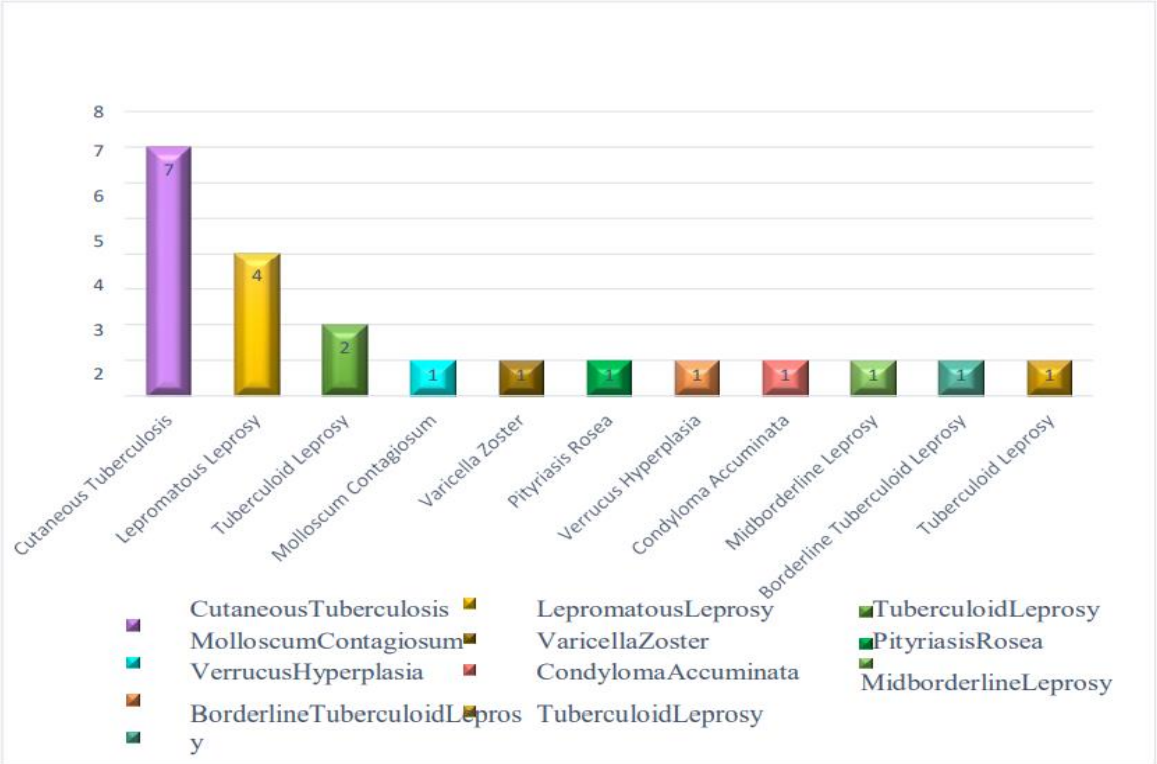
	E.Pityriasisrosea	1	
3.Psoriasiformtissue reaction	A.Psoriasis B.Pityriasisrubrapilaris	12 1	14
4.Connective tissue Disorder	A.DLE B.Scleroderma/Morphea	2 8	11
5.Tumors	A.BCC B.SCC	3 3	6
6.	C.Hairfollicletumor-Pilomatricoma	1	1
7.Bullous disease	A.Pemphigoid vulgaris C. HaileyHaileydisease D.Darier's disease	1 2 1	5
8.Non-specific dermatitis	A.Tattooreaction B.Photodermatitis	2 3	5
9.Spongioticdermatoses	A.Eczema B.Erythroderma C.PrurigoNodularis	1 1 2	4
10.Connective tissue Tumor	A.Nervefibertumor-Neurofibroma B.Vasculartumor- Hemangioma	1 1	2
11.Pigmentationdisorders	A. Ashydermatoses B.DowlingDegos C.ILEN	1 1 1	3
12.AppendagealDisease	Alopecia-Lichenplanopilaris	1	1
13.Vasculitis	Smallvessel vasculitis	1	1
14.Deposition disorder	Lipoidproteinosis	1	1
15.Abnormalityinrepair	Keloid	1	1
Total number		**95**	**100**

6. The bacterial and viral infections identified in the present study is shown in Graph-Figure 3 with bar chart and studies with bullous lesion in graph- figure 4. The common ones like leprosy, tuberculosis, moluscumcontogium, pemphigus shown in figure histologically.(figure- 5,6,7,8)



Graph-Figure 3- shows spectrum of infectious diseases in 20 patients.

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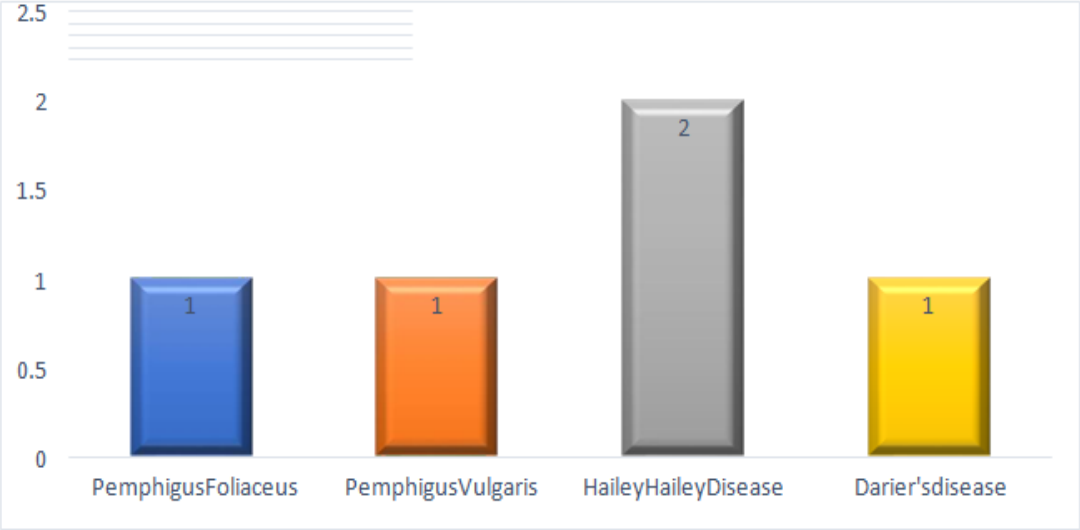

Figure 4 shows spectrum of bullous diseases in bar chart

7. Other significant findings found in the present study were each case of tattoo reaction, inflammatory linear verrucus epidermal nevus and keloid (figure 9) were identified. In this study we found 7 patients had cutaneous tumors which comprised of 3 cases each of basal cell carcinoma and squamous cell carcinoma with one case of pilomatricoma. (figure 10,11)
8. In 38 (29%) out of 133 patients a definitive diagnosis could not be reached on histopathological examination. The histopathological findings in 26(20%) of 38 patients did not show microscopic features consistent with clinical diagnosis and therefore these cases were reported as inconclusive biopsy. These cases were clinically diagnosed as Lichen planus (7 patients), leprosy (4), Bullous lesion (3), vasculitis and syphilis 2 each and one each case of Cutaneous leishmaniasis, Keratosis pilaris, Lupus vulgaris, Familial hypercholesteremia, Langerhans cell histiocytosis, Gorton disease, Erythema nodosum and Lupus miliaris disease facie. In 6 patients biopsy was inadequate while in another 6 patients there was discordance between clinical diagnosis and histopathological findings. In this group one patient of leprosy who was on treatment and one patient of pyogenic granuloma showed characteristic features of squamous cell carcinoma.

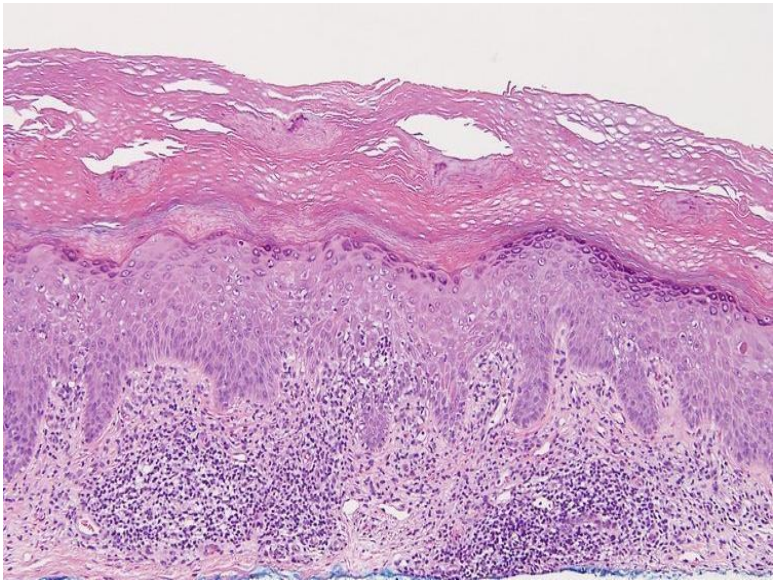

Figure 1 a case of lichen planus. Shows hypergranulosis, irregular acanthosis, compact orthokeratosis anddense bandlike infiltration of lymphocytes in papillarydermis(H&EX100)

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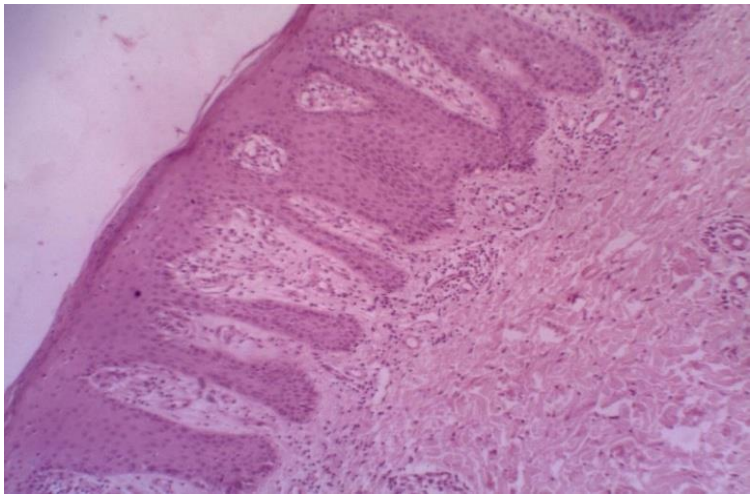

Figure2 – a case of psoriasis.Shows markedly elongated rete ridges,absent granular layer,and neutrophilic infiltration in the dermal papillae (H&E X100)

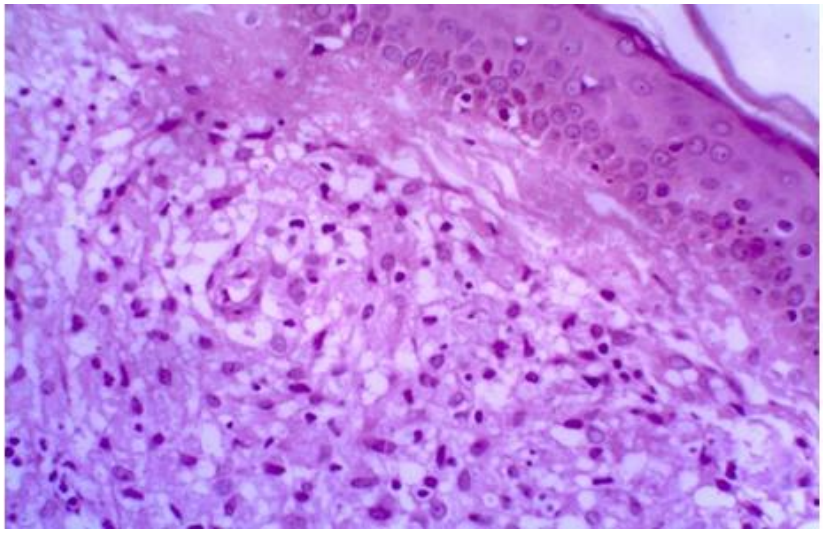

Figure 5 A- a case of Lepromatous leprosy. Shows thinning of epidermis, clear grenz zone between epidermis and dermis, aggregates of foamymacrophages in the dermis.(H&EX400)

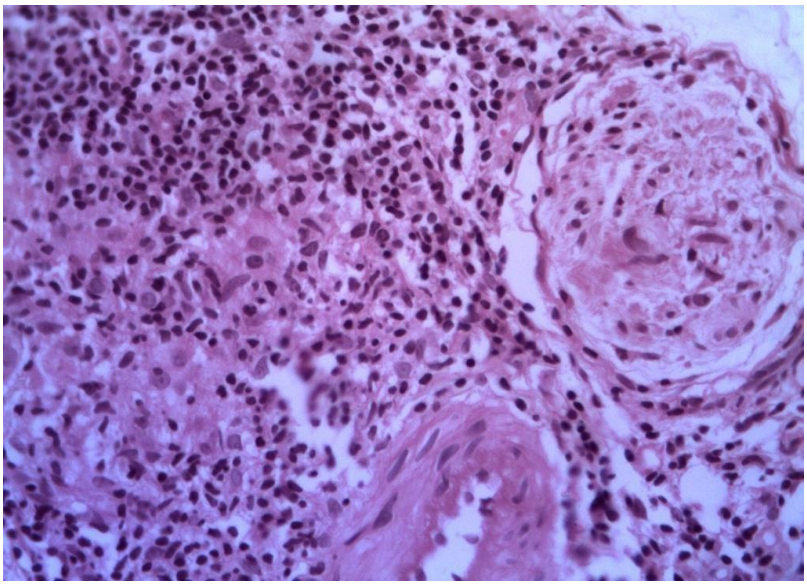

Figure 5 B- a case of Tuberculoid leprosy. Shows endoneuritis with granulomas involving nerve fiber and granulomas in dermis. (H&E X400)

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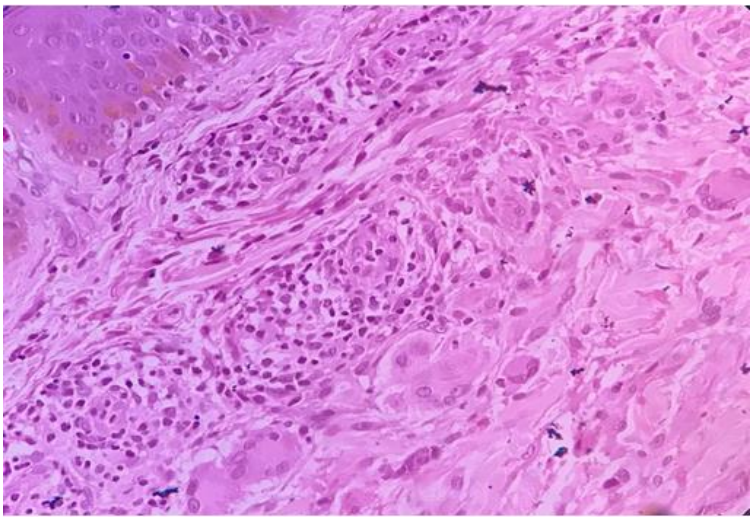

Figure 6 Tuberculosis. Shows granulomas comprised of epitheloid cells and Langhans giant cellsin the papillary dermis. (H&E X400)

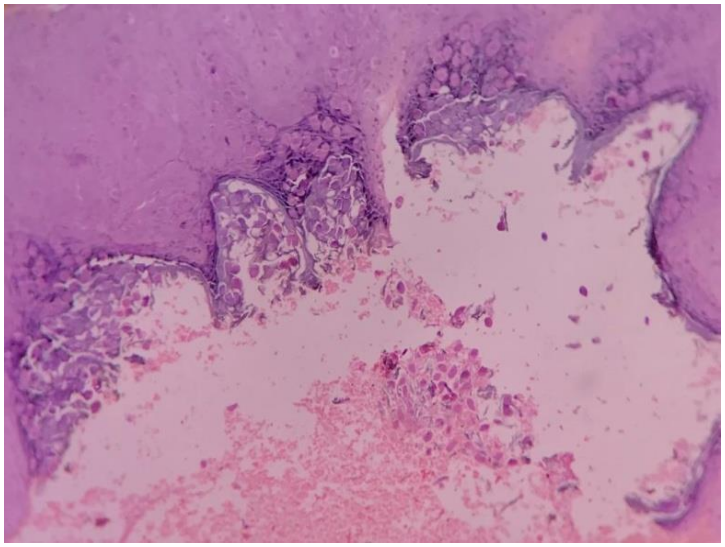

Figure 7 a case of molluscum contagiosum.Shows lobulated endophytic hyperplasia producing a circumscribed intradermal pseudotumor and molluscum bodies in epidermal cells. (H&E X100)

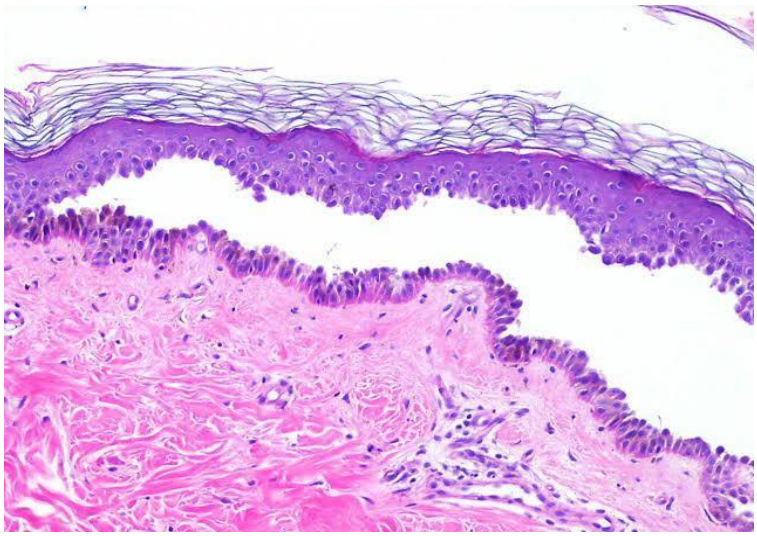

Figure 8- a case of Pemphigus vulgaris. Shows suprabasal blister containing acantholytic cells and inflammatory cells. The dermal papillae are lined by single layer of basal keratinocytes 'villi'. (H&E X100)

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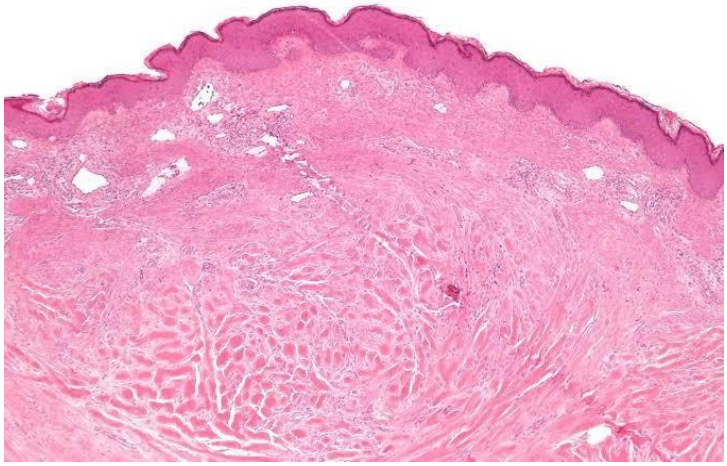

Figure 9 –a case of Keloid. Shows abundant collagen in the dermis. (H&EX40)

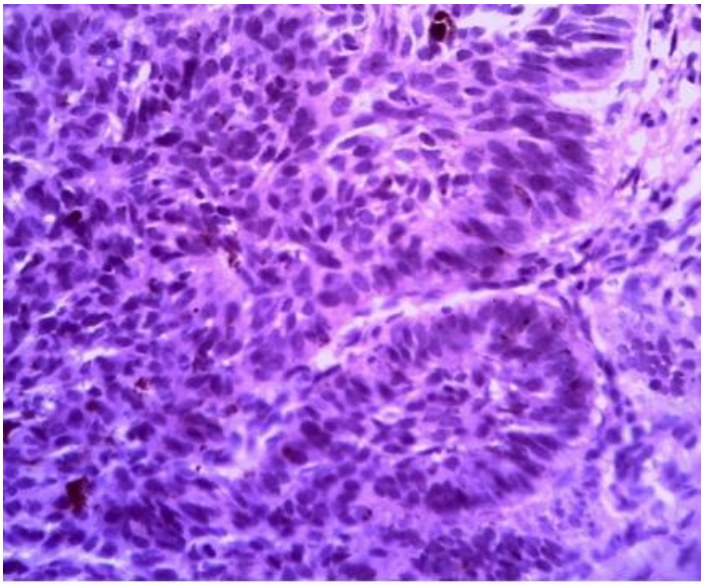

Figure 10- a case of basal cell carcinoma.(Nodular type) shows nests of tumor cells with peripheral palisading pattern and interface clefting. (H&E X100)

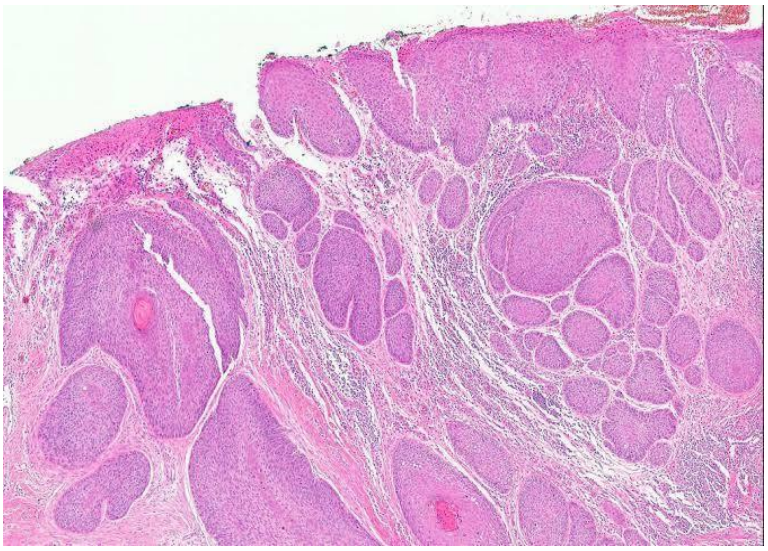

Figure 11- a case ofsquamous cell carcinoma. Shows sheets of large polygonal cells having large hyperchromatic nuclei in epidermi

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DISCUSSION

The management of skin diseases requires a pertinent diagnosis, which in many occasions constitutes an intricate process. Skin biopsy is an established diagnostic procedure which connects clinical diagnostic methodology with the invisible to the unaided eye microscopic field of skin pathology. Taking under consideration the potentials and limitations of optical microscopy and the indications of performing an invasive technique, dermatologists often rely on skin biopsy for enhancing their diagnostic abilities. Skin biopsy is an established method for allying the dermatologist in overcoming the diagnostic dilemmas which occur during consultations.

Several reports describing histopathological findings of cutaneous lesions are described in the literature; however very few reports describing spectrum of cutaneous diseases are published. The largest report describing spectrum of skin diseases is from Athens (Greece); it describes findings in 6720 patients; including 2862(48%) males and 3075(52%)females.[16] The Indian literature describes only two reports describing spectrum of cutaneous diseases.[17,18] The present study describes spectrum of cutaneous lesions in 133 patients comprising of 78(59%)males and 55(41%) females. with male to female ratio1.4:1.Similar studies were carried out in Athens16 (Greece), Telangana[17] Pondicherry[18] (India), which comprised of 5841 patients (male,48%, female, 52%), 112patients (male, 54%, female, 45%), 92patients (male,59%,female,41%)respectively. There is equal proportion of male to female in a study from Greece. While Indian study shows less female population ratio as compared to male. Our study is comparable from those study reported from India.[17,18]

Various studies have shown cutaneous lesions in 23-31% of patients in the age group of 21-30 years.[17,19,20] In the present study cutaneous lesions were present in 32% patients in the age range of 21-30 years, our report is comparable with other studies. The diseases identified in our patients such as lichen planus, psoriasis, pityriasis, viral infections clinically manifest in adolescent age group for which biopsy is performed and this explains 32% of patients in age range of 21-30 years in the present study.

This study is from Athens, Greece and was published in the year 2014.16 In this study clinical diagnoses were malignant tumors in 2158 (19%) out of 5941 patients, benign tumors (nevus) in1176(11%)out of 6720 patients and papulosquamous dermatoses in 1358(12%)out of 6720 patients. In the present study high prevalence of papulosquamous dermatoses is seen in 37% patients,the other diagnosed were cutaneous infection in 21% patients and autoimmune disease in 12% in patients and neoplasm in 7% patients.

A study from Athens, Greece showed lichenoidreaction in 880 (8%) out of 6720 patients.[16] Thereports fromotherIndianstudiesshowslichenoidreactionin20-27%patients.[17,18] In the present studylichenoid reaction was identified in 23%patients, ourreport is comparable with other Indian studies.

In the present study the clinicopathological correlation was found in 95 (71%) out of 133 patients however in 38 (29%) out of 133 patients clinical diagnoses did not match with histopathological findings. In the study of Korfitis et al 5597 (83%) out of 6720 patients, clinical diagnosis matched with microscopic findings and in1123 (17%) patients clinical diagnosis did not correlate with histological findings.[16] In a study by Agrawal S, clinical diagnosed was proved study histologically in 31(52%) out of 60 patients, was not proven histopathologically in 29 (48%) patients.[18]

In the present study the percentage of clinico-pathological correlation is 71% which is slightly less than a study by Korfitis who reported clinico-pathological correlation in 83% patients.16 In Indian study clinico-pathological correlation was found in 52% patients; which is lower than our study.17 In the present studyclinical diagnoses in 23 % patients was not proved by microscopy, this is slightly higher than a study by Korfitis who showed clinicopathological discrepancy in 17% patients and higher than Indian study which showed discrepancy in 48% patients.The reasons for 23% discrepancy in our study are inconclusive biopsy in 26 (20%) out of 133 patients, inadequate biopsy and clinico-histopathological discordance in 6(5%) patients each.In a study by Korfitis et al16 where diagnoses in 17% patients were not proved histologically, in 39 (5.2%) patients were inadequate biopsy, in 27 (3.6%) patients the site of biopsy was not representative of the lesion, and in 24 (3.2%) patients the pathological features were altered were due to previous treatment, and in 23 (3.1%) patients optical microscopy with standard staining was considered as inappropriate for a specific diagnosis,and in 16(2.1%)patients, the examined lesion was not fully developed or resolved.

CONCLUSIONS

Despite the fact that a plethora of modern techniques have been developed and utilized in the diagnosis of skin disease, dermatologists still rely vastly on biopsy for diagnostic purposes.

As discussed in this study, there is a wide range of diseases that allow dermatologists to select skin biopsy in order to confirm their suspected diagnosis, and the histological perspective proves to be both helpful and reliable in the majority of cases.

However, there are also limitations in this method and there are cases that the performance of a biopsy does not produce diagnostic results.

As a consequence proper diagnosis is delayed and all imminent therapeutic decisions rely heavilyupon the dermatologist’s comprehension of the situation. Therefore an optimal use of the process is suggested with comprehensive descriptions and relevant

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diagnoses by the dermatologist along with a closer cooperation with the dermatopathologist performing clinicopathological correlation whenever possible.

Limitations of study- In some case the histology is more "suggestive of" rather than "diagnostic off" especially in common lesions like psoriasis and lichen planus. The other difficulty the pathologists face these days is the lack of information which is required for the diagnosis at some or manylevels. There are no such standard criteria for some diseases.

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