

Spectrum of Cutaneous Tumors and Cysts at a Tertiary Care Centre

Geeta Pachori¹, Supriya Singh Toor², Manisha Jain³, Rashmi Sharma⁴, Tushar Bayla⁵

¹Senior Professor and Head, ²Resident, ⁴Assistant Professor, Department of Pathology J L N Medical College and Associated Group of Hospitals, Ajmer, ⁵Medical Officer, ³Senior Resident, Department of Pathology, Geetanjali Medical College and Hospital, Udaipur, Rajasthan, India

ABSTRACT

Introduction: Cutaneous tumors include a wide variety of benign and malignant tumors that originate from one of the normal constituents of the skin. Diagnosis of these tumors essentially relies on histopathology as their clinical presentation is very nonspecific. The aim of this study was to analyze the spectrum of cutaneous tumors and cysts.

Methodology: It was a descriptive study conducted on skin biopsy specimens received in the Department of Pathology, in a government medical college over a period of four years. Age of patients in the study ranged from 10 - 85 years. Histopathological diagnoses were categorized as per WHO classification of skin tumors.

Results: Out of 720 skin biopsies, 350 (48.61%) were cutaneous tumors, 335 (46.53%) cutaneous cysts, and 35 (4.86%) were miscellaneous lesions. Amongst the cutaneous tumors, most common lesions were keratinocytic tumors (21.81%), followed by melanocytic tumors (9.02%), soft tissue tumors (8.20%), appendageal tumors (7.66%), neural tumors (1.67%), and haematolymphoid tumors (0.28%). Most of the tumors were benign (82.78%) while only 17.22% were malignant. Overall, melanocytic naevi (7.36%) was the most common benign lesion while basal cell carcinoma (8.06%) was the most common malignant tumor.

Conclusion: Histopathological confirmation of malignant tumors carries significance pertaining to prognosis and possible treatment options. Histopathology is a reliable tool in confirming the exact nature and diagnosis of skin tumors and cysts. Hence, adequate biopsy material should be obtained in all such cases with doubtful clinical diagnosis.

INTRODUCTION

Cutaneous tumors originate from pleuripotent stem cells and differentiate towards uni-or multi-lineage tumor components. Benign tumors are encountered much more commonly than malignant tumors. They can be solitary or multiple, usually well demarcated lesions of slow growth potential.¹ Malignant tumors are much rarer, however, they follow more aggressive clinical course with rapid growth, change in shape, size, pigmentation and may even ulcerate. They have potential of nodal and distant metastasis, resulting in morbidity and mortality.² Skin tumors demonstrate an extreme variation in their clinical presentation, biologic behaviour, and histologic pattern. Some malignant tumors or pre-malignant lesions may mimic their benign counterparts. Thus, the value of histological examination of tissue biopsy cannot be overstressed. The purpose of this study was to assess the histological spectrum of cutaneous tumors and cysts with their distinguishing features to evade potential pitfalls between benign and malignant skin tumors; and cutaneous cysts.

METHODS

It was an observational study conducted on skin biopsy specimens received in the Department of Pathology in a Government Medical College of Rajasthan over a period of four years. The study was conducted retrospectively from July 2013 to June 2016, and prospectively from July 2016 to June 2017. A total of 1945 skin biopsies were received from the Department of Dermatology and Department of Surgery, out of which 720 were included in the study. Age of patients in this study ranged from 10 - 85 years. All the benign tumors, malignant tumors, and cutaneous cysts were included. Infective lesions and

inflammatory disorders including vesico-bullous disorders were excluded from the study. Although verrucas are HPV-related lesions of infective aetiology, they have been included under keratinocytic tumors as per WHO criteria.³

For the retrospective study, the paraffin embedded tissue blocks were retrieved, re-sectioned, and re-examined. For prospective study, samples were allowed to fix in formalin for 12-14 hours at room temperature. For gross sampling, size, shape, colour, external surface, cut surface, and consistency were noted. Further processing was done according to the size of the biopsy. For samples less than 3 mm in size, whole biopsy tissue was processed as such. For specimens between 4 mm to 6 mm in size, tissue was cut through the centre and both halves were processed. For samples of size 7 mm or more, 2-3 mm thick slice was cut from the centre and processed, and the remaining tissue was saved. For lesions that were clinically diagnosed as neoplastic and were large, margins were inked, and grossing was done. Histopathological analysis was carried out on paraffin embedded tissue sections which were stained with hematoxylin and eosin. Special stains like periodic acid-schiff (PAS) and reticulin stain (RS) were performed as and when required. The sections were first studied under the scanner view to study the outlines of section and then under higher magnification to study the cellular details. Histopathological diagnoses were categorized as per WHO classification (2006) of skin tumors³ (Figure 1).

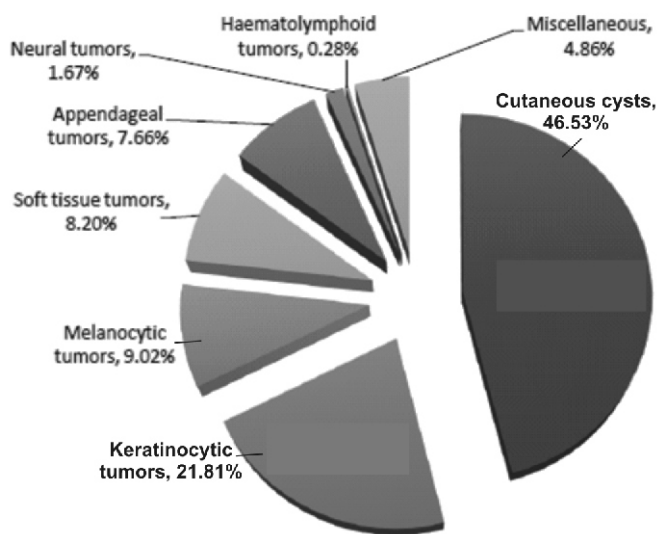


Figure 1: The overall incidence of skin tumors according to WHO classification.³

RESULTS

A total of 720 skin biopsy specimens were studied. Male: female ratio was 1:1.3 with slight female predominance, with maximum cases of benign lesions common among age group of 21-30 years and maximum malignant cases common between age group of 51-60 years. Out of 720 skin biopsies, there were 350 (48.61%) cutaneous tumors, 335 (46.53%) cutaneous cysts, and 35 (4.86%) miscellaneous lesions. Amongst the cutaneous tumors, most common lesions were keratinocytic tumors (157 cases, 21.81%), followed by melanocytic tumors (65 cases, 9.02%), soft tissue tumors (59 cases, 8.20%), appendageal tumors (55 cases, 7.66%), neural tumors (1.67%), and haematolymphoid tumors (0.28%). Benign skin tumors and cysts were more common constituting 82.78% of all biopsies received whereas only 17.22% malignant cases were encountered. Thus, the ratio of benign to malignant cases was established to be 4.8:1.

Malignant tumors (61.15%, 96 cases) formed higher proportion of keratinocytic tumor group, basal cell carcinoma being more common than squamous cell carcinoma. Benign tumors constituted 38.85% (61 cases) with verrucas being the most common pathology seen. In melanocytic tumor group, benign melanocytic lesions were 81.54% (53 cases) which were more common as compared to their malignant counterparts, 18.46% (12 cases). Dysplastic naevus is considered a pre-malignant condition that formed half (six cases, 9.23%) of the malignant melanocytic lesions. In soft tissue tumor group, majority were found to be of benign type (44 cases, 74.58%). Dermatofibrosarcoma protuberans (15 cases, 25.42%) was the only malignant tumor encountered from this group. The appendageal tumors were sub-categorized as tumors of apocrine and eccrine differentiation (24 cases, 43.64%), follicular differentiation (22 cases, 40%), and sebaceous differentiation (9 cases, 16.36%). Other categories of skin tumors included tumors of neural origin (12 cases, 1.67%) that included neurofibromas. Tumors of haematolymphoid origin (2 cases, 0.28%) included parapsoriasis, which is a pre-malignant lesion.

Cutaneous cysts formed the second largest group of lesions. Epidermoid cyst (327 cases, 97.61%) was the most common cyst of skin. The rest of the cases were of trichilemmal cyst (eight cases, 2.39%). They were all benign lesions. Miscellaneous lesions included calcinosis cutis (15 cases, 42.86%), acrochordon and corn (eight cases, 22.86% each), verrucous naevus, and metastatic

deposits (two cases, 5.71% each). Out of the two cases of metastatic deposits, one case was a known case of malignant mesothelioma and other one was a known case of adenocarcinoma of breast.

DISCUSSION

Most of the tumors in present study were benign (82.78%) while only 17.22% were found to be malignant. This was in concordance with other studies done across India as

Table 1: Total number of cases and relative percentage of all skin tumors diagnosed

Classification	Type	Pathological diagnosis	No of cases	Percentage	
A. Keratinocytic tumors	Benign	Verrucas	48	6.67%	
		Seborrheic keratosis	06	0.83%	
		Keratoacanthoma	07	0.97%	
	Malignant	Basal Cell carcinoma	58	8.06%	
Squamous cell carcinoma		38	5.28%		
B. Melanocytic tumors	Benign	Benign melanocytic naevi	53	7.36%	
	Pre-malignant	Dysplastic naevus	06	0.83%	
	Malignant	Malignant melanoma	06	0.83%	
C. Soft tissue tumors		Dermatofibrosarcoma protuberans	15	2.08%	
		Haemangioma	11	1.53%	
		Keloid	10	1.39%	
		Dermatofibroma (fibrous histiocytoma)	10	1.39%	
		Hypertrophic scar	09	1.25%	
		Pyogenic granuloma	02	0.28%	
		Lymphangioma	02	0.28%	
	D. Appendageal tumors	a. Apocrine and eccrine	Microcystic adnexal carcinoma	01	0.14%
			Paget's disease	01	0.14%
			Hidrocystoma	01	0.14%
Hidradenoma			17	2.36%	
Cylindroma			02	0.28%	
Mixed tumor (Chondroid Syringoma)			02	0.28%	
b. Follicular			Trichoblastoma	02	0.28%
		Trichoepithelioma	02	0.28%	
		Trichofolliculoma	02	0.28%	
		Pilomatricoma	16	2.22%	
		c. Sebaceous	Sebaceous carcinoma	01	0.14%
			Sebaceous Adenoma	02	0.28%
Sebaceous Hyperplasia			02	0.28%	
Naevus sebaceous	04		0.56%		
E. Neural Tumors		Neurofibroma	12	1.67%	
F. Haematolymphoid tumors		Parapsoriasis	02	0.28%	
	G. Cutaneous cysts	Epidermoid cyst	327	45.42%	
Trichilemmal cyst (Pilar cyst)		08	1.11%		
H. Miscellaneous		Calcinosis Cutis	15	2.08%	
		Acrocordon	08	1.11%	
		Corn	08	1.11%	
		Verrucous naevus	02	0.28%	
		Metastatic carcinoma	02	0.28%	
TOTAL			720	100%	

well as internationally. Sheenam A et al⁴ concluded that benign neoplasms were more frequently seen (72.8 %) than malignant neoplasms (27.2%). They also determined that amongst the malignant neoplasms, keratinocytic tumors were the commonest (77.3%). The present study had closely similar results with keratinocytic tumors accounting for 77.45%.

Wahab A J et al⁵ conducted a similar study in Tamil Nadu whose results were similar with the present study. They reported benign lesions to be more common (86.4%) than malignant skin lesions (13.6%). Most common group of benign tumors were adnexal tumors and most common malignant tumors were keratinocytic tumors, with squamous cell carcinoma leading in incidence. Park S H et al⁶ in their study reported that benign tumors and malignant tumors were 70.8% and 20.8% respectively, rest (8.47%) being pre-malignant lesions. On the contrary, the results of present study were dissimilar from the outcome of study conducted by Gundalli S et al⁷ in southern part of India that showed predominance of malignant tumors (60.16%) and lower number of benign tumors (39.84%).

A histopathological review of skin tumors reported dermatofibrosarcoma protuberans as the commonest malignant soft tissue tumor.⁸ Contrary to the studies published in India, Khalid M et al⁹ reported that basal cell carcinoma to be more common in Saudi Arabia followed by squamous cell carcinoma and melanoma. A study on incidence of non-melanoma skin cancers (NMSC) mentioned that although basal cell carcinoma is the commonest NMSC worldwide, but studies from various regions across India have reported squamous cell carcinoma to be the most prevalent tumor constituting 64.9% of all the cases.¹⁰

Singh S et al¹¹ found that skin adnexal tumors constituted 7.76% of total skin tumors. The results of the present study coincide very closely at 7.64%. They further stated that benign skin adnexal tumors constituted 84.21% and malignant tumors constituted 15.79%. Although benign skin adnexal tumors were found to be more common than malignant tumors in present study, the percentages varied by a small number (benign tumors- 90.91%, and malignant tumors-9.09%). Their study had highest frequency of eccrine tumors, similar to the findings of the present study.

Sharma A et al¹² showed most common tumors to be of

apocrine and eccrine differentiation (42.86%) followed by tumors of follicular differentiation (37.71%) and least common were tumors of sebaceous differentiation (21.43%).¹⁰ Kaur K et al¹³ showed most common tumors to be of follicular differentiation (39.09%), second most common tumors were of apocrine and eccrine differentiation (37.27%) and least common were tumors of sebaceous differentiation (23.64%). The results were similar to present study. The difference appeared when comparison was made with respect to incidence of benign and malignant adnexal tumors. Sharma A et al¹² concluded benign tumors to be 80.36% and malignant tumors to be 19.64%. Kaur K et al¹³ showed similar results with benign tumors comprising 82.73% and malignant tumors as 17.27%. The present study showed higher number of benign tumors and lesser number of malignant tumors when compared for their outcomes. A study in Nepal with highly similar outcomes with present study reported epidermal keratinous cyst as the commonest cutaneous cyst and squamous cell carcinoma as the commonest cutaneous tumor.¹⁴

Ochicha O et al¹⁵ compared various studies from across the world highlighting the differences in the incidence of skin cancers in light skinned population versus darker skinned population. Studies conducted on caucasian population from Europe, Australia and North America have reported basal cell carcinoma to be most frequent, while studies done in Africa and India have reported squamous cell carcinoma to be most common cutaneous tumor.

CONCLUSION

The most common cutaneous tumors were of keratinocytic type and epidermoid cyst was the most common cyst of skin. It is important to reach a definitive diagnosis even in benign skin tumors as some of them are cutaneous markers of syndromes as well as internal malignancies. Thorough examination of lesions gives a clinical clue in most cases, but histopathology is an indispensable tool for confirmation of the diagnosis, assessing prognosis, and planning appropriate management. Hence, biopsy should be performed in all such cases with doubtful clinical diagnosis.

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Corresponding Author

Dr Supriya Singh Toor, Flat no. 201, Plot no. 7, Ashok marg, Anasagar link road, Ajmer, Rajasthan, India.

email: drsupriyaator@gmail.com
