

“HISTOPATHOLOGICAL PROFILE OF SOFT TISSUE TUMORS WITH RELATION TO AGE, GENDER AND ANATOMICAL DISTRIBUTION”

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Abstract

Introduction: Soft Tissue Tumours (STT) are a diverse group of tumours. Soft tissue tumours are a highly heterogeneous group of tumours that are classified on a histogenetic basis according to the adult tissue they resemble. Benign soft tissue tumours outnumber malignant tumours by a wide margin. Histopathology is considered gold standard in the diagnosis of STT.

Purpose: The main objective is, to the study histopathological profile of soft tissue tumours and to analyse their distribution according to age, sex and anatomical site of occurrence.

Materials and Methods: In the present study, all operated cases, excised biopsies and resected specimens were taken into consideration. After processing the tissue, detailed microscopic examination was carried out to arrive at the final diagnosis.

Results: The peak age of incidence of soft tissue tumours were observed in the 3rd and the 4th decade of life and showed a slight female predominance. Majority of the STT cases identified were located in the extremities. Most common soft tissue tumours were lipomatous tumours.

Conclusion: Lipomatous tumours constituted the bulk of soft tissue tumours (99/151cases). The incidence of lipomatous tumours was more in females (54.5%) with M: F ratio 1:1.2 and 31.3% of tumours occurred in the 3rd decade. The commonest site was in the extremities constituting 34.31% of the total cases followed in frequency by the chest wall with 18.54%.

Key Words: Fibrous tissue tumours, lipomatous tumour, neural tumours, soft tissue tumour

Introduction: Soft tissue tumours (STT) are a diverse and fascinating group of lesions that arise from the supporting soft tissue of the body¹. Soft tissue tumours are a highly heterogeneous group of tumours that are classified on a histogenetic basis according to the adult tissue they resemble as benign, intermediate and malignant. Intermediate tumours are further sub classified into locally aggressive and rarely metastasizing tumours based on the biological behaviour². Soft tissue tumours constitute a large and heterogeneous group of neoplasms. The annual incidence of soft tissue tumour is 1.4 per 100000 populations³. Soft tissue sarcomas account for 15% of all childhood cancers^[3] which are the fourth most common malignancy in children, after hematopoietic neoplasm, neural tumour and Wilms' tumour⁴. Benign tumours closely resemble normal tissue on histology and have a limited capacity for autonomous growth. The incidence of benign STT is higher when compared to malignant tumours⁵. The annual clinical incidence (number of new patients presenting to clinician) of benign STT is 3000/million population, worldwide⁶. The sensitivity and specificity of the role of FNAC is debatable due to its known limitations⁷. Hence, histopathology is considered the gold standard method for the diagnosis of soft tissue tumours. As it is evident that benign STT most often have an atypical clinical manifestation

landing up with many differential diagnoses clinically, the histopathological diagnosis serves as the confirmatory diagnostic tool⁵. In many instances, clinicopathological analysis helps to enhance the efficacy in arriving at appropriate and early diagnosis, especially in conditions where many differential diagnoses are encountered⁵. Like almost all other malignancies, soft tissue sarcomas become more common with increasing age; the median age being around 65 years⁸.

Aims and Objectives:

The main aim of the study is to understand the histopathological profile of soft tissue tumours and to analyse their distribution according to age, sex and site of occurrence.

Materials and Methods:

Type of study: Retrospective study

This study was conducted in a tertiary care teaching hospital and comprised of 151 cases of soft tissue tumours which were received and analysed in the Department of Pathology. The operated specimens or biopsy material of soft tissue tumours received from July 2000 to July 2005, in the pathology department were studied in detail. A total of 151 cases were analysed. All specimens were fixed in 10% formalin for 24 h. The sections were cut meticulously and stained with hematoxylin and eosin (Harris hematoxylin). Their gross features and microscopic findings were analysed in detail. The distribution of soft tissue tumours according to the age, sex and site of occurrence were studied.

Inclusion criteria:

All the mesenchymal tumours arising from any soft tissue like fibrous tissue, adipose tissue, skeletal muscle, neural tissue, blood and lymph vessels were included in this study.

Exclusion criteria: All the non-mesenchymal tumours, bone tumours and any known already diagnosed tumours were excluded from the study.

The study has been approved by the Institutional Research Ethics Committee and the study did not receive any kind of funding or financial support.

The data was analysed and compiled in the form of tables, pie chart and bar diagrams.

Results:

Amongst the 151 cases of soft tissue tumours analysed, 137 (90.73%) were benign and 14 (9.27%) were malignant (Figure 1). Benign tumours of soft tissue are commoner than benign tumours of bone. They can occur at almost any site both within and between muscles, ligaments, nerves, and blood vessels. These tumours vary widely in appearance and behaviour.

Table 1: Incidence of benign and malignant soft tissue tumours

S.No	Type	No. of cases	Percentage
1.	Benign	137	90.73
2.	Malignant	14	9.27
	Total	151	100

*The term incidence has been used in a relative sense and signifies hospital incidence at our hospital, rather than incidence in population.

The present study included a total of 151 soft tissue tumours. Benign soft tissue tumours constituted 90.73% of overall tumour incidence during the study period (Table 1), among which benign soft tissue tumours accounted for 90.73 % (Figure 1).

Figure 1 - Incidence of benign and malignant soft tissue tumours

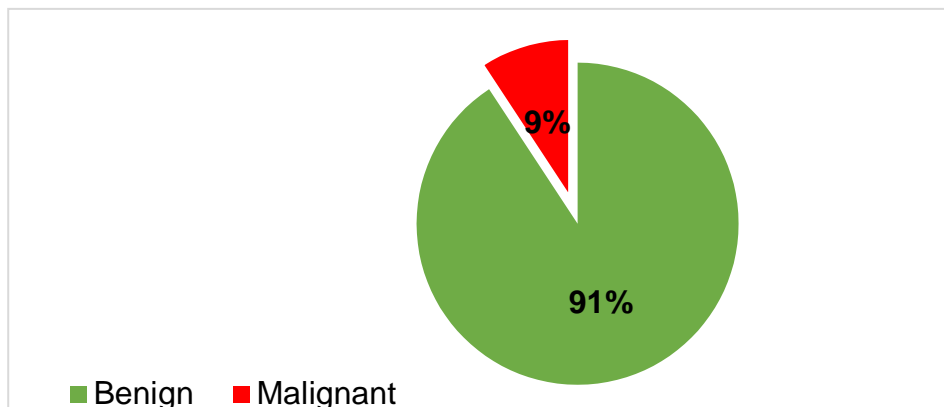


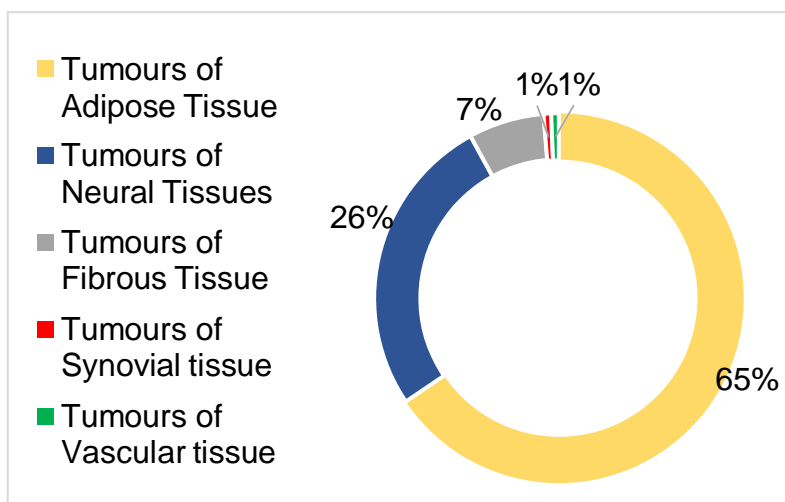
Table 2: Gender Distribution of the Benign and Malignant Soft Tissue Tumours

S No	Gender	Benign	Malignant	Total
1.	Male	65	5	70
2.	Female	72	9	81

Benign and malignant soft tissue tumours showed a slight female preponderance with a male to female ratio of 1:1.16 (Table 2).

Tumours arising from the adipose tissue were the commonest (Figure 2) and accounted for 65.65%.

Figure: 2 - Number of cases and percentage distribution of the STT with respect to their tissue of origin



Neurologic and fibrous tissue tumours were the next common neoplasms. The majority of benign STT belonged to the adipocytic group (65.56%), followed by neural tissue tumours (26.49) and fibroblastic tumours (6.63%) -Table 3.

Table 3: Number of cases and percentage distribution of the STT with respect to their tissue of origin:

S No.	Tissue of Origin	Number of cases	%
1.	Tumours of Adipose Tissue	99	65.56
2.	Tumours of Neural Tissues	40	26.49
3.	Tumours of Fibrous Tissue	10	6.63
4.	Tumours of Synovial tissue	1	0.66
5.	Tumours of Vascular tissue	1	0.66
	Total	151	100

Most of the STT cases occurred in the lower limbs (31.79%) followed by upper limbs (22.52%) and trunk (18.54%) as shown in Table 4.

Table 4: Anatomical location of Tumours

Site	Benign	Malignant	Total	%
Head & Neck	12	2	14	9.27
Upper Limbs	33	1	34	22.52
Shoulder	13	-	13	8.61
Abdomen	14	-	14	9.27
Chest wall	26	2	28	18.54
Lower Limbs	39	9	48	31.79
Total	137	14	151	100

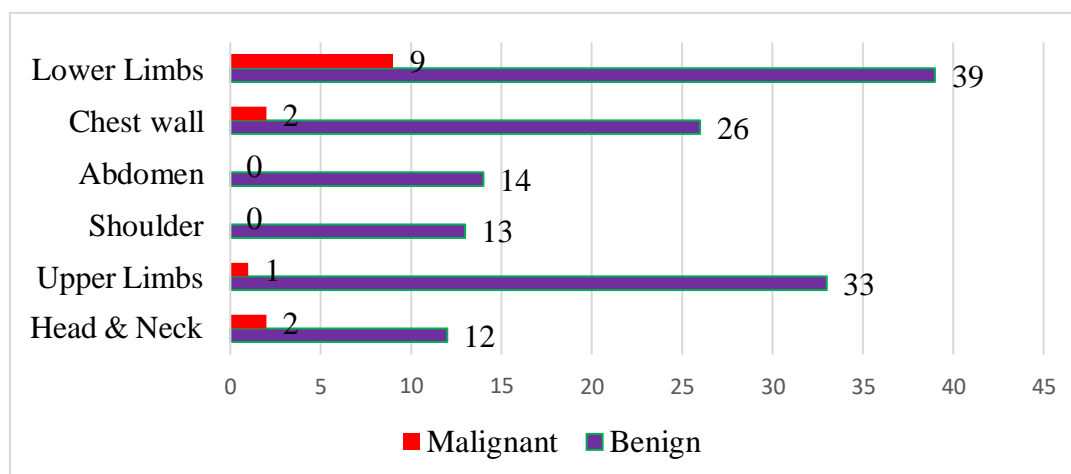
Lipomatous tumours constituted the bulk of soft tissue tumours (99/151cases) -Table 5.

Table 5: Gender and Age incidence of soft tissue tumours

The incidence of lipomatous tumours was more in females (54.5%) with M: F ratio 1:1.2 and 31.3% of tumours occurred in the 3rd

S.No	Diagnosis	Age group in years														Total		
		10-19		20-29		30-39		40-49		50-59		60-69		70-79		M	F	Gross Total
		M	F	M	F	M	F	M	F	M	F	M	F					
1.	Lipomatous tumour	3	1	7	8	9	22	9	13	11	7	6	3	-	-	45	54	99
2.	Neural Tumours	1	2	1	6	2	2	7	5	3	2	4	5	-	-	18	22	40
3.	Fibrous tissue Tumours	-	-	1	2	0	1	3	0	1	1	0	0	1	-	6	4	10
4.	Vascular tissue tumours	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	1
5.	Synovial Tissue Tumour	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	1

decade. The commonest site was in the extremities constituting 46.5% of the total cases followed in frequency by the chest wall with 21.2% (Figure 3).

Figure: 3 - Anatomical location of Tumours

Out of the 151 cases, 40 cases (26.5%) of neural tumours were diagnosed of which 33 were benign (neurofibromas-26 cases: schwannomas- 7 cases) and 7 were malignant peripheral nerve sheath tumour (MPNST). Neural tumours were more common in females (55%) with M: F ratio 1: 1.2 and 30% of tumours occurred in the 4th decade with the commonest site being the lower limbs (45%) cases (Table 5). 10 cases belonged to the tumours of fibrous tissue category, constituting to about 6.6% of total cases with the M: F ratio of 1.5: 1. 60% of these tumours occurred in the 2nd and 3rd decade (Table 5).

Discussion:

Soft tissue is defined as the supportive tissue of various organs and the nonepithelial extra- skeletal structures exclusive of lympho-hematopoietic tissues. It includes fibrous connective tissue, adipose tissue, skeletal muscle, blood/lymph vessels and the peripheral nervous system. Soft-tissue tumours constitute a large and heterogeneous group of neoplasms and are relatively rare and constitute less than 1% of all the cancers. Benign mesenchymal tumours outnumbered sarcomas by the factor of at least 100⁹. The annual clinical incidence of benign soft tissue tumours has been estimated up to 3000/million population i.e.-less than 1% of all the malignant tumours¹⁰. Lipomas are the most common neoplasm of mesenchymal origin arising in any location where fat is present. At least one third of benign tumours are lipomas, one third is fibro histiocytic tumours and fibrous tumours, 10% are vascular and 5 % are nerve sheath tumours¹¹. The age of the patients in our study ranged from 11 years to 79 years. Benign tumours were found to be more common in younger population whereas malignant tumours were commoner in 5th to 6th decade of life. This result was in concordance with studies conducted by Agravat et al¹² and Wimber et al.¹³. According to them benign tumours were commoner in younger age group as compared to malignant tumours which were recorded maximum in the 60-70 years age group. In our study, 52 males and 99 females were included (Table 2). Benign STT occur all over the body as it is well known for its vast distribution. An overall incidence of soft tissue tumours was higher in females with a ratio of 1: 0.52. This observation is in contradiction with the studies conducted by Trojani et al¹⁴ Jemal et al¹⁵ Gustafson¹⁶ Ducimetiere et al¹⁷ as shown in table 5.

Conclusion: Benign soft tissue tumours outranged malignant soft tissue tumours in the younger population and showed female predominance. Lipomatous tumours were the commonest with anatomical presentation at the upper and lower limbs, and trunk area.

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