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Prevalence of benign and malignant soft tissue tumors presenting in a tertiary care hospital

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Abstract
Soft tissue tumors are defined as mesenchymal proliferations that occur in extraskeletal, none pithelial tissue of the body, excluding the visceral organs. Both benign and malignant soft tissue tumors commonly present as a painless mass. A core biopsy, an excisional biopsy and an incisional biopsy are the appropriate technique used for diagnosing most soft tissue masses. This study was carried out to find out the proportion of different benign and malignant soft tissue tumors presenting in the hospital and to find the correlation between the clinical presentation and histopathological features of the soft tissue lesions. This observational study was conducted at a tertiary care hospital and patients from all age and sex groups were included. Detailed clinical data including history, findings of clinical examination and radiological findings were recorded. Site of soft tissue tumors has been categorised under head and neck, upper and lower extremities and trunk. In our study benign lesions comprise 89% and malignant 11% of total cases. The most common soft tissue tumor in our study is Lipoma followed by hemangioma, fibroma and schwannomas. Most common malignant soft tissue tumor in our study is high grade sarcoma with age predilection of 41-60 yrs age group.

Keywords: soft tissue mass, benign, malignant, lipoma, sarcoma

Introduction

Soft tissue is a none pithelial, extra skeletal tissue of the body exclusive of reticuloendothelial system, glia and supporting tissue of the various parenchymal organs. It is represented by the voluntary muscles, adipose tissue and fibrous tissue along with the vessels serving these tissues. They are classified according to the tissue they recapitulate (eg. muscle, fat, fibrous tissue, vessels and nerves). Soft tissue tumors are defined as mesenchymal proliferations that occur in extra skeletal, none pithelial tissue of the body, excluding the viscera, coverings of brain and lymphoreticularsystem. Like many other malignant tumors, the pathogenesis of most soft tissue tumors is still unknown. Recognized causes include various chemical and physical factors, exposure to ionizing radiation, inherited or acquired immunological defects. Evaluation of the exact cause is difficult because of the long latentperiod. Soft tissue tumors can occur at any age. It has been noted that the histological distribution of soft tissue tumors are rather specific for a particular age group at a particular anatomical site [1]. Both benign and malignant soft tissue tumors commonly present as a painless mass. When a soft tissue mass arises in a patient with no history of trauma or when a mass persisting even after 6 weeks after a local trauma a biopsy isindicated. They arise nearly everywhere in the body, the most important locations being the extremities, trunk, abdominal cavity and head & neck region [2]. It is sometimes possible to make an accurate diagnosis by detail clinical history, physical examination and naked eye examination of the tumors. Clinical features like age of the patient, location & size of the tumor help greatly in narrowing down the differential diagnosis. Clinically soft tissue tumors are classified according to various parameters like location, growth pattern, likelihood of recurrence, presence and distribution of metastases, patient's age and prognosis [3]. Although most soft tissue tumors of various histogenetic types are classified as either benign or malignant, many are of an intermediate nature having aggressive local behaviour with a low to moderate propensity for metastasis. In general, benign soft tissue tumors occur at least 10 times more frequently than malignant ones, though the true incidence of soft tissue tumors is not well documented because many of them do not report to the clinician.

Material and Methods

This observational study was conducted at tertiary care hospital. All patients with soft tissue lesions referred to department of pathology from various departments for histopathological examination were included in the study. Consecutive type of non- probability sampling was followed for the selection of study subjects. All patients referred with soft tissue lesions anywhere in the body irrespective of age and gender were included in the study except for the patients who presented with uterine and Gastro intestinal soft tissue tumors or in whom informed consent could not be obtained.

Detailed clinical data including history, findings of clinical examination and radiological findings were recorded. Site of soft tissue tumors has been categorised under head and neck, upper and lower extremities and trunk. The features like capsule, size, consistency, areas of necrosis, hemorrhage, calcification, ossification and adhesion to the adjacent structures was noted.

The collected data was entered in Microsoft excel 2007. The data has been tabulated and presented with appropriate graphs/diagrams.

Results

Table 1: Age Distribution of benign soft tissue tumors

S.No	Tumors	0-20	21-40	41-60	>60yrs	Total* cases	Mean Age
1	Lipoma	6	16	14	4	40 (43)	38.7
2	Fibroma	0	4	4	0	08 (8.6)	38.2
3	Hemangioma	3	3	0	2	08 (8.6)	32.2
4	Giant cell tumor	1	1	2	1	05 (5.4)	39
5	Fibromyxoma	0	2	1	0	03 (3.2)	34.6
6	Neurofibroma	0	4	6	1	11 (11.8)	44
7	Papilloma	0	2	0	0	02 (2.2)	35.5
8	Glomustumor	0	3	0	1	04 (4.3)	40.2
9	Schwannoma	1	5	0	0	06 (6.5)	27
10	Eccrineporoma	0	0	0	1	01 (1.1)	62
11	Fibroepithelioma	0	2	2	0	04 (4.3)	46.2
12	Trichoadenoma	0	0	0	1	01 (1.1)	65
	Total	11 (11.8)	42 (45.2)	29 (31.2)	11 (11.8)	93 (100)	38.8

*Figures in parenthesis indicate percentage

Table 2: Age Distribution of Malignant soft tissue tumors

S.No	Tumors	0-20 yrs	21-40 yrs	41-60 yrs	>60 yrs	Total*	Mean Age
1	High grade sarcoma	0	1	2	3	6 (54.5)	54.8
2	Synovial sarcoma	0	1	0	0	1 (9.1)	25
3	Spindle cell sarcoma	0	0	2	0	2(18.2)	52.5
4	Small round blue cell tumor	0	1	1	0	2 (18.2)	38
	Total	0	3 (27.3)	5 (45.5)	3 (27.3)	11 (100)	48.6

Table 3: Sex Distribution of Benign Tumors

S. no.	Type of Tumor	Male	Female	Total
1	Lipoma	26	14	40 (43)
2	Fibroma	5	3	08 (8.6)
3	Hemangioma	5	3	08 (8.6)
4	Giant cell tumor	3	2	05 (5.4)
5	Fibromyxoma	2	1	03 (3.2)
6	Neurofibroma	8	3	11 (11.8)
7	Papilloma	2	0	02 (2.2)
8	Glomus tumor	3	1	04 (4.3)
9	Schwannoma	4	2	06 (6.5)
10	Eccrine poroma	0	1	01 (1.1)
11	Fibroepithelioma	1	3	04 (4.3)
12	Trichoadenoma	1	0	01 (1.1)
	Total	60 (64.5)	33 (35.5)	93 (100)

Table 4: Sex Distribution of Malignant Tumors

s.no.	Type of malignant tumor	Male	Female	Total
1	High grade sarcoma	4	2	6 (54.5)
2	Synovial sarcoma	1	0	1 (9.1)
3	Spindle cell sarcoma	2	0	2(18.2)
4	Small round blue cell tumor	2	0	2 (18.2)
	Total	9	2	11(100)

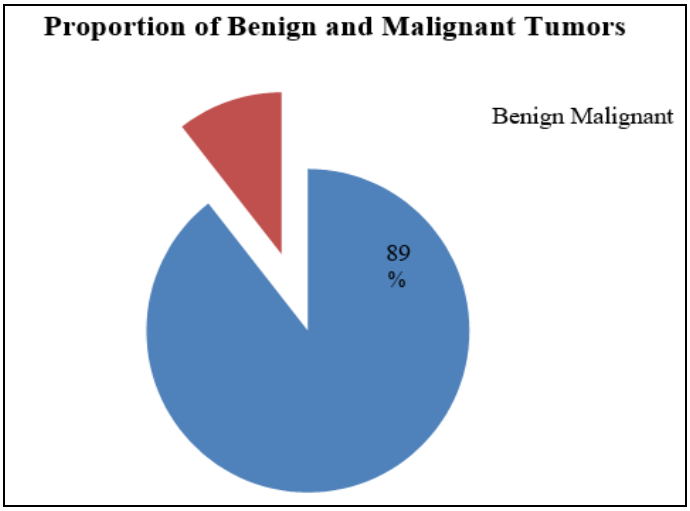

Fig 1: Proportion of Benign and Malignant tumors

Table 5: Distribution of Benign soft tissue tumors according to site

S. no	Type of Benign tumor	Head &Neck	Extremities		Trunk	Total
			Upper	Lower		
1	Lipoma	5	13	5	17	40(43)
2	Fibroma	3	3	1	1	08(8.6)
3	Hemangioma	5	1	1	1	08(8.6)
4	Giant cell tumor	0	4	0	1	05(5.4)
5	Fibromyxoma	0	1	2	0	03(3.2)
6	Neurofibroma	1	5	3	2	11(11.8)
7	Papilloma	1	0	0	1	02(2.2)
8	Glomustumor	0	3	1	0	04(4.3)
9	Schwannoma	1	2	3	0	06(6.5)
10	Eccrine poroma	1	0	0	0	01(1.0)
11	Fibroepithelioma	0	0	3	1	04(4.3)
12	Trichoadenoma	1	0	0	0	01(1.0)
	Total	18 (19.4)	32 (34.4)	19 (20.4)	24 (25.8)	93 (100)

Table 6: Distribution of Malignant soft tissue tumors according to site

S. no	Sarcomos	Head &Neck	Extremities		Trunk	Total*
			Upper	Lower		
1	High grade sarcoma	0	1	2	3	6 (54.5)
2	Synovial sarcoma	0	0	1	0	1 (9.1)
3	Spindle cell sarcoma	0	1	0	1	2 (18.2)
4	Small round blue cell tumor	1	0	0	1	2 (18.2)
	Total	1 (9.1)	2 (18.2)	3 (27.3)	5 (45.5)	11 (100)

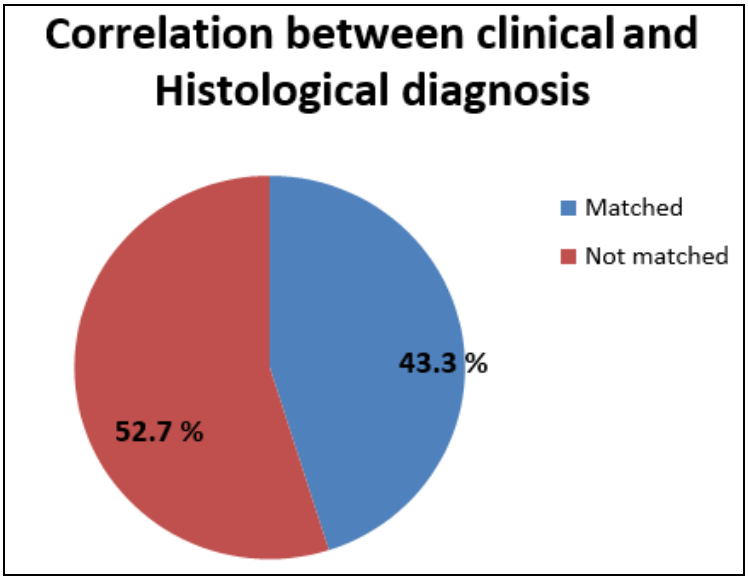

Fig 2

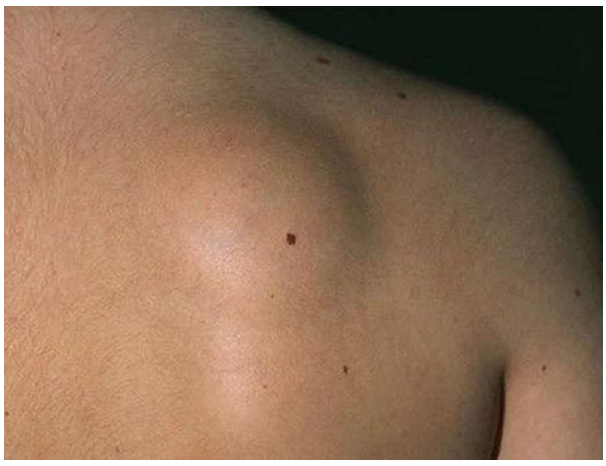

Fig 3: Lipoma clinical photograph

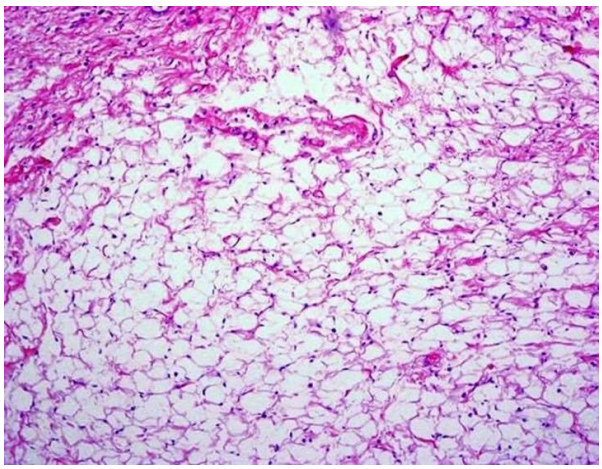

Fig 4: Lipoma: H&E stain (10X)

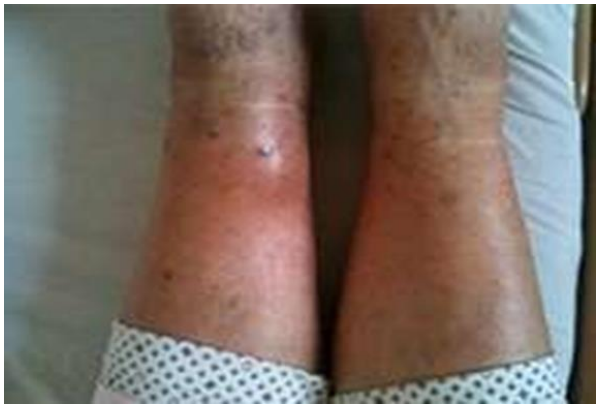

Fig 5: Schwannoma

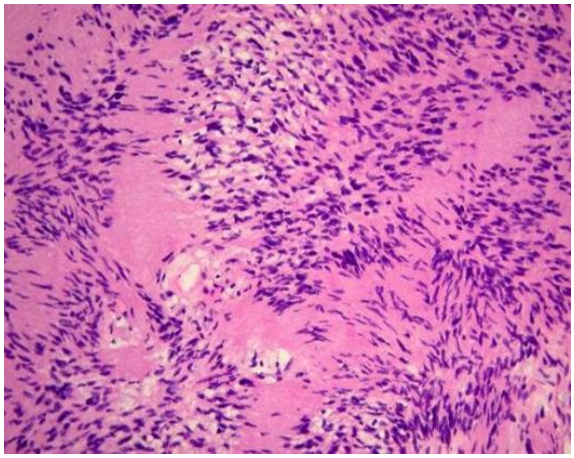

Fig 6: Schwannoma: H&E stain (10X)

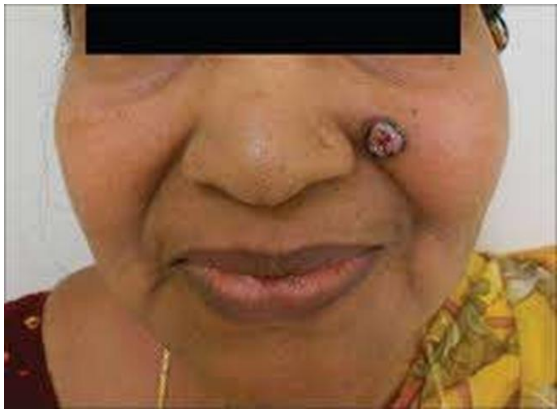

Fig 7: Eccrine Poroma

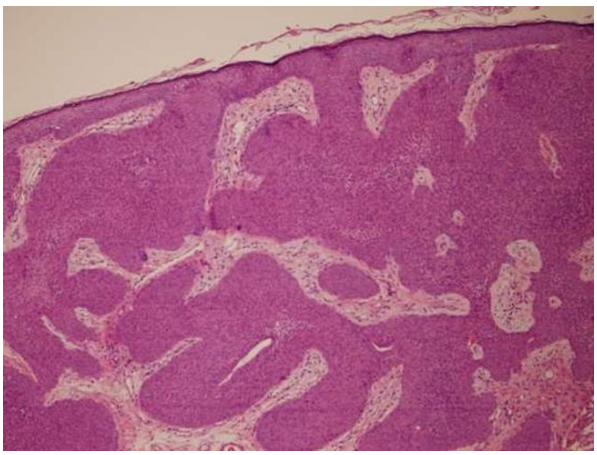

Fig 8: Eccrine poroma: H&E stain (10X)

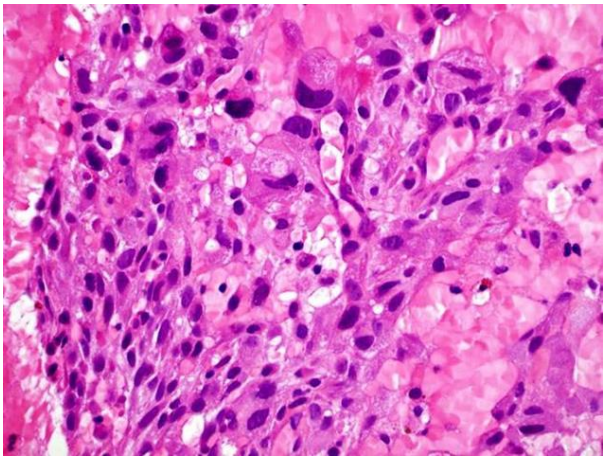

Fig 9: HIGH GRADE Sarcoma (H&E stain 40X)

Discussion

The presentation of majority of soft tissue tumors can occurs at any age and pathogenesis of some of these lesions is unknown. Even on microscopic examination, subtle differences are seen between soft tissue masses. This has led to the diagnostic challenge of variety of benign and malignant tumors. The diagnostic accuracy can be improved by proper history taking, the site and size of tumor and analyzing the demographic features like age and sex distribution. The most common soft tissue tumor in our study is Lipoma followed by hemangioma, fibroma and schwannomas. The findings are similar to what is reported in the text [4] and other studies [5-7]. Actual proportion of lipomas is higher in the community because most of them do not come to the health care facility as they are largely asymptomatic and show little or no progression. Three-fourth of the tumors are in the age group of 21 to 60 years, more so in the 21 to 40 years age group. [1]. The mean age of patients with soft tissue tumors reported in a study done in teaching hospital in Bangalore was 40.4 years with peak distribution in the age group of 21-40 years (37.7%) [6]. In another study at SGPGI Lucknow almost half of the patient with benign soft tissue tumors were in the age group of 21 to 40 years [5]. In the study most of the cases were of lipoma (43%) followed by neurofibroma (11.8%) and hemangioma (8.6%). The results of our study are in accordance with the study done by Reily Ann Ivan et al (n=155) at Chennai medical college which showed similar proportion and age distribution of benign and malignant tumors. Lipoma was the most common soft tissue tumor with maximum number of cases in 29-40 years age group [8]. However, a study done at Narayana Medical College by GudeliVahini et al found maximum cases of lipoma cases but the age group of all cases were more than 60 years [9].

Neurofibromas were seen in the age group of 21-60 years in our study. Mean age for usual neurofibroma was 32.73 years whereas for diffuse it was 25.6 years in a study conducted at Sevagram, Ward ha [10]. The mean age of neurofibroma in the study by Kransdorf was 37 years and was more common in males. They were distributed all over the body but were predominantly seen in head and neck region, truck and lower extremity [11]. Pramila Jain et al found that the benign adipocyte tumor accounted for majority of benign soft tissue tumors followed by vascular tumors [7]. In our study overall distribution of malignant soft tissue tumors shows peak in the age group of 41 to 60 years with none occurring in age group less than 20 years. In comparison to benign tumors,

malignant tumors have shown peaking 1-2 decades later in our study. Owing to the small number of malignant tumors in our study, it is not possible to comment conclusively on their age distribution. The mean age of patients of synovial sarcoma in a study of a large referral population was 32 years with no significant difference among the two sexes and predominantly occurring in the lower limb [1]. Almost two-third of the benign tumors taken in our study are among the males (Table 3). This is subject to reporting bias probably because of male dominance and greater importance given to the health problems of the male members in the society and females health issues being neglected. In a study conducted at a teaching hospital in Karnataka the distribution of the tumors between the sexes was almost equal (M: F ratio of 1:1.04) [12]. The ratio is higher as compared to other studies. Study done by Kinjal Bera et al showed slightly higher proportion of benign tumors in males (54.3%) [13]. Pramila Jain et al found that out of 370 cases, 206(55.7%) were males and 164(44.3%) were females [7]. Similar ratio was also observed in the study done by Kransdorf et al [11]. In a retrospective study of soft tissue sarcomas by Mandong et al male to female ratio was 2:1 [14]. But owing to small sample size the sex ratio among cases of malignant tumors is 9:1in our study.

As stated in literature benign tumors are 10 times more common as compared to malignant tumors. In our study of 104 patients, 89% had benign tumors and 11% had malignant tumors (figure 1). In the study by Peterson et al 49%were malignant, 35% were benign and 11% were intermediate [15]. In our study the proportion of malignant tumors is very low, only 11 cases being reported. In Table 2, out of 11, five cases were in 41-60 years of age group, with high grade sarcoma being the most common malignant tumor. There was no case occurring in the age group less than 20 years. Reily Ann Ivan et al study also showed similar results, where out of 155 patients, only 16 were malignant and most of the cases were in 31-40 years of age group [8]. Kinjal Bera et al did a study where malignant cases reported were above the age of 50 years [13].

Sarcomas are the group of heterogeneous tumors which are mesenchymal in origin. Incidence of soft tissue sarcoma has been reported as 1% in adults and 12% in pediatric age group [16]. However, in our study there was no case below the age of 20 years. The most common type of malignant soft tissue tumor is liposarcoma. It shows various subtypes like myxoid, differentiated and pleomorphic. Usually no visible fat is present. Lesion size is more than 10 cms which is globular and nodular in physical appearance. Liposarcoma tends to be infiltrative in nature. It involves muscles which is major feature to differentiate it from lipoma as their histological features are identical [17]. Our study didn't find a single case of liposarcoma. We did find one case of synovial sarcoma which involves the synovial cells and predominantly occurs in lower extremities [18].

Various studies showed that trunk is the commonest site for benign tumor followed by lower extremities and for malignant lesions, lower extremities are the commonest site. With reference to Table 5, site of occurrence of benign tumors is higher in upper extremities (34.4%) followed by trunk (25.8%) whereas distribution of malignant tumors according to site is maximum in trunk area (45.5%) followed by lower extremity (27.3%) as shown in Table 6. Figure 5 and 6 interpret the similar results of distribution of benign and malignant tumors according to site respectively. However different results in study done by Lazim et al [19]. Pramila Jain et al reported that 40% of soft tissue tumorsoccursin lower extremities [7]. GudeliVahini reported that the majority of soft tissue cases had their site of distribution in head and neck [9]. The pathological evaluations were correlated with clinical presentations of the patients.

Conclusion

Even though soft tissue sarcomas are rare and usually present as a painless mass, the clinician must be able to diagnose it early for better management. Large scale, multicentre prospective studies are needed to more comprehensively understand the behavior and outcome of these tumors in our population.

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