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A variety of skin tumors arise from the epidermis, epidermal appendages, dermis and subcutis. Many a time clinical diagnosis becomes difficult, when histopathological examination (HPE) aids in arriving at the correct diagnosis

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Abstract

Objectives: To study the clinical spectrum and histopathological features of suspected skin tumors, analyze the concurrence rate between the clinical and histopathological diagnoses and highlight the role of histopathology in diagnosing skin tumors.

Materials and Method: Suspected skin tumours are as a routine biopsied for histopathological examination. A retrospective study was conducted from the documented data available over a period of 8 months in the department of dermato-venereo-leprology at a tertiary care centre. A total of 65 patients with suspected skin tumors had undergone skin biopsy for histopathological examination after clinical evaluation. Sections had been stained with hematoxylin and eosin for basic study and immunohistochemistry in difficult cases.

Results: Out of 65 clinically suspected cases, only 59(90.7%) were skin tumors; among them, clinical diagnosis correlated with histopathological features in only 35(53.8%) patients. In 19(29.2%) cases, HPE was needed for accurate diagnosis and 5(7.69%) patients needed Immunohistochemistry in addition. The most common age group was 18-35 years. The male female ratio was 1.2 1. The majority of lesions were located on the head and neck (34 cases; 57%) and the least on the vulva (1 case; 1.6%). Benign tumors were mostly soft tissue and adnexal tumors, the most common being neurofibroma; malignant lesions included basal cell carcinoma, squamous cell carcinoma and mycosis fungoides.

Conclusion: Histopathological examination is crucial to arrive at the correct diagnosis of clinically suspected skin tumors; this study emphasizes its pivotal role in the accurate diagnosis of skin tumors.

Keyword: Skin tumors, Clinico pathological, Correlation, Retrospective study

Introduction

The skin, the largest organ with a complex structure, serves many functions.(1) A variety of tumours arising from it are encountered in clinical practice. The ability to properly diagnose and treat them is a vital skill for clinicians. Most present as asymptomatic papules, plaques or nodules; the anatomic location, number and distribution provide important clues. Yet, clinical diagnosis is often difficult and histopathology becomes invaluable in confirming the diagnosis. The diversity of skin tumours(2) and the easy availability of tissue for histopathological examination have made their study interesting. Any suspected skin tumour should be biopsied for histopathological examination to aid in evaluation and management and to exclude malignancy.(3) In India, malignant skin tumours constitute about 1-2% of all cancers, cancer registries reporting a cumulative incidence varying from 0.5 to 2 per 100000 population;(4) the incidence continues to rise, emphasizing the need for accurate early diagnosis.

Aims and Objectives

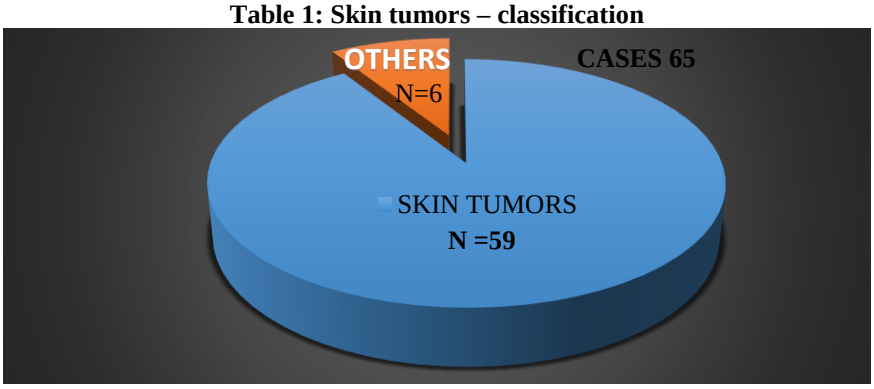
a. To study the clinical spectrum and histopathological features of suspected skin tumors.
b. To analyze the clinicopathological correlation and concurrence rate between clinical diagnoses and histopathological findings.
c. To highlight the role of histopathology in the diagnosis of skin tumors.

Materials and Method

Suspected skin tumours are as a routine biopsied for histopathological examination**.** A retrospective study was conducted from the documented data available over a period of 8 months in the department of dermato-venereo-leprology at a tertiary care centre. A total of 65 patients with suspected skin tumors had undergone skin biopsy for histopathological examination after clinical evaluation. A detailed clinical history was obtained; dermatological examination was carried out to evaluate the type, distribution, configuration and topography of lesions. The lesion was biopsied after obtaining an informed written consent. Punch biopsy was preferred for smaller lesions; excision biopsy was done for larger ones. Sections were processed for histopathological examination. They had been stained by routine hematoxylin and eosin stain for basic study. In select cases immunohistochemistry was done for confirming the diagnosis.

Results

Table 1: Skin tumors – classification



Of the 65 patients evaluated for skin tumors, after histopatholgical examination 59 (90.7%) had confirmed skin tumors; 6 (9.3%) had other dermatological conditions.

The tumours in the 59 patients were broadly classified according to WHO Classification of Skin Tumours -2006.[5]

Clinicopathological features of individual tumours

Keratinocytic/epidermal tumours

Seborrheic keratosis: Morphologically two were papillomatous, two were nodular; histologically, three were of acanthotic type and one was keratotic. HPE showed cells having a basaloid appearance with interspersed horn cyst filled with keratin.

Keratoacanthoma: Symmetric firm, dome shaped nodules with central keratin filled crater was present, in one patient on the leg and in another on the face; on HPE showed buttressing of the epidermis over the side of the crater.

Squamous cell carcinoma (SCC): Two verrucous, fungating nodules were clinically diagnosed as SCC; on HPE, one showed moderately differentiated and the other showed poorly differentiated SCC.

Basal cell carcinoma (BCC): Two cases of pigmented BCC, present over the head and neck on HPE showed peripheral palisading of nuclei of basaloid tumor masses and peritumoral clefting artefact (**Fig. 2a, b**).

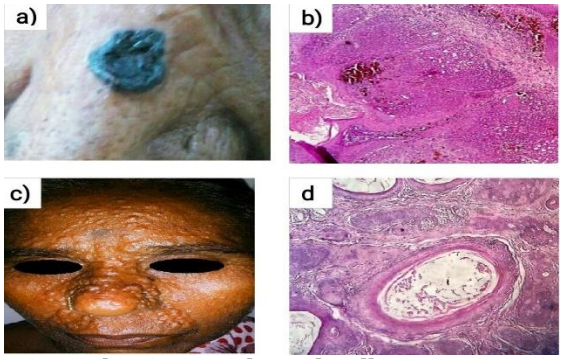


Fig. 2a, b: Pigmented Basal Cell Carcinoma 2a) clinical picture 2b) peripheral palisading of nuclei of basaloid tumor masses and peritumoral clefting artifact (10X)
c, d: Trichoepithelioma 2c) multiple skin coloured smooth papules & nodules over face 2d) dermis shows cluster of basaloid cells within fibrous stroma and cystic spaces containing keratin (10X)

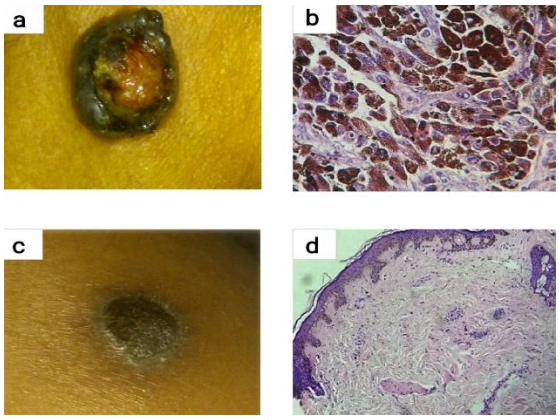


Fig. 3
(a, b) **Malignant melanoma** 3a) clinical picture 3b) round to oval cells with pleomorphic, large hyperchromatic nuclei containing melanin pigment (40) (c, d) **Dermatofibroma** 3c) brown coloured nodule 3d) dermis shows storiform arrangement of spindle shaped cells (10X)

Benign Adnexal Tumors

Syringoma: Of 5 cases, one had vulval syringoma and one eruptive syringoma with lesions present on both upper limbs, abdomen and neck. On HPE were seen ducts and cysts whose walls were lined by two rows of epithelial cells; some ducts possessing small, comma like tails of epithelial cells giving a "tadpole" appearance.

Trichoepithelioma: Patient came with multiple skin coloured papules and nodules over face. On HPE, dermis shows cluster of basaloid cells within fibrous stroma and cystic spaces containing keratin (Fig. 3).

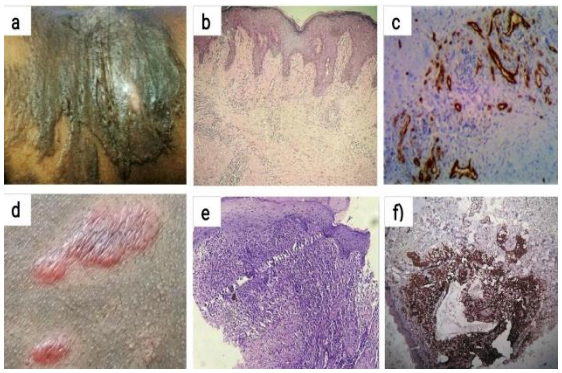


Fig. 4

(a, b, c) **Benign lymphangioendothelioma** 4a) well defined hyperpigmented plaque 4b) dermis shows irregular thin walled vascular channels which appeared empty (10X) 4c) CD31 marker positivity (40X) (d, e, f) **Solitary mastocytoma** 4d) erythematous plaques 4e) dermis shows numerous mast cells (10X) 4f) CD117 marker positivity (10X)

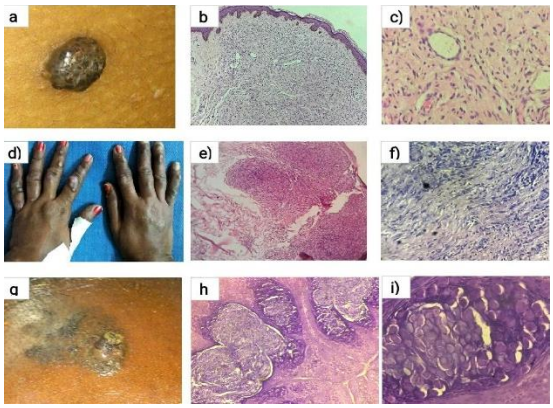


Fig. 5

(a, b, c) **Neurofibroma** 5a) clinically diagnosed as dermatofibroma but on HPE 5b) dermis showed thin spindle cells with elongated wavy nuclei spaced among wavy collagenous strands (10X) 5c) spindle cells with elongated wavy nuclei (40X) (d, e, f) **Histoid Hansen** 5d) clinically diagnosed as multicentric reticulohistocytosis but on HPE 5e) dermis shows extensive cellular infiltration of macrophages, plasma cells with histiocytes arranged in storifrom pattern (10X) 5f) Fite Faraco staining shows numerous acid fast bacilli (40X) (g, h, i) **Molluscum contagiosum** 5g) clinically diagnosed as keratoacanthoma but on HPE 5h) shows lobules containing hyalinized molluscum bodies (10X) 5i) Molluscum bodies (Henderson- Peterson bodies- intracyoplasmic)(40X)

Melanocytic tumors: One case of melanoma was seen over the lower extremity. HPE showed a tumor composed of round to oval cells with pleomorphic, large hyperchromatic nuclei containing melanin pigment.

Neural tumors

Neurofibroma: This was found to be the most common individual tumor in this study. Out of ten cases, five had family history. It was found to be more common in females with head and neck being the most common region involved. On HPE, thin spindle cells with elongated wavy nuclei were seen spaced among wavy collagenous strands.

Fibrous tumors

Dermatofibroma: Four cases were encountered on the extremities as small, firm, solitary, reddish to brownish colored nodules. On HPE, all showed storiform arrangement of spindle shaped cells.

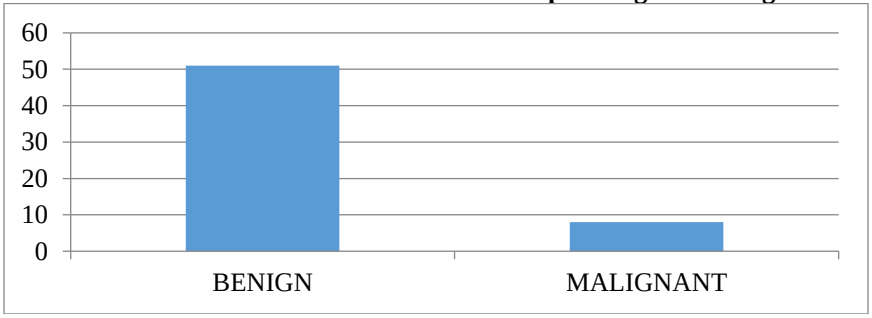
Vascular tumors

Benign lymphangioendothelioma: It was present in a 52-year-old female around the knee joint, initially clinically diagnosed as cutaneous tuberculosis but histopathology showed irregular thin walled vascular channels which appeared empty. For accurate diagnosis immunohistochemistry was done which showed positivity for CD31.

Others

Solitary mastocytoma: In this study 2 cases were seen, both in children as itchy, erythematous plaques over the back. HPE showed dermal mast cells. For accurate diagnosis immunohistochemistry was done which was positive for CD11.

Table 2: Skin tumors - Clinical and histopathological findings

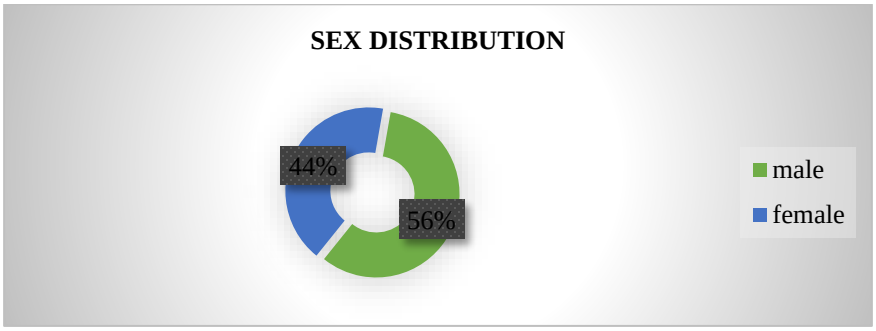


An analysis of this study showed that benign tumors were more common than malignant tumors. 51 (86.4%) of the 59 cutaneous tumors were benign and 8 (13.6%) were malignant.

The most common benign tumors were adnexal tumors and the least were fibrous tumors. The most common malignant tumors were keratinocytic tumors. (**Table 2)**

In the present study, skin tumors were present in all age groups; the peak age incidence was between 18-35 years (34.7%).

Maximum number of benign tumors was found in the 2nd-3rd decade and malignant tumors in the 6th-7th decade.



Both benign and malignant skin tumors were more common in males; male: female ratio being 1.2:1.

While studying the anatomical distribution of skin tumors, it was observed that the majority were found on the head and neck (34 cases; 51%); followed by extremities and the least on the vulva (1 case; 1.5%).

In our study the most common individual benign tumor found was neurofibroma (17%) followed by syringoma (8.4%). Among malignant tumors, the most common was squamous cell carcinoma (3.3%).

In this study, the correlation between clinical diagnoses and histopathological features has been analyzed **(Table 3)**.

Among the 65 clinically suspected cases, 59 were skin tumors. The clinical diagnoses showed positive correlation with the histopathological finding in 35 cases.

Routine histopathology helped in arriving at an accurate diagnosis in 19 of the remaining 24 cases, while immunohistochemistry was required in 5 cases for diagnosis.

Regarding negative correlation in this study, one among the 10 clinically diagnosed neurofibroma cases proved to be dermatofibroma on histopathological examination(HPE).

One among 4 clinically diagnosed dermatofibroma cases showed HPE features of neurofibroma;

Of clinically diagnosed eccrine hydrocystoma cases one was sebaceous hyperplasia and one of the two clinically diagnosed basal cell carcinoma cases histologically proved to be an irritated seborrheic keratosis.

HPE helped to identify a case of molluscum contagiosum out of 3 clinically diagnosed keratoacanthomas, a case of lymphangioma circumcriptum and 2 cases of angiokeratomas out of 3 clinically diagnosed vascular tumors and a case of Histoid Hansen clinically diagnosed as muti-centric reticulohistocytosis. This shows the pivotal role of histopathology in the accurate diagnosis of skin tumors.

Discussion

In the present study, skin tumors were present in all age groups; the peak age incidence was between 18-35 years (34.7%). Maximum benign tumors were found in the 2nd-3rd decade and malignant tumors in the 6th-7th decade. This is consistent with the study by Vaibhav Bari et al on histopathological review of 125 cases of skin tumours.[6]

Both benign and malignant skin tumors were more common in males. In the present study, there were 33 males (56%) & 26 females (44%); male: female ratio was 1.2:1. The incidence in males and females in the present study are comparable with those reported by Shivanand Gundalli et al who reported male: female incidence of 62.26% and 37.74%.[7]

In our study both SCC cases were in males; Reddy DJ and Rao KV,[8] Khalid M et al,[9] Ochicha O et al[10] reported 54% and 46% SCC cases in males and females respectively while Chakravarthy RC et al[11] reported 71.62% and 28.38% cases in males and females respectively.

While studying the anatomical distribution of skin tumors, it was observed that the majority of lesions were found on the head and neck (34 cases; 51%); followed by extremities and least on the vulva (1 case; 1.5%). In a previous study, equal number of skin tumors were reported on the head and neck and extremities 44.8%, of which face was the common site 35.2%.[6]

In our study, squamous cell carcinoma was found over the extremities, which is consistent with observations of Reddy DJ and Rao KV,[8] Chakravarthy RC et al,[11] Budhraja S N et al,[12] Khalid M et al.[9] Ochicha O et al[9] reported higher percentage of cases (68%) in the extremities.

In Indian studies, malignant melanoma accounted for 8.85% to 29.4% of all skin cancers.[11,12,13] The percentage incidence was low (1.5%) in our study. The foot was the most common site. Budhraja SN et al,[12] Chakravarthy RC et al,[11] Reddy DJ et al,[8] Ochicha O et al[10] also reported foot as the common site in 85.3%, 80%, 80% and 93% of the cases of malignant melanoma respectively.

Benign tumors (86.4% - 51 cases) were more common than malignant tumors(13.6% - 8 cases). The incidence of benign and malignant tumors was68.4% and 31.6% in the study by Har-Shai et al.[14] Malignant cutaneous neoplasia in different hospital based studies in India ranged from 1.87-8.84%.[4,11,12,15,16]

We studied a total of 16 adnexal tumors, out of which 15 (93.7%) were benign & 1 (6.3%) was malignant. Our findings correlate with that of Vaishnav & Dharkar[17] (1974), and Reddy et al[18] and Sirsat and Kail[19] who reported 89.58%, 69.41% and 68.64% as percentage incidence of benign & 10.42%, 30.59% and 31.36% for malignant adnexal tumors respectively.

Of the 59 skin tumors, in 35 cases, the clinical diagnoses showed positive correlation with the histopathological findings. Of the remaining 24 cases, routine histopathology aided in 19 and immunochemistry was required in 5 cases in arriving at an accurate diagnosis.

Conclusion

Skin tumors may at times be difficult to diagnose only by clinical examination. Here histopathology becomes crucial to arrive at the correct diagnosis. This study emphasizes the pivotal role of histopathology in the diagnosis of skin tumors.

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