

Panorama of Soft Tissue Tumors at Tertiary Care Centre in Navi Mumbai

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ABSTRACT

Introduction: Soft tissue tumors are nonepithelial extra skeletal heterogenous group of tumors which are classified on histogenetic basis according to adult tissue they resemble.

Materials and Methods: A retrospective study was undertaken in the department of Pathology MGM Medical College and Hospital, Navi Mumbai over a period of one year from January 2015 to December 2016 which included a total of 585 cases.

Result: Total number of cases of soft tissue tumors during the period of study was 585, of which 579 cases (98.98%) were benign, 3 cases (0.51%) of intermediate type and malignant type each with adipocytic tumors (71.5%) being the predominant benign soft tissue tumors followed by smooth muscle tumors.

Conclusion: The diagnosis and management of soft tissue tumors require a team perspective. Availability of a modern, more logical histopathologic classification and standard nomenclature now offers a better clinico-pathological co-relation. The clinico-pathological evaluation being the gold standard in the diagnosis of soft tissue tumors.

Keywords: Soft tissue tumors, Benign, Malignant, Histopathology

INTRODUCTION

Soft tissue tumors are defined as mesenchymal proliferation which occurs in extraskeletal nonepithelial tissue of the body, excluding the viscera, covering of brain and lymphoreticular system. [1] These can occur at any age with no sex preponderance. Soft tissue tumors are a highly heterogenous group of tumors classified on histogenetic basis according to adult tissue they resemble. The large majority of soft tissue tumors are benign, with a very high cure rate after surgical excision. Malignant mesenchymal neoplasms amount to less than 1% of the overall human burden of malignant tumors.

The most common locations of soft tissue tumors are extremities, trunk, abdominal cavity and head and neck region. [2] Soft tissue tumors have fascinated pathologists for many years because of the wide variety of tumors and histopathological similarities between some tumors with only subtle difference which is discernible on careful microscopic examination thus posing a diagnostic challenge to the histopathologist.

Aims and Objectives:

1. To study the histopathological features of soft tissue tumors.
2. To study the relative frequency of benign and malignant cases.
3. To estimate the age and sex distribution.

MATERIALS AND METHODS

The present study comprised of all soft tissue tumors, both benign and malignant received in the Department of Pathology. Retrospective study was undertaken for a period of one year from January 2016 to December 2016. Detailed clinical data including history, clinical features, radiological findings and gross findings were taken from histopathology record section. The sections were stained with H & E and examined under light

microscopy. Ancillary stains were done whenever feasible.

OBSERVATIONS AND RESULTS

Total number of cases of soft tissue tumors during the period of study was 585, of which 579 were benign, 3 intermediate type and 3 malignant. (Table 1)

Table 1: Relative incidence of benign and malignant soft tissue tumors:

Type	Number of cases	Percentage
Benign	579	98.98%
Intermediate	3	0.51%
Malignant	3	0.51%
Total	585	100%

Table 2: Distribution of Soft tissue tumors :

S. No	Type	Benign	Intermediate	Malignant
1	Adipocytic Tumors	414 (71.5%)	0	0
2	Fibroblastic/ Myofibroblastic tumors	1 (0.17%)	0	0
3	Nerve Sheath tumors	15 (2.59%)	0	0
4	Fibrohistiocytic Tumors	3 (0.51%)	3	2
5	Vascular Tumors	22 (3.80%)	0	0
6	Pericytic / Perivascular tumors	8 (1.39%)	0	0
7	Smooth muscle tumors	116 (20.04%)	0	1
Total		579 (100%)	3	3

Table 3: Distribution of benign cases:

Type	No of cases in Males	No of cases in females
Adipocytic Tumors:		
a) Lipoma	285	124
b) Angiolipoma	1	
c) Fibrolipoma	1	1
d) Elastofibrolipoma	0	2
Fibroblastic / Myofibroblastic Tumors:		
a) Cellular angiofibroma	0	1
Fibrohistiocytic Tumors:		
a) Benign fibrous Histiocytoma	0	3
Nerve Sheath Tumors:		
a) Schwannoma	2	4
b) Neurofibroma	5	4
Vascular Tumors:		
a) Capillary Hemangioma	14	5
b) Cavernous Hemangioma	2	1
Pericytic / Perivascular Tumors:		
a) Myofibroma	2	0
b) Glomus	4	2
Smooth Muscle tumors:		
a) Classical Leiomyoma	0	76
b) Hyaline change Leiomyoma	0	21
c) Myxoid change Leiomyoma	0	18
d) Cutaneous Leiomyoma	1	
Total	317	262

Table 4: Distribution of Intermediate cases:

Type	No of cases in Males	No of cases in females
Fibrohistiocytic Tumor:		
Dermatofibrosarcoma Protuberans	3	0

Table 5: Distribution of Malignant cases:

Type	Number of cases in Males	No of cases in females
Fibrohistiocytic Tumors:		
Malignant Fibrous Histiocytoma	2	0
Smooth Muscle Tumors:		
Leiomyosarcoma	0	1

Adipocytic tumors were commonest being 414 cases followed by smooth muscle tumors (117 cases) and vascular tumors (22 cases) respectively followed by nerve sheath tumors (15 cases), Pericytic / Perivascular tumors (8 cases), Fibrohistiocytic Tumors (8 cases) and Fibroblastic/ Myofibroblastic tumors (1 case). On classifying lipomas histopathologically, there were 414 cases of lipoma including 2 cases of elastofibrolipoma and fibrolipoma each with 1 case of angiolipoma. On classifying smooth muscle tumors histopathologically, classical leiomyomas exhibited predominance accounting for 76 cases followed by hyaline change leiomyoma and myxoid degeneration leiomyoma being 21 cases and 18 cases respectively. There was one case of cutaneous leiomyoma found on lower limb of 35 year old male. Malignant counterpart of leiomyoma was encountered in a 57 year old debilitated female. Fibrohistiocytic tumors were further sub-classified into benign, intermediate and malignant tumors of which there were 3 cases of benign fibrocytic histiocytoma and dermatofibrosarcoma protuberans respectively followed by 2 cases of malignant fibrous histiocytoma. (Table 2, 3, 4, 5).

DISCUSSION

Soft tissue tumors are a heterogenous group of tumors which are classified on histogenetic basis. Benign soft tissue tumors outnumber malignant tumors by a margin of about 100:1 in hospital population.^[3] In our study we found the ratio being lower (579 benign and 3 malignant). In this study benign soft tissue tumors formed 98.98% and intermediate and malignant being 0.51% each. According to a study by Batra et al^[3] 89.2% of all soft tissue tumors were benign and 10.8% were malignant. Jain et al^[1] found the percentage of benign to malignant tumors to be 90.6% and 9.4% respectively. Umarani M.K.et al^[4] found 92.2% of benign and 5% malignant cases. Malignant tumors had preponderance in the 5th and 6th decade of life as

compared to the benign ones. Soft tissue tumors had a slight male preponderance in comparison with females.

Adipocytic tumors were the commonest amongst all accounting for 71.5% and smooth muscle cell leiomyomas accounting for 20.04% cases followed by 3.80 % of vascular tumors and 2.59% of nerve sheath tumors of all benign soft tissue tumors. (Table 2) According to study by Batra et al,^[3] Lipoma was the most common soft tissue tumor and accounted for 65.7% of all soft tissue tumors. A study by Jain et al^[1] quoted lipoma being the commonest tumor (50.27%) followed by vascular tumors (20%). Umarani M.K.et al^[4] found the largest histological group was adipocytic tumors followed by nerve sheath tumors. However, in our study smooth muscle tumors (leiomyomas) were the second most common.

Male preponderance was observed in almost all the soft tissue tumors in the studies available. In our study, male to female ratio was 1.22:1 of all soft tissue tumors which was seen similar to a study done by Jain et al, quoting a ratio of 1.2:1, while those reported by Myhre - Jensen O^[5] and Beg et al^[6] were 1:1 and 1.8:1 respectively. Batra et al^[3] reported a ratio of 2.1:1 but in case of malignant soft tissue tumors, males and females were equally affected with the ratio being 1.1:1. In our study, male preponderance was even seen in malignant tumors with the ratio being 2:1 of all the malignant cases. Studies done by Jain et al,^[1] Batra et al^[3] and Kransdorf MJ^[7] have categorized soft tissue tumors as benign and malignant. In the present study, the soft tissue tumors have been grouped as benign, intermediate and malignant. Since the intermediate type is separately grouped, the percentage of malignant cases is less as compared to the other studies. In all benign tumors, routine histopathological examination was able to diagnose cases. In intermediate and malignant cases, it was seen that ancillary studies including immunohistochemistry were important in

some of the cases to correctly classify the tumor.

In the present study, out of 579 benign cases, 414 cases (71.5%) were reported as lipoma which formed largest group among the soft tissue tumors. Two commonest variants in the study done by Ndukwe et al [8] and Lin et al [9] were conventional and fibrolipomas which coordinated with our study along with one case of angiolipoma and two cases of elastofibrolipoma. On gross examination the lipomas presented as encapsulated, yellow, glistening mass of variable size. Microscopic examination revealed sheets of adipocytes admixed with dilated congested vessels and fibrous tissue in few cases. The second most common finding in our study was smooth muscle tumors accounting for 116 cases, of which 112 were uterine and 3 in cervix. However, 1 case of smooth muscle tumor was reported in male patient on arm. Uterine leiomyomas are extremely common neoplasm of the uterus with estimated rate of 20-40% of women over the age of 30 years. Grossly, leiomyomas presented as greyish white firm masses with whorled appearance on cut surface. Microscopy showed benign spindle shape cells arranged in interlacing fascicles. Malignant tumor reported under smooth muscle tumor was leiomyosarcoma of uterus in a 76 year old female. Grossly, it was a single, pedunculated, submucosal greyish yellow mass with stalk protruding through endocervical canal. Microscopy showed spindle shaped cells showing plump hyperchromatic nuclei with increased nuclear to cytoplasmic ratio, with marked nuclear pleomorphism and scant cytoplasm arranged in fascicles along with atypical mitotic figures. In our study 22 cases of benign vascular tumors were reported, of which 19 cases were of capillary hemangioma and 3 cases of cavernous hemangioma with male predominance. Gross examination of all showed grey white, soft, polypoidal bits ranging from 0.5 to 1cm. Microscopy examination showed vaguely lobular pattern displaying numerous

blood vessels lined by plump endothelial cells. (Figure 1)

Following smooth muscle tumors, next 4th most common were benign peripheral nerve sheath tumors neurofibroma (9 cases) and schwannoma (6 cases). Donner et al over a period of 22 years revealed 288 benign tumors of major peripheral nerve reported, neurofibroma as the most common tumor followed by schwannoma which correlated with our study. Gross examination revealed a characteristic gelatinous appearance. Microscopy revealed interlacing bundles of elongated cells with wavy nuclei with preponderance in males. Schwannomas were commonly seen in females with the tumor grossly being encapsulated, yellow white in appearance. Microscopy revealed Antony A and Antony B areas. (Figure 2) 8 cases of fibrohistiocytic tumor were reported, 3 cases being benign fibrohistiocytic tumor and intermediate (Dermatofibrosarcoma protuberans) respectively and 2 cases of MFH. 5/8 cases were noted in males with lower limbs being the commonest site. Fletcher et al [10] in their study of benign fibrous histiocytoma noted male predominance with lower limb being the most common site. Grossly, tumor was grey white, soft - firm, well circumscribed and showed storiform pattern on microscopy and IHC done for the same being CD34 positive whereas CD68, desmin, Pan ck and S100 were negative, thus confirming the diagnosis. (Figure 3A &B) MFH reported in male patients grossly revealed well circumscribed, grey white, fleshy mass where as on microscopy tumor was composed of spindle cells arranged in fascicles and bundles with spindly, hyperchromatic nuclei and moderate amount of eosinophilic cytoplasm. At places herring bone pattern was also seen with large areas of necrosis. IHC done for the same showed vimentin positive and desmin, S100 and SMA being negative, thus confirming our diagnosis. (Figure 4)

An accurate histopathological classification contributes significantly to

establishing the prognosis of sarcoma with the important diagnostic features being cell morphology, architectural arrangement with immunohistochemistry being imperative in poorly differentiated aggressive tumors.

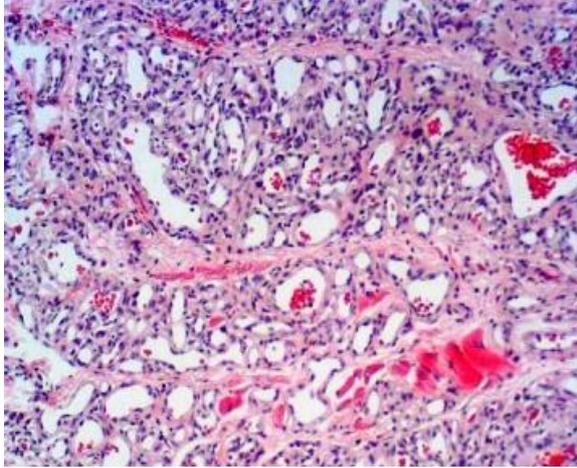


Figure 1: Capillary Hemangioma: sections show vaguely lobular pattern with numerous blood vessels. (H & E 10x)

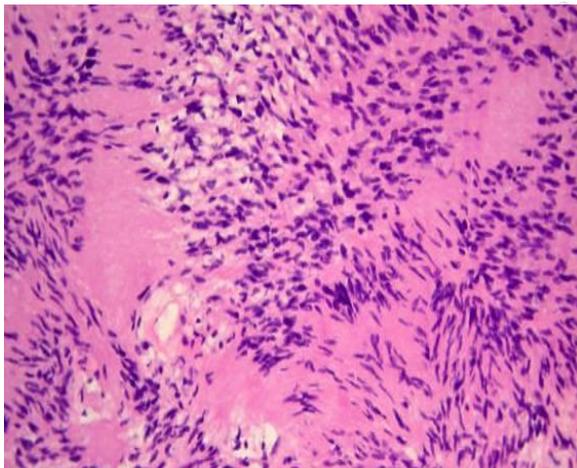


Figure 2: Schwannoma : Sections show Antoni A and Antoni B areas. (H & E 40x)

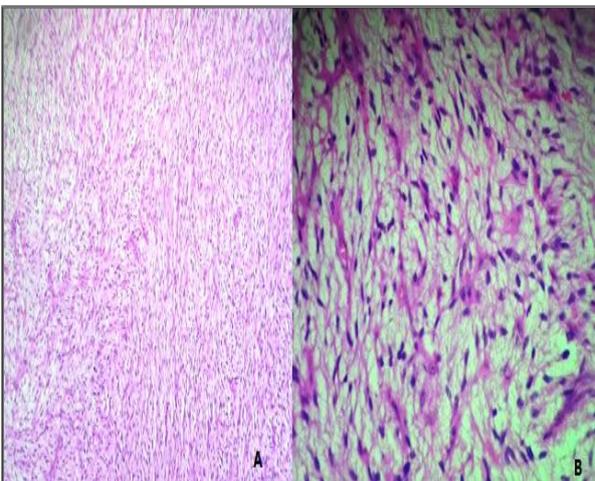


Figure 3A - DFSP : sections show tumor cells arranged in fascicles, vague storiform pattern at the periphery showing marked myxoid degeneration (H & E 10x).

Figure 3B - myxoid degeneration along with both neoplastic proliferation of fibroblasts and histiocytes. (H & E 40x).

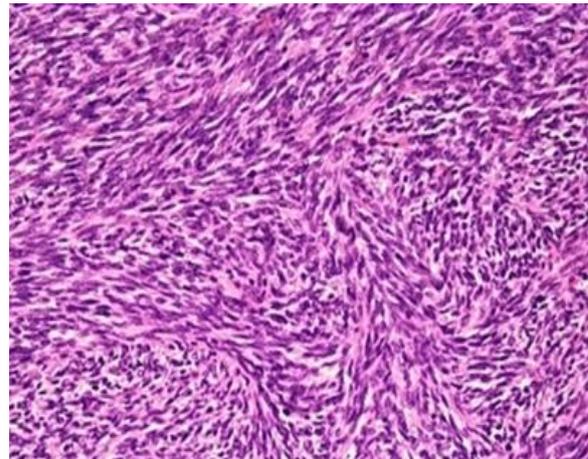


Figure 4: MFH: sections show spindle cells arranged in fascicles and bundles with spindly, hyperchromatic nuclei and moderate amount of eosinophilic cytoplasm and herring bone pattern. (H & E 40x)

CONCLUSION

The diagnosis and management of soft tissue tumors require a team perspective. Even though soft tissue sarcomas are rare and usually present as painless mass, the clinicians must be able to diagnose it early for better management. Availability of histopathological classification and standard nomenclature now offers a better clinico-pathological diagnosis of soft tissue tumors.

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