

A Hospital Based Retrospective Assessment of the Histopathology of the Soft Tissue Tumours

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Abstract

Aim: Histopathological analysis of soft tissue tumours in a tertiary care hospital in Bihar region.

Methods: This retrospective study was carried out in the Department of Pathology, Darbhanga Medical College and Hospital, Darbhanga, Bihar, India from November 2019 to October 2020. Total 100 patients of all the soft tissue tumors, both benign and malignant were included in this study.

Results: Benign soft tissue tumours formed 85% of all soft tissue tumours while malignant soft tissue tumours constituted 15%. The commonest benign tumour was lipoma (50%) of all benign tumours of soft tissue followed by vascular tumours (20%) peripheral nerve sheath tumours (17%), fibrous tumours (3%), fibrohistiocytic tumours (4%) smooth muscle tumours (2%) and tumours of uncertain differentiation (1%) in the decreasing order to frequency. The benign adipocytic tumours accounted for the majority of benign soft tissue tumours (47%) followed by vascular tumours (16%). Benign tumours of smooth muscle (1%) and tumours of uncertain differentiation are nil encountered. 38% benign soft tissue tumours were seen in extremities followed by head and neck 30% and for the malignant soft tissue tumours mainly lower extremities followed by trunk and abdomen.

Conclusion: The diagnosis and management of soft tissue tumors require a team perspective. Even though soft tissue sarcomas are rare and usually present just as painless mass, the clinician must be able to diagnose it early for better management.

Keywords: soft tissue tumors, clinicopathological, adipose

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Introduction

In contrast to the reticuloendothelial system, glia, and supporting tissue of the various parenchymal organs, "soft tissue" is a non-epithelial extra-skeletal tissue of the body. [1]

The upper and lower limbs, the trunk, the retro-peritoneum, and the head and neck are the most prevalent sites of occurrence, but they can happen everywhere. [1]

Benign soft tissue tumours are more common than malignant ones. There is a

gender disparity in the prevalence of soft tissue tumours, with men being affected more frequently than women. These tumours range from being biologically inactive at the site of the first diagnosis to being biologically active in a wide range of ways, from being benign to being malignant. Cellularity, mitotic count, tumour differentiation, and necrosis are utilised to determine a tumor's grade in soft tissues. Size, microscopic grade, location, margins, clinical staging, DNA ploidy, and genetic changes are the most important factors in determining the prognosis of soft tissue tumours. [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] Soft tissue tumours can develop almost everywhere in the body, and are divided into two categories, benign and malignant, based on their biological behaviour. Benign tumours, which look and act like the healthy tissue they originate from, can only grow at a very slow rate on their own. Soft tissue tumours can be classified as benign or malignant based on their rate of growth; benign tumours are typically small (5cm in diameter), slow growing, well-defined, well-encapsulated, and painless; malignant tumours grow rapidly (>5cm in diameter), are located deep within the fascia, and cause pain.[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 quintessential 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 and Hospital, Darbhanga, Bihar, India from November 2019 to October 2020

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. Sections of approximately 5 was taken and stained by routine hematoxylin and eosin. Special stains like PAS and reticulin, PTAH were also done wherever necessary in studies. They were further examined microscopically and grading was done according.

Results

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

Type	No. of soft tissue tumours	Percentage
Benign	85	85%
Malignant	15	15%
Total	100	100%

Table 2: Age incidence in soft tissue tumours

Age in yrs	Total	%
Below 10	7	7
10-20	15	15
20-30	8	8
30-40	10	10
40-50	17	17
50-60	20	20
above 60	23	23
Total	100	100

Table 3: Incidence of Benign & Malignant Soft Tissue Tumors

Type	Category of Soft tissue tumors		Total (%)
	Benign (%)	Malignant (%)	
Adipocytic	47 (47%)	3 (3%)	50 (50%)
Fibrous	3 (3%)	0	3 (3%)
Fibrohistiocytic	2 (2%)	2 (2%)	4 (4%)
Smooth Muscle	1 (1%)	1 (1%)	2 (2%)
Skeletal Muscle	0	3 (3%)	3 (3%)
Blood Vessels	16(16%)	4(4%)	20 (20%)
Peripheral nerve sheath tumors	16 (16%)	1(1%)	17(17%)
Tumors of uncertain differentiation	0	1(1%)	1(1%)
Total	85 (85%)	15 (15%)	100 (100%)

Table 4: Site distribution of Benign and Malignant Soft Tissue tumours

Sl. No.	Site	Benign	Malignant	Total
1.	Extremities	31	7	38
2.	Head and Neck	27	3	30
3.	Back and Shoulder	19	1	20
4.	Trunk and Abdomen	6	4	10
5.	Others	02	00	2
Total		85	15	100

Total 100 cases of soft tissue tumours were include in this study. Its slightly male preponderance with a male to female ratio was 1.5:1. Benign soft tissue tumours formed 85% of all soft tissue tumours while malignant soft tissue tumours constituted 15%. Malignant soft tissue tumours had a peak above 60 years age group. The male to female ratio among the benign soft tissue tumours was 1.33:1 and

among the malignant soft tissue tumours was 1.27:1. On detailed histomorphological examination, the single most common histological group was the adipose tumours. The commonest benign tumour was lipoma (50%) of all benign tumours of soft tissue followed by vascular tumours (20%) peripheral nerve sheath tumours (17%), fibrous tumours (3%), fibrohistiocytic tumours (4%)

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 (16%). 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 (3) followed by tumours of skeletal muscle, blood vessels and peripheral nerve. 38% benign soft tissue tumours were seen in extremities followed by head and neck 30% and for the malignant soft tissue tumours mainly lower extremities followed by trunk and abdomen.

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 85% and malignant tumours was 15% 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 tumors of head and neck by Makino [16] stated 96% tumors as benign and 4% as malignant. In all their 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 literature. Specific sarcomas tend to appear in certain age groups. The male preponderance in almost all soft tissue tumour. In the present study there were 60 males and 40 female out of total 100 causes of soft tissue tumour with male to female ratio 1.5:1 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 Beg18 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. Lazim *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. Aggravates all [21] studied 100 cases of soft tissue tumors. Of these 86% were benign, 6% malignant, 2% borderline and 6% were tumor like lesions. The adipocytic tumour (50%) are most common soft tissue tumours followed by vascular tumours (20%) and peripheral nerve sheath tumours (17%). 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 (16%). 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 (4%) followed by tumours of skeletal muscle, blood vessels and peripheral nerve. Myhre-Jensen 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 37.5% occur in lower extremities.

In present study 38% benign soft tissue tumours were seen in extremities followed by head and neck 30% 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. [29] 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.

Conclusion

Soft tissue cancers are complex and require a multidisciplinary approach to diagnosis and treatment. Although soft tissue sarcomas are uncommon and frequently manifest as a painless tumour, an early diagnosis is essential for effective treatment. It is crucial to examine the specimen thoroughly on a macroscopic level and take a representative sample of the tumour.

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