

Original research article

A Retrospective Clinicopathological Assessment of Soft Tissue Tumors at the Tertiary Care Centre of North Bihar

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Abstract

Aim: A clinico pathological evaluation of soft tissue tumors in tertiary care centre of North Bihar

Methods: This retrospective study was carried out in the Department of Pathology, Darbhanga Medical College, Laheriasarai, Darbhanga, Bihar, India, from January 2020 to January 2021. Total 100 patients of all the soft tissue tumors, both benign and malignant were included in this study.

Results: Total 100 cases of soft tissue tumours were included in this study. It has slightly male preponderance with a male to female ratio was 1.38:1. Benign soft tissue tumours formed 84% of all soft tissue tumours while malignant soft tissue tumours constituted 16%. The commonest benign tumour was Adipocytic (52%) of all tumours of soft tissue followed by vascular tumours (20%), peripheral nerve sheath tumours (17%), fibrous tumours (2%), fibrohistiocytic tumours (2%) smooth muscle tumours (2%) and tumours of uncertain differentiation (1%). The benign adipocytic tumours accounted for the majority of benign soft tissue tumours (47%) followed by vascular tumours (17%) & Benign peripheral Nerve Sheath Tumors (16%), Benign Fibrous Tumor (2%), Benign Fibrohistiocytic Tumors (1%), Benign tumours of smooth muscle (1%) and tumours of uncertain differentiation are nil encountered.

30% benign soft tissue tumours were seen in extremities followed by head and neck 27% and for the malignant soft tissue tumours mainly lower extremities (6%) followed by Head & Neck (5%).

Conclusion: The clinicopathological evaluation is still the gold standard for the proper diagnosis of soft tissue tumors.

Keywords: soft tissue tumors, clinico pathological, adipocytic tumours.

Introduction

Soft tissue' is a non-epithelial extra skeletal tissue of the body exclusive of the reticuloendothelial system, glia and supporting tissue of the various parenchymal organs".¹ Though, they can occur anywhere in the body, most commonly they involve upper and lower extremities, trunk, retro-peritoneum and head and neck.¹ The incidence of benign soft tissue tumors are more when compared to the frequency of malignant ones. Malignant Soft tissue tumors occur more commonly in males than females. Biological activity of these tumors varies from benign localized tumors, to benign locally aggressive, to malignant metastatic types. The

criteria used for grading soft tissue tumors include cellularity, mitotic count, tumor differentiation and necrosis. Prognosis of soft tissue tumors mainly depend on tumor size, microscopic grade, location, margins, clinical staging, DNA ploidy and genetic alterations.² Diagnosis of soft tissue tumors are done by standard methods like Light microscopy of Hematoxylin and Eosin tissue sections, special stains like Masson's trichrome, PAS and if necessary immunohistochemistry.³⁻⁵ Depending on the biological behaviour, soft tissue tumours are classified into benign and malignant tumours, which arise nearly everywhere in the body. Benign tumours, which closely resemble normal tissues from which they arise, have limited capacity for autonomous growth. Benign soft tissue tumours are usually slow growing, superficial, well-defined, well encapsulated, painless and any soft tissue tumour is considered malignant if they increase in size with size > 5cm, are deep to deep fascia and painful.^{6,7} The mainstay of diagnosis of soft tissue tumour depends on the use of characteristic diagnostic techniques employed in diagnosis of soft tissue tumours with various sampling techniques being excisional, incisional and core biopsy with preferred technique for diagnosing the soft tissue masses over the extremities persistently remaining open biopsy which is considered as gold standard.⁸⁻¹⁰ Fine needle aspiration cytology (FNAC) plays an important role in diagnosing the

soft tissue lesions and CT-guided FNAC can be of particular help in diagnosis of intraabdominal and retroperitoneal lesions.¹¹ Biopsy of soft tissue tumours, particularly of suspicious malignant soft tissue lesion, is quite essential part of preoperative investigations, which helps in diagnosing the biological behaviour and outcome of tumours including poorly differentiated high grade tumours, which is complimented by latest diagnostic techniques such as immunohistochemistry, cytogenetic and molecular methods. This has led to a more logical histogenetic classification and standard nomenclature which has enhanced better chances of clinico-pathological correlation.¹²

Material and Methods

This retrospective study was carried out in the Department of Pathology, Darbhanga medical college, Laheriasarai, Darbhanga, Bihar, India, from January 2020 to January 2021, after taking the approval of the protocol review committee and institutional ethics committee.

Methodology

Total 100 patients of all the soft tissue tumors, both benign and malignant were included in this study. Detailed clinical data including history, clinical features, USG, Radiological findings and gross findings was taken from histopathology record section. The blocks were recut and stained by routine H&E stain. The tissue were fixed in 10% formalin and processed through standard paraffin embedding technique. Special stains like PAS and reticulin, PTAH were also done wherever necessary in studies. They were further examined microscopically and grading was done accordingly.

Results

Table 1: Relative incidence of benign & malignant soft tissue tumours

Type	No. of tumours	soft	tissue	Percentage
Benign	84			84%
Malignant	16			16%
Total	100			100%

Table 2: Age & Sex incidence in soft tissue tumours

Age in yrs	Sex		Total
	Male	Female	
Below 10	3	5	8
10-20	9	6	15
20-30	6	3	9
30-40	8	2	10
40-50	9	7	16
50-60	10	9	19
above 61	13	10	23
Total	58	42	100

Table 3: Sex Incidence of All Soft Tissue Tumors

Category	Sex		Total
	Male (%)	Female (%)	
Benign	50(50%)	34 (34%)	84
Malignant	8(8%)	8(8%)	16
Total	58 (58%)	42(42%)	100

Table 4: Incidence of Benign & Malignant Soft Tissue Tumors

Type	Category of Soft tissue tumors		Total (%)
	Benign (%)	Malignant (%)	
Adipocytic	47 (47%)	5 (5%)	52(52%)
Fibrous	2 (2%)	0	2 (2%)
Fibrohistiocytic	1 (1%)	1 (1%)	2 (2%)
Smooth Muscle	1 (1%)	1(1%)	2 (2%)
Skeletal Muscle	0	4 (4%)	4 (4%)
Blood Vessels	17 (17%)	3(3%)	20 (20%)
Peripheral nerve sheath tumors	16 (16%)	1(1%)	17 (17%)
Tumors of uncertain differentiation	0	1(1%)	1(1%)
Total	84 (84%)	16(16%)	100 (100%)

Table 5: Site distribution of Benign and Malignant Soft Tissue tumours

Site	Benign	Malignant	Total
Extremities	30	6	36
Head and Neck	27	5	32
Back and Shoulder	17	2	19
Trunk and Abdomen	8	3	11
Others	02	00	2
Total	84	16	100

Total 100 cases of soft tissue tumours were included in this study. It has slightly male preponderance with a male to female ratio was 1.38:1. Benign soft tissue tumours formed 86% of all soft tissue tumours while malignant soft tissue tumours constituted 16%. Malignant soft tissue tumours had a peak above 60 years age group .the male to female ratio among the benign soft tissue tumours was 1.47:1 and among the malignant soft tissue tumours was 1:1.On detailed histomorphological examination; the single most common histological group was the adipocytic tumours. The commonest tumour was Adipocytic (52%) of all tumours of soft tissue followed by vascular tumours (20%) peripheral nerve sheath tumours (17%), skeletal muscle

(4%), fibrous tumours (2%), fibrohistiocytic tumours (2%) smooth muscle tumours (2%) and tumours of uncertain differentiation (1%). There is a highly significant association between the type of tumours and the category of tumours. The benign adipocytic tumours accounted for the majority of benign soft tissue tumours (47%) followed by vascular tumours (17%) Peripheral Nerve Sheath Tumors (16%), Fibrous Tumors (2%), Fibrohistiocytic tumors (1%). Benign tumours of smooth muscle (1%) and tumours of uncertain differentiation are nil encountered. The malignant tumours of adipose tissue accounted for majority of malignant soft tissue tumours (2) followed by tumours of skeletal muscle, blood vessels and peripheral nerve. Both benign and malignant soft tissue tumor is most common in extremities followed by head and neck.

Discussion

Soft tissue is a nonepithelial 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 (muscle fat, fibrous tissue, vessels and nerves). Some soft tissue tumors have no normal tissue counterpart but have consistent clinicopathologic features warranting their designation as distinct entities.

In present study the frequency of benign tumour was 84% and malignant tumours was 16% which is in between study of Myher Jensen *et al.*¹³ and Lazxim *et al.*¹⁴ whereas M.J. Kransdorf *et al.*¹⁵, reported 60.2% benign and 39.8% malignant soft tissue tumour in their study. In other study of soft tissue tumours' of head and neck by Makino¹⁶ stated 96% tumors as benign and 4% as malignant. In all these studies benign tumours predominated over malignant tumours. The relative frequency of benign to malignant soft tissue tumours is difficult to estimate accurately since many of the benign tumours cause not much problems and patients do not report to the clinicians and also most benign lesions are not removed.

All around the world many workers analyzed various aspects of soft tissue tumours like age and sex distribution, site, clinical features etc. which have been published in many literatures. Specific sarcomas tend to appear in certain age groups. The male preponderance in almost all soft tissue tumour. In the present study there were 58 males and 42 female out of total 100 causes of soft tissue tumour with male to female ratio 1.38:1 which is equal to the study of M.S. Kransdorf *et al.*¹⁷ Our study is also comparable with studies of Mynes Jensen *et al.*¹³ and Beg.¹⁸ where M:F were 1:1 and 1.8:1 respectively. In present study peak incidence is in age above 60 years followed by age group 50-60 years. Lazxim *et al.*¹⁴ studied 213 cases of soft tissue tumours in one year and reported a male preponderance in all soft tissue tumour with M:F ratio of 1.7:1.

Mandong *et al.*¹⁹ done ten years retrospective study of soft tissue sarcomas and reported male to female ratio 2: 1., which is very close to study of Abudu *et al.*²⁰ where male to female ratio was 1.9:1. Agravat *et al.*²¹ studied 100 cases of soft tissue tumors. Of these 86% were benign, .6% malignant, 2% borderline and 6% were tumor like lesions. The commonest tumour was Adipocytic (52%) of all tumours of soft tissue followed by vascular tumours (20%) peripheral nerve sheath tumours (17%), fibrous tumours (2%), fibrohistiocytic tumours (2%) smooth muscle tumours (2%) and tumours of uncertain differentiation (1%) in the decreasing order to frequency. There is a highly significant association between the type of tumours and the category of tumours. The benign adipocytic tumours accounted for the majority of benign soft tissue tumours (47%) followed by vascular tumours (17%). Benign tumours of smooth muscle (1%) and tumours of uncertain differentiation are nil encountered. Myhre-Jensen⁵ reported

most common benign soft tissue tumours were of adipocytic (48.1%) constitute majority of lipoma followed by benign fibrohistocytic tumours (15.8%). Regarding the site of soft tissue tumours in fair number of studies commonest site was extremities. Soft tissue tumors may arise in any location although approximately 36% occur in lower extremities.

In present study 30% benign soft tissue tumours were seen in extremities followed by head and neck 27% which is comparable with Beg *et al.* studies.¹⁸ The studies by Lazim, Beg and Zhi *et al.*^{19,22,23} State commonest site was extremities for the malignant soft tissue tumours mainly lower extremities followed by trunk and abdomen. Whereas in case of Madong *et al.*¹⁹ extremities followed by head and neck. Meis-Kindblom *et al.*²⁴ studied eighty cases of angiosarcoma and found most common site was extremities. A study of MPNST from 200 soft tissue sarcomas by Kar *et al.*²⁵ reported extremities as most common site followed by chest wall and trunk, pelvis and head and neck.

The malignant soft tissue tumours were observed to have a strong predilection for extremities 57.14% specifically lower extremities, followed by trunk and abdomen 22.85%. The predilection is confirmed by the studies of Kransdorf^{15,17}, Gebhard *et al.*²⁶ studied clinicopathologic and immuno histochemical features of pleomorphic liposarcomas and found lower extremities as most common site of occurrence. Studies by Olivera AM *et al.*²⁷ and Weiss SW *et al.*²⁸ on extra skeletal myxoid chondrosarcoma and MFH respectively also reported extremities as most common site that too lower extremities more than upper extremities. Accurate histologic classification contributes significantly to establishing the prognosis of sarcoma. Important diagnostic features are cell morphology and architectural arrangement; often these features are not sufficient to distinguish one sarcoma from another, particularly with poorly differentiated aggressive tumors. Whatever the type, the grade of a soft tissue sarcoma is important in predicting its behavior. Grading is largely based on degree of differentiation, average number of mitosis per high power field, cellular pleomorphism and extent of necrosis. In general tumors arising in superficial locations have better prognosis than deep seated lesions.

Conclusion

The present study concluded that the clinicopathological evaluation is still the gold standard for the proper diagnosis of soft tissue tumors.

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