Histopathology spectrum of skin lesions in teaching institution

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Abstract

Introduction: The skin has many functions and is a complex organ. Epidermis with skin adnexa, melanocytic system, dermis and subcutis are three main anatomic components of skin. Skin diseases are common in developing countries, prevalent among all age groups and up to 2000 skin diseases are known until now. Skin diseases show many different geographical patterns which range from simple vesicular non-neoplastic lesion to fatal neoplastic lesion. Histopathological examination of skin biopsy is necessary for accurate diagnosis, to identify etiological agents and to guide dermatologist or clinician for deciding appropriate management.

Aim and Objectives: Present study was carried out to understand prevalence and spectrum of various skin lesion in correlation with age, sex and site of involvement at tertiary care hospital and so to educate community and physicians accordingly after study results. Material and Methods: Study Design: Non-interventional, cross-sectional, retrospective study was carried out on all skin biopsies at department of pathology, government medical college Bhavnagar, Gujarat, irrespective of age, sex and clinical diagnosis for Study Duration: from January 2017 to January 2020 for three years. Results: Out of 610 biopsies, Seborrheic keratosis, Leprosy and Basal cell carcinoma were commonly observed non-neoplastic, infective and neoplastic skin lesions, respectively. In our study, most common involved age group is >60 years and male preponderance. Conclusion: Leprosy and Basal cell carcinoma were most commonly observed infective and neoplastic skin lesion in our study respectively. Therefore, community should be educated to prevent airborne droplet transmission and repeated unprotected ultraviolet light sun exposure to reduce the prevalence of both these diseases. We suggest such type of study in different geographical area to plan preventive strategy to reduce morbidity due to various skin lesion.

Keywords: Basal cell carcinoma, histopathology, leprosy, skin lesion

Introduction

The skin has many functions and is a complex organ. Epidermis with skin adnexa, melanocytic system, dermis and subcutis are three main anatomic components of skin. Skin diseases are common in developing countries, prevalent among all age groups and up to 2000 skin diseases are known until now. There is wide variation in the pattern of skin disease between different countries and regions. Variation may be due to factors like age, sex, environment, racial and social customs.

Skin problems are very commonly encountered health problems in India. Prevalence ranges from 6.3 to 11.6%. Skin diseases show many different patterns which range from simple vesicular non-neoplastic lesion to fatal neoplastic lesion.

Histopathological examination of skin biopsy is necessary for accurate diagnosis, to identify etiological agents and to guide dermatologist or clinician for deciding appropriate management.

Until now, there are only few studies about understanding spectrum of various skin lesion.
Goswami, et al.: Histopathology of skin disorders

Aim and Objective

Present study was carried out to understand prevalence and spectrum of various skin lesions in correlation with age, sex and site of involvement at tertiary care hospital and so to educate community and physicians accordingly after study results.

Material and Methods

Study design

Non-interventional, cross-sectional, retrospective study was carried out on all skin biopsies at department of pathology, government medical college Bhavnagar, Gujarat, irrespective of age, sex and clinical diagnosis.

Study duration

From January 2017 to January 2020 for three years.

Specimen collection and processing

All received skin biopsies were fixed in 10% buffered formalin and then tissues were processed. Paraffin wax embedding was done and 5 mm thin sections were cut in microtome from prepared tissue blocks. All sections were stained with routine hematoxylin and eosin stain. Special stains like Fite-Faraco, Ziehl-Neelson, Periodic acid-Schiff stain and Masson trichome stain done wherever necessary to confirm the diagnosis.

Inclusion criteria

All skin biopsies received in histopathological section in mentioned study duration were included irrespective of age, sex and clinical diagnosis.

Exclusion criteria

1. Inadequate skin biopsy samples. Patient with history of chemotherapy and radiotherapy were excluded from study.
2. Poorly fixed or autolyzed skin biopsies were also not included in study.

Final diagnosis was given after histopathological examination and special stain wherever necessary. All collected data were recorded and tabulated.

Results

Out of 610 biopsies, 531 (87.1%) cases were non-neoplastic, 29 (4.8%) cases were neoplastic and 50 (8.1%) cases were inconclusive [Table 1].

The most common non-neoplastic histopathological pattern observed was non-infectious vesiculobullous and vesiculopustular disease 177 (33.3%) [Table 2].

Most common vesiculobulolous and vesiculopustular disease was seborrheic keratosis 94 (17.7%) cases, followed by pemphigus 45 (8.5%) cases and dermatitis 25 (4.7%) cases. In infectious disease, leprosy was the commonest 120 (22.6%) cases followed by verruca vulgaris 22 (4.1%) cases. Lichen planus 33 (6.2%) was the commonest in non-infectious erythematous papular and squamous disease followed by psoriasis 28 (5.3%) cases [Table 2].

In our study, most common age group involved having skin lesion is more than 60 years and male preponderance.

In neoplastic lesions, most common was basal cell carcinoma 13 (44.8%) cases, followed by squamous cell carcinoma 12 (41.4%) cases and melanoma 2 (6.9%) cases [Table 3].

In non-neoplastic lesion, commonest involved site was head and neck 151 (28%), followed by back 117 (22%) and lower extremity 89 (16.7%) cases. In neoplastic lesion, commonest involved site was head and neck 17 (58%), followed by lower extremity 6 (20%) and trunk 3 (10%) cases.

| Table 1: Type of skin lesions according to histopathology |
|-----------------------------------------------|-----------------|
| Type of skin lesion                        | No. of cases (%) |
| Non-neoplastic lesion                      | 531 (87.1%)     |
| Neoplastic lesion                          | 29 (4.8%)       |
| Inconclusive                               | 50 (8.1%)       |

| Table 2: Type of non-neoplastic lesion       |
|-----------------------------------------------|
| Skin Lesions                        | No. of cases (%) |
| Infectious Lesion                     | 151 (28.4%)     |
| Non-infectious vesiculobulous and vesiculopustular disease | 177 (33.3%) |
| Non-infectious granuloma              | 3 (0.6%)        |
| Connective tissue disease             | 19 (3.6%)       |
| Photosensitivity                      | 3 (0.6%)        |
| Perforating disease                   | 4 (0.8%)        |
| Inflammatory disease                  | 1 (0.2%)        |
| Metabolic disease                     | 2 (0.4%)        |
| Pigmented disease                     | 11 (2.0%)       |
| Tumors of cyst and epidermis          | 27 (5.0%)       |
| Tumors of appendages                  | 2 (0.4%)        |
| Adnexal tumors                        | 3 (0.6%)        |
| Non-infectious erythematous papular and squamous disease | 89 (16.8%) |
| Congenital disease                    | 7 (1.3%)        |
| Vascular disease                      | 18 (3.4%)       |
| Autoimmune disease                    | 1 (0.2%)        |
| Fibrous disease                       | 8 (1.5%)        |
| Miscellaneous                         | 4 (0.8%)        |

| Table 3: Types of Neoplastic lesion        |
|---------------------------------------------|
| Skin lesion                      | No. of cases (%) |
| Carcinoma in situ                  | 2 (6.9%)        |
| Squamous cell carcinoma            | 12 (41.4%)      |
| Basal cell carcinoma               | 13 (44.8%)      |
| Melanoma                          | 2 (6.9%)        |
As per the results, the histopathology microscopy are shown in Figures 1-4.

**Discussion**

In our study, highest frequency of skin disease is in the age group of >60 years. In contrast to Bezbaruah R et al[11] and Abubakar SD et al[12] where highest frequency was in 21–30 years of age whereas Adhikari RC et al[3] found the highest frequency in 31–40 years of age.

Our study showed male predominance which was similar to Dayal et al[13] and Kumar V et al[14] and in contrast to female predominance in Bezbaruah R et al[11] and Adhikari et al[3].

In our study, 87.1% cases are non-neoplastic skin lesion which is much higher in comparison to neoplastic skin lesion (4.8%). However, in Bezbaruah R et al[11] and Abubakar SD et al[12]; neoplastic lesions observed as a major skin lesion entity in comparison to non-neoplastic lesion. Seborrheic keratosis (17.7%) was the commonest non-infectious vesiculobullous and vesiculopustular disease in our study.

However, in contrast to our study finding, spongiotic dermatitis commonly observed lesion in Adhikari et al[3]. In our study, lichen planus commonly observed non-infectious erythematous papular and squamous disease which is similar to Agrawal S et al[15] and Reddy et al[16].

Leprosy was commonly observed infective skin lesion in our study which was similar to result of Agrawal et al[15]. It suggests that airborne contagious skin disease like leprosy is more common in this study geographical area. Therefore, community should be educated to take preventive measures to prevent airborne transmission of leprosy like skin disease. However, in contrast to our study, dermatophytosis was commonest infective skin lesion in study done by Nepal by Karn et al[17] and Walker et al[18]. This observed difference could be due to hot and humid weather condition in certain geographical area may be the cause of increased prevalence of dermatophytosis like fungal infection.

Basal cell carcinoma was commonest neoplastic skin lesion observed in our study (44.8%) which was in contrast to study results of Thapa et al[19] and Rauniyar et al[20] in which keratinocytic tumor were commonly observed neoplastic skin lesion. Hence, it is understandable that ultraviolet (UV) rays from sunlight could be the possible cause of basal cell carcinoma in our geographical area. Community can be educated to minimize repeated and unprotected sunlight exposure after 10 a.m.
In our study, inconclusive results were obtained in about 6.2% cases.

Upper extremity and back were the commonest site involved in our study, in contrast to Bezbaruah R et al.[11] where eyelid and lip were the commonest site of involvement.

**Conclusion**

Leprosy and Basal cell carcinoma were most commonly observed infective and neoplastic skin lesion in our study, respectively. Therefore, community should be educated to prevent air borne droplet transmission and repeated unprotected UV light sun exposure to reduce the prevalence of both these diseases. It is advisable that family physician should be encouraged to take skin biopsy for histopathology examination when implacable for making final diagnosis among diverse skin lesion. We suggest such type of study in different geographical area to plan preventive strategy to reduce morbidity due to various skin lesion.

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**Conflicts of interest**

There are no conflicts of interest.

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