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Original Article

Histopathological spectrum of skin diseases in a tertiary skin health and referral centre

Ram Chandra Adhikari[1], Mahesh Shah[2], Anil Kumar Jha[3]

[1]*Department of Pathology, Tribhuvan University Teaching Hospital, Kathmandu, Nepal.*
[2]*Department of Dermatology, DI Skin Health & Referral Centre, Kathmandu, Nepal.*
[3]*Department of Dermatology, Nepal medical College Teaching Hosptial, Kathmandu, Nepal.*

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ABSTRACT

Background: Skin diseases are very much prevalent in the developing countries. The pattern of skin diseases varies from country to country and even region to region within a country. The histological diagnosis is used by clinicians to aid in the management of patients & most appropriate clinical interventions.

Materials and Methods: The study included a total of 1040 skin biopsies from January 2016 to December 2018 in the department of pathology, DI skin health and referral centre, Kathmandu, Nepal.

Results: The majority of the patients were in the age group of 31-40 years. The most common skin disease is non-infectious vesicobullous and vesicopustular disease (28.6%), followed by non-infectious erythematous papular and squamous disease (25.9%). The most common vesicobullous disease is spongiotic dermatitis (84.8%). Erythema dyschromicum perstans (31.8%) is the commonest non-infectious erythematous papular and squamous disease. The most common microbial disease is fungal infection, followed by leprosy. Among the neoplastic diseases of skin, tumors of epidermis are commonest diseases and the most common epidermal tumor is basal cell carcinoma. The commonest tumor of skin is melanocytic nevus. The most frequent site is upper extremities.

Conclusion: Eczema is predominating non-infectious vesicobullous and vesicopustular disease. A relatively higher, prevalence of fungal infections was observed. Basal cell carcinoma is the commonest epidermal tumor and melanocytic nevus is commonest of all skin tumors.

Correspondence:
Dr. Ram Chandra Adhikari, MD
Consultant Pathologist,
DI Skin Health & Referral Centre (DISHARC), Maharajgunj,
Kathmandu, Nepal
ORCID ID: 0000-0002-1605-2898
Email: rcadhikari@hotmail.com

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INTRODUCTION

The skin is a complex organ with many functions and 3 anatomic components: epidermis with skin adnexa, melanocytic system, and dermis and subcutis.[1,2] It is the largest organ in the human body, in which precisely regulated cellular and molecular interactions govern many crucial responses to our environment.

Skin diseases are very much prevalent in the developing countries. There are at least 2000 different skin diseases in

the field of dermatology which affect all age groups.[3] These diseases range from simple acne and scabies to various serious disorders such as toxic epidermal necrolysis and fatal neoplastic conditions.[4,5] The pattern of skin diseases varies from country to country and even region to region within a country due to different ecological factors, genetics, hygienic standards and social customs.[4-6]

Only few statistical studies are carried out in Indian subcontinent really stating the skin diseases that requires histological examination to aid in clinical diagnosis.[7] Not all the skin lesions require skin biopsy and most of them are diagnosed on the basis of clinical presentation & history. The histological diagnosis is used by clinicians to aid in the management of patients & most appropriate clinical interventions.

Though the spectrum of histopathology of skin disorders is varied, clinical presentation is restricted to only a few changes such as hyperpigmentation, hypopigmentation, macules, papules, nodules etc. Each clinical presentation is common to have different histopathological pictures and the thus definitely requires histopathology for their confirmation.[8]

The aim of this study is to identify the histopathological diagnoses of various skin lesions prevalent in this country, their frequency, age, sex and site of distribution.

MATERIALS AND METHODS

The study was done from January 2016 to December 2018 in the department of pathology, DI skin health and referral centre (DISHARC), Kathmandu, Nepal. Permission was obtained from ethical committee. This study included a total of 1040 skin biopsies, processed in automated histokinette, sectioned and stained with Hematoxylin & eosin and reviewed by Pathologist. Special stains like Ziehl-Neelsen (ZN), Periodic Acid Schiff (PAS) and Fite-Faraco were used whenever required. Relevant demographic data was obtained from requisition from provided with the specimens. The data were entered in Microsoft Excel and statistical analysis was performed.

RESULTS

A total of 1040 skin lesions specimens were included in the study. Patient age in the study population ranged from 4 to 88 years. The majority of the patients were in the age group of 31-40 years . There is no significant gender wise predilection for skin diseases. Male to female ratio was 1.08:1.

The skin diseases, diagnosed based on histopathology are grouped in Table 1. The most common skin disease is non-infectious vesicobullous and vesicopustular disease (n=297; 28.6%), followed by non-infectious erythematous papular and squamous disease (n=269; 25.9%). Rare diseases are metabolic diseases (n=1; 0.1%), disorders associated with physical agents (n=03; 0.3%) and degenerative and perforating disorders (n=02; 02%).

The non-infectious vesicobullous and vesicopustular diseases and non-infectious erythematous papular and squamous diseases are further classified which is shown in table 2 & 3. The most common vesicobullous disease is spongiotic dermatitis (n=252; 84.8%). When eczema is excluded, subepidermal bullous disease (n=10; 3.4%) and pemphigus (n=9; 3%) are common with almost equal prevalence.

Erythema dyschromicum perstans (n=86; 31.8%) is the commonest non-infectious erythematous papular and squamous disease, followed by psoriasis (n=7; 29.3%) and lichen planus (n=47; 17.4%). Erythema annulare centrifugum (n=1; 0.4%) is the least common non-infectious erythematous papular and squamous disease.

Microbial diseases, neoplastic diseases, connective tissue diseases, inflammatory diseases of cutaneous adnexae, vascular diseases of skin and genodermatoses are classified in table 4, 5, 6, 7, 8 and 9 respectively. The most common microbial disease is fungal infection (n=42; 35.3%), followed by leprosy (n=28; 23.5%) and verruca (n=20; 16.8%). (Table 4) Histoplasmosis, chromoblastomycosis (fig.1) and candidiasis are rare skin infections and cutaneous leishmaniasis is not uncommon.

Among the neoplastic diseases of skin, tumors of epidermis are commonest diseases (53.6%), followed by tumors of mesenchyme (19%), and benign pigmented lesion (18.5%). (Table 5) The most common epidermal tumor is basal cell carcinoma (23 cases, fig 2), followed by squamous cell carcinoma (20 cases) and seborrheic keratosis (15 cases). Melanoma is infrequent tumor (1.5%) in this study, while melanocytic nevus is commonest of all skin tumors.

Lichen sclerosus et atrophicus (n=25; 40%) is the commonest connective tissue disease, followed by morphea (n=9; 40%). (Table 6) Scarring alopecia (n=13; 59.1%) is the commonest inflammatory disease of cutaneous adnexae, followed by rosacea (n=6; 27.3%). (Table 7) Among vasculitides,(Table 8) leukocytoclastic vasculitis (n=11; 50%) is the commonest one, followed by lymphocytic small-vessel vasculitis (n=7; 31.8%). Genodermatoses are found to be rare diseases (total 11 cases) in this study and shown in table 9.

The site wise distribution of skin diseases are listed in table 10. The most frequent site is upper extremities (22%), followed by lower extremities (19.6%). Ear, nail and vulva are less frequent sites for skin diseases. Both non-infectious vesicobullous and vesicopustular diseases and non-

Table 1: Spectrum of skin diseases based on histopathology

Skin diseases	Number of cases (n)	Percentage (%)
Genodermatoses	11	1.1
Non-infectious erythematous papular and squamous diseases	269	25.9
Non-infectious vesicobullous and vesicopustular diseases	297	28.6
Vascular disease	22	2.1
Connective tissue disease	25	2.4
Photosensitive disorders	7	0.7
Disorders associated with physical agent	3	0.3
Non-infectious granuloma	10	1.0
Microbial diseases	119	11.4
Degenerative and perforating disorders	2	0.2
Metabolic diseases	1	0.1
Inflammatory diseases of adnexae	23	2.2
Inflammatory diseases of subcutis	7	0.7
Neoplastic diseases	205	19.7
Inconclusive	39	3.8
Total	**1040**	**100**

Table 2: Non-infectious vesicobullous and vesicopustular diseases

Non-infectious vesicobullous and vesicopustular diseases	Number of cases (n)	Percentage (%)
Spongiotic dermatitis (Eczema)	252	84.8
Pemphigus	9	3.0
Subepidermal bullous disease	10	3.4
Erythema multiforme	2	0.7
Lichen simplex chronicus	23	7.7
Subcorneal pustular dermatosis	1	0.3
Total	**297**	**100**

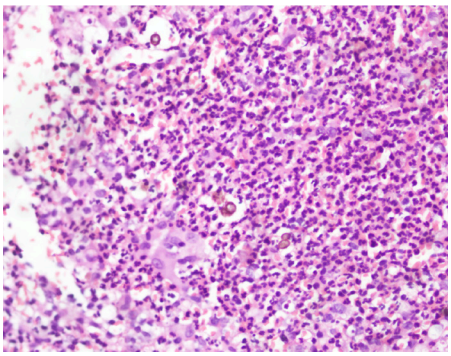

Figure 1: *Neutrophilic abscess and pigmented spores of chromoblastomycosis in the dermis. (H&E stain, X400)*

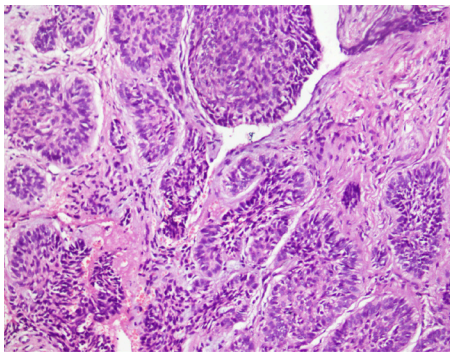

Figure 2: *Nests of basaloid cells infiltrating the dermis with retraction artifact. (H&E stain, X200)*

infectious erythematous popular and squamous diseases frequently affected upper extremities. The common site for pemphigus is trunk, while it is upper extremities for subepidermal bullous diseases. The psoriasis frequently affected upper extremities, while lichen planus is more commonly found in lower extremities. The most common location of erythema dyschromicum perstans is neck. The clinical diagnosis is concordant with histopathological diagnosis in 73.8% cases, while it in discordant in remaining cases.

DISCUSSION

The pattern of skin diseases is influenced by the developing economy, level of literacy, social backwardness, varied climate, industrialization, access to primary health care, and

Table 3: Non-infectious erythematous papular and squamous diseases

Non-infectious erythematous papular and squamous diseases	Number of cases (n)	Percentage (%)
Urticaria	**5**	**1.9**
Erythema annulare centrifugum	1	0.4
Prurigo nodularis	17	6.3
Psoriasis	79	29.3
Parapsoriasis	7	2.6
Pityriasis rosea	7	2.6
Lichen planus	47	17.4
Lichen planus-like keratosis	2	0.7
Pityriasis rubra pilaris	3	1.1
Pityriasis lichenoides	6	2.2
Erythema dyschromicum perstans	86	31.8
Lichen planus pigmentosus	10	3.7
Total	**270**	**100.0**

Table 4: Microbial diseases of skin

Microbial diseases		Number of cases (n)	Percentage (%)
Bacterial diseases	**Acute folliculitis**	**4**	**3.4**
	Tuberculosis	10	8.4
	Leprosy	28	23.5
Fungal diseases	**Dermatophytosis**	25	21.0
	Chromoblastomycosis	3	2.6
	Candidiasis	1	0.8
	Histoplasmosis	1	0.8
	Sporotrichosis	12	10.1
Protozoal diseases	**Cutaneous leishmaniasis**	3	2.5
Viral diseases	**Verruca**	20	16.8
	Molluscum contagiosum	1	0.8
Arthropod-bite reaction	**Lichen urticatus**	11	9.3
Total		**119**	**100.0**

Table 5: Neoplastic diseases of skin

Non-infectious erythematous papular and squamous diseases	Number of cases (n)	Percentage (%)
Histiocytoses	2	1.0
Pigmented benign lesion	38	18.5
Malignant melanoma	3	1.5
Tumors of epidermis	110	53.6
Tumors of epidermal appendages	11	5.4
Malignant lymphoma	2	1.0
Tumors of mesenchymal tissue	39	19.0
Total	**205**	**100.0**

different religious, ritual and cultural factors.

This study included 1040 cases, which underwent skin biopsies in tertiary DI skin health & referral centre, Kathmandu, Nepal. The majority of the patients were in the age group of 31-40 yrs with age range of 4 to 88 years. In contrast to this finding, the age group of 21-30 years presented the highest frequency of skin diseases in a studies of Bezbaruah R et al[8] and Abubaker SD et al.[9] There is no significant gender predilection in this study, however female predominance was reported in studies of Bezbaruah R et al[8], Dayal S et al[10] and Kumar V et al[11] and male predominance

Table 6: Connective tissue diseases of skin

Connective tissue diseases	Number of cases (n)	Percentage (%)
Lupus erythematosus	6	24.0
Morphea	9	36.0
Lichen sclerosus et atrophicus	10	40.0
Total	**25**	**100.0**

Table 7: Inflammatory diseases of cutaneous adnexae

Inflammatory diseases of cutaneous adnexae	Number of cases (n)	Percentage (%)
Folliculitis	2	9.1
Rosacea	6	27.3
Scarring alopecia	13	59.1
Chondrodermatitis nodularis helicis	1	4.5
Total	**22**	**100.0**

Table 8: Vascular diseases of skin

Vascular diseases	Number of cases (n)	Percentage (%)
Leukocytoclastic vasculitis	11	50.0
Granuloma faciale	1	4.5
Neutrophilic dermatoses	2	9.1
Lymphocytic small-vessel vasculitis	7	31.8
Atrophie blanche	1	4.5
Total	**22**	**100.0**

Table 9: Genodermatoses

Genodermatoses	Number of cases	Percentage
Ichthyosis vulgaris	1	9.1
Keratosis Palmaris et plantaris	2	18.2
Porokeratosis	2	18.2
Darier's disease	1	9.1
Acrokeratosis verruciformis of Hopf	1	9.1
Urticaria pigmentosa	2	18.2
Epidermolytic plantar keratoderma	2	18.2
Total	**11**	**100.0**

Table 10: Site wise distribution of skin diseases

Site	Number of cases	Percentage
Scalp	51	4.9
Face	138	13.3
Ear	6	0.6
Neck	87	8.3
Trunk and abdomen	122	11.7
Upper extremities	229	22.0
Palm	76	7.3
Lower extremities	204	19.6
Sole	60	5.8
Oral cavity	26	2.5
Penis	24	2.3
Vulva	11	1.1
Nail	6	0.6
Total	**1040**	**100.0**

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in other studies.[10,12]

The prevalence of infective disorders has outstripped that of non-infective disorders in some studies, varying from 42.68% to 89.72%.[10,13-15] In contrast to this finding, non-infective disorders have higher prevalence in this study and in some other studies varying from 53.15% to 58.07%.[12,16-18] This difference could possibly be due to differing susceptibilities in different population groups in diverse geographical regions.

Neoplastic lesion constituted 19.7% of all skin lesions in this study, which is much lower than papulosquamous and vesicobullous diseases. However, neoplastic lesions were the major entity in a study of Bezbaruah R et al[8] and Abubaker SD et al.[9] Among epidermal tumors, basal cell carcinoma is the commonest tumor in our study. Other studies[8,19] reported epidermal cyst being the commonest epidermal tumor. Melanoma is infrequent tumor (1.5%) in this study and it is similar in south Asian region in contrast to Europe, USA and Australia.

The most common vesicobullous disease is spongiotic dermatitis (84.8%) and this finding is similar to the finding of Ogun GO et al.[20] Among papulosquamous diseases, psoriasis and lichen planus are the predominating diseases in many studies.[21,22] In our study, psoriasis and lichen planus are common diseases after erythema dyschromicum perstans. The incidence of erythema dyschromicum perstans is significantly high in this study and this disease is frequently reported from south Asian region.

Among the infective conditions, while fungal infections was the most common disorder in this study (35.3%) and this finding is similar to most of the studies, varying in prevalence from 12.8% to 46.25%.[10,12,13,23] Higher prevalence of fungal infections is attributed to hot and humid climatic conditions in some geographical regions. The prevalence of scabies has varied from 8.56% to 16.0% in clinically based studies some studies.[12,17,23] Our study is histopathology based and we have not seen even single case of scabies in tissue section. The prevalence of leprosy in reported with a range of 1.7% to 11.7%.[10,12,17,24] Leprosy constituted 23.5% of all microbial diseases and 2.7% of all skin diseases in this study.

We have encountered few cases of Lichen sclerosus et atrophicus, morphea, scarring alopecia, rosacea and genodermatoses. These conditions are found to be uncommon in other studies as well.

Upper and lower extremities are found to be commonest site of involvement by skin diseases in this study, while face including eyelid and lip is frequent site in a study of Bezbaruah R et al.[8] This may be due to peculiarities of geographical and occupational variation.

CONCLUSION

A huge diversity in skin lesions was noticed in our study ranging from eczema to fatal malignant conditions. The study confirmed a higher prevalence of non-infective dermatoses with predominance of non-infectious vesicobullous and vesicopustular disease. Eczema is predominating non-infectious vesicobullous and vesicopustular disease. A relatively higher, prevalence of fungal infections was observed, which probably reflects the minor regional variation. Basal cell carcinoma is the commonest epidermal tumor and melanocytic nevus is commonest of all skin tumors.

Conflict of interests: None

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