



Histomorphological Study of Skin Lesions in a Specialized Tertiary Care Hospital: A Descriptive Study

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Abstract: **Introduction:** The skin is the largest organ of the integumentary system in human. Dermatological lesions are commonly encountered in all countries and it encompasses a wide spectrum, varies from country to country and various regions within a country. Skin diseases are much common in developing countries. The spectrum varies according to geographic distribution, gender, age, and coexisting disorder. We conducted this study to find out the prevalence of different skin lesions and to evaluate their frequency and site of distribution. **Aim of the Study:** The aim of this study was to find out the prevalence of different skin lesions and to evaluate their frequency and site of distribution. **Methods:** This was a descriptive study and was conducted in the Department of Histopathology of Bangladesh Specialized Hospital, Dhaka, Bangladesh during the period from January 2019 to December 2021. We included 133 skin biopsies in our study. **Result:** Among 133 skin biopsies examined, non-infectious vesicobullous and vesicopustular disease were found in 53 (48.18%) cases followed by microbial disease in 20 (18.18%) and non-infectious erythematous papular and squamous disease in 28 (21.05%) cases. Lichen simplex chronicus was the most common vesicobullous disease seen in 08 (15.09%) cases. Dermatophytes were the commonest microbial disease found in 10 (50%) cases. The commonest non-infectious erythematous papular and squamous disease was lichen planus and psoriasis 08 (15.09%) cases. The commonest neoplastic lesion was keratinocytic tumor seen in 13 (56.53%) cases. The commonest tumor of the skin was seborrheic keratosis and squamous cell carcinoma in 13 (56.53%) cases. Upper extremities were the most frequently involved site by skin lesions. **Conclusion:** In our study prevalence of lichen simplex chronicus was higher. We observed a wide spectrum of skin lesions ranging from dermatitis to malignant neoplasm. The importance of specific histomorphological features lies in distinguishing various skin lesions and play a major role in making the final diagnosis of these diverse skin lesions. This highlights the role of histopathological examination for the proper management of patient. **Keywords:** Histomorphology, Skin lesion, Leprosy, Dermatophytes, Dermatitis, Papular.

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INTRODUCTION

The skin is the largest organ of the integumentary system in human [1]. Different skin diseases comprise of non-specific, non-infectious and infectious diseases to various types of benign and malignant tumorous (neoplastic) lesions. Dermatological lesions are commonly encountered in all countries and it encompasses a wide spectrum,

varies from country to country and various regions within a country. This variation is also influenced by sex, age and associated systemic disorders, economy, literacy, racial and social customs. Its prevalence ranges from 6.3%-11.16% [2]. Dermatological disorders are common in all countries but the pattern of lesions varies greatly. Skin diseases are influenced by various factors like

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environment, economy, literacy, racial and social customs [3]. Majority of skin lesions are diagnosed on the basis of clinical presentation & history. The histological diagnosis in turn is used by clinicians to aid in the management of patients and most appropriate clinical interventions [4]. Not all the skin lesions require skin biopsy but some of them require it for proper diagnosis and identification of etiological agent. With growing awareness and improvement in medical facilities, spectrum of diseases has been highly variable. Clinical diagnosis of different entities is often difficult, as most of the appendageal tumors present as asymptomatic papules or nodules. Anatomical location, number and distribution of lesions provide important clue but histopathology is invaluable in confirmation of the diagnosis [5]. Incidence of skin tumours has increased dramatically over the last several decades at least in part as a result of increasing sun exposure necessitating vigorous surveillance [6]. Skin tumours at time pose a great challenge to surgeons as some of benign tumours can be confused with malignant tumours and it is vitally important to intervene as some can become metastatic resulting in morbidity and mortality. Most of the time clinical diagnosis may not be accurate because of similarity in gross appearance [7]. Many of the skin lesions are diagnosed clinically based on the history and examination of the lesions. However, some of them require additional simple diagnostic procedures to make final diagnosis such as potassium hydroxide preparation, Tzanck smear, examination under wood's lamp and skin biopsy in around 1.3% of patients [2]. The histomorphology of skin disorders shows wide spectrum, however the clinical presentations are very few like hypopigmentation, hyperpigmentation, macules, papules, nodules and few others [8]. Accurate diagnosis of skin disorders is of utmost importance as treatment is varied for different skin disorders presenting with the similar clinical lesions [9]. Histopathological study required for definitive diagnosis and identifying causative agent with special stains wherever feasible, help clinicians to decide the appropriate management and clinical intervention [2]. Despite advancement in molecular techniques in diagnosis and prognosis, morphology still remains the basis of diagnosis for most neoplasms and many inflammatory dermatoses [10]. In neoplastic lesions, the histopathology of inflammatory skin diseases frequently does not exhibit a one-to-one correlation with a single diagnosis and requires correlation with the Clinical presentation for a definitive diagnosis. In some cases, a specific histologic diagnosis is not required by the dermatologist while few others, accurate histological diagnoses plays the critical role

of role in determining the course of treatment [11]. The pattern of skin diseases shows variation from country to country and even region to region within a country due to different ecological factors, genetics, hygienic standards and social customs [12]. Majority of skin lesions presenting in skin outpatient department can be diagnosed on the basis of clinical history and presentation. Only in lesions where clinical findings are insufficient to reach a conclusion biopsy is sent to assist in diagnosis. Commonly used skin biopsy techniques are punch biopsy, superficial and deep shave biopsy, deep incisional biopsy, complete excision, and curettage [9]. As the understanding of inflammatory skin disorders is incomplete and continues to evolve, it becomes obvious that no single uniform classification of disease has been or is likely to be perfect for all uses. Instead, as many disorders as possible are classified by presumed etiology, and the rest are classified based on their most distinctive features [13].

OBJECTIVE OF THE STUDY

The main objective of the study was to find out the prevalence of different skin lesions and to evaluate their frequency and site of distribution.

METHODOLOGY & MATERIALS

This was a descriptive study and was conducted in the Department of Histopathology of Bangladesh Specialized Hospital, Dhaka, Bangladesh during the period from January 2019 to December 2021. We included 133 skin biopsies in our study. These are the following criteria to be eligible for the enrollment as our study participants: a) All the patients who were subjected to skin biopsy; b) All biopsies that showed definite signs of skin pathology were included in this study. The biopsies taken were fixed in 10% formalin and then processed. Four microns thick sections were taken and stained with Haematoxylin and Eosin stain (H&E). Special stains like Ziehl- Neelsen (ZN), Periodic Acid Schiff (PAS) and Fite-Faraco were used whenever required.

All data were recorded systematically in preformed data collection form and quantitative data was expressed as mean and standard deviation and qualitative data was expressed as frequency distribution and percentage. Statistical analysis was performed by using SPSS (Statistical Package for Social Sciences) for windows version 10. Probability value <0.05 was considered as level of significance. The study was approved by Ethical Review Committee of Bangladesh Specialized Hospital, Dhaka, Bangladesh.

RESULT

Table 1: Type of skin lesions according to histopathology

Serial No.	Number of the skin lesion (%)
1. Non-neoplastic	110 (82.71)
2. Neoplastic	23 (17.29)
Total	133 (100)

In table 1 we found that out of 133 skin biopsies, 110 (82.71%) were non-neoplastic and 23 (17.29%) were neoplastic.

Table 2: Distribution of cases according to histopathological patterns of non-neoplastic

Serial No.	Number of the skin lesion (%)
Infectious lesions	20 (18.18)
Non-infectious vesiculobullous and vesiculopustular lesions	53 (48.18)
Granulomatous lesions	05 (4.54)
Pigmented diseases	12 (10.91)
Tumor of epidermis	06 (5.45)
Tumor of appendages and soft tissue	08 (7.27)
Vascular diseases	04 (3.64)
Connective tissue disorders	02 (1.81)
Total (n=110)	

Table 2 shows the most common non-neoplastic histopathological pattern observed was non-infectious vesiculobullous and vesicopustular disease comprising of 53 (48.18%) cases followed

by microbial disease 20 (18.18%) cases and non-infectious pigmented lesion 12 (10.91%). Connective tissue disease was the least commonly seen in 2 (1.81%) cases.

Table 3: Classification of skin lesions in various groups according to the histopathological examination

Serial No.	Number of the skin lesion (n=53) (%)
A) Non-infectious vesiculobullous and vesiculopustular lesions,	
1. Spongiotic dermatitis	07 (13.02)
2. Lichen simplex chronicus	08 (15.09)
3. Pemphigus	06 (11.32)
4. Subepidermal bullous disease	04 (7.55)
B) Non-infectious erythematous papular and squamous disease	
5. Erythema Dyschromicum perstans	03 (5.66)
6. Lichen planus	08 (15.09)
7. Psoriasis	08 (15.09)
8. Pityriasis rosea	02 (3.77)
9. Lichen planus pigmentosus	02 (3.77)
10. Urticaria	05 (9.43)

Table 3 shows that most common vesiculobullous and vesiculopustular disease was lichen simplex chronicus 08 (15.09%) cases, followed by spongiotic dermatitis 7 (13.02%) cases and pemphigus 06 (11.32%) cases. Among

noninfectious erythematous papular and squamous disease, lichen planus and psoriasis were the commonest diseases seen in 8 (15.09%) cases followed by urticaria seen in 5 (9.43%) cases.

Table 4: Classification of skin lesions and cell carcinoma according to the histopathological examination

Serial No.	Number of the skin lesion, n=23 (%)
1. Seborrheic keratosis	11 (47.83)
2. Squamous cell carcinoma	02 (8.69)
3. Melanocytic lesion	06 (26.09)
4. Basal cell carcinoma	04 (17.39)

In table 4 we found that among all neoplastic skin lesions, keratinocytic tumor was most commonly seen in 13 (56.53%) cases followed by melanocytic tumors seen in 06 (26.09%) cases. The seborrheic keratosis 11 (47.83%) and squamous cell carcinoma 02 (8.69%) was a commonest keratinocytic tumor seen. Intra-dermal nevus was the commonest melanocytic lesion observed in 06 (26.09%).

DISCUSSION

Skin lesions are due to imbalance in homeostasis that results in conditions as diverse as wrinkles and hair loss, rashes and blisters and life-threatening cancers [14]. A skin biopsy may not be required in all the skin lesions but for the proper diagnosis and identification of etiological agents, dermatologist used to do it [15]. This study showed the highest frequency of skin disease in the age range of 41-50 years. In contrast to the finding of this study, Bezbaruah R *et al.*, [14] and Abubaker SD *et al.*, [16] found the highest frequency in 21- 30 years whereas Adhikari RC *et al.*, [17] found the highest frequency in 31-40 years.

The current study shows slight female preponderance which was similar to the study done by Bezbaruah R *et al.*, [14] and Adhikari *et al.*, [17] however Dayal *et al.*, [18] and Kumar V *et al.*, [19] found male predominance in their studies. Our study showed 82.71% of non-neoplastic skin lesions which was much higher in comparison to those of neoplastic skin lesions (17.29%). However, Bezbaruah R *et al.*, [14] Abubaker SD *et al.*, [16] and Sushma *et al.*, [15] in their study found neoplastic lesions as a major entity. Lichen simplex chronicus (15.09%) was the most common vesicobullous disease found in our study. A similar result was also found in the study done by Adhikari *et al.*, [17] and Ogun GO *et al.*, [20] Agrawal S *et al.*, and Reddy *et al.*, found psoriasis and lichen planus as a commonest papulosquamous disease [21, 22]. And lichen planus and psoriasis were the commonest papulosquamous disease also found in our study. Dermatophytes (50%) were a commonest infective skin lesion in our study followed by tuberculosis (20%). Agrawal *et al.*, also found leprosy as a commonest infectious skin disease in their study. [21] In contrast to our study, previous studies done in by Karn *et al.*, and Walker *et al.*, [23, 24] found dermatophytosis as the commonest infective skin lesion and they concluded that hot and humid climatic conditions in a certain geographic region may be the possible cause for the increase in prevalence in fungal infections.

Hansen's disease, in India continues to account for 60% of new cases reported globally each year. Skin biopsy is of vital importance in Hansen's

disease for not only diagnosis but also for correct histological classification, bacillary index and follow up of treatment response and disease activity. In our study it was found 15% cases. It is also helpful in differentiating relapse from reversal reaction and to categories lepromatous reaction into type 1 and 2 [25]. Diagnosis of Leprosy can be made on the basis of clinical findings and skin biopsy is indicated if the diagnosis is in doubt, as in indeterminate leprosy and when other granulomatous disorders like lupus vulgaris or sarcoidosis cannot be ruled out [26]. Since Multibacillary Leprosy forms can easily be diagnosed clinically therefore lesser skin biopsies from these lesions are sent to histopathology for confirmation. Leprosy was more commonly seen in males than females. This consistent with Veena *et al.*, Vasikar *et al.*, [27, 28] Most common vesico-bullous disease in our study is Lichen simplex chronicus 08 cases; (15.09%) closely followed by Pemphigus Vulgaris (06 cases; 11.32%). This is consistent with studies done by Gupta *et al.*, and Adhikari *et al.*, [17,29] Pemphigus Vulgaris was the most common vesico-bullous lesion in studies done by Mamatha *et al.*, Narang *et al.*, Kumar *et al.*, [2, 19, 30].

The common neoplastic lesion observed in our study was keratinocytic tumor (56.53%) followed by the melanocytic tumor (26.09%). However, the overall commonest lesion was intra-dermal nevus. Among keratinocytic tumors, the seborrheic keratosis (47.83%) and squamous cell carcinoma (8.69%) cases. These findings were comparable to the study done by Thapa *et al.*, and Rauniyar *et al.*, [31-33]. The skin lesions were commonly seen in the upper and lower extremities in our study. Adhikari *et al.*, in their study also found upper and lower extremities as the commonest site of involvement by skin lesions [17]. However, in contrast to our study, Bezbaruah R *et al.*, found eyelid and lip as a frequent site of involvement [14].

Limitations of the Study

Limitations of present study were lack of clinicohistological correlation and we didn't follow-up for a long period.

CONCLUSION AND RECOMMENDATIONS

In our study prevalence of lichen simplex chronicus was higher. We observed a wide spectrum of skin lesions ranging from dermatitis to malignant neoplasm. The importance of specific histomorphological features lies in distinguishing various skin lesions and play a major role in making the final diagnosis of diverse skin lesions. This highlights the role of histopathological examination for the proper management of patient. Seborrheic keratosis and melanocytic lesion was most commonly observed neoplastic skin lesion in our

study. So, further study with a prospective and longitudinal study design including larger sample size needs to be done to prevent the prevalence of neoplastic skin diseases.

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