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Original Research Article

A Retrospective Evaluation of Soft Tissue Tumors in Tertiary Care Centre: A Clinic-Pathological Investigation

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Abstract

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

Methods: This retrospective study was carried out in the Department of Pathology, Patna Medical College and Hospital, Patna, Bihar, India for 15 months. Total 200 patients of all the soft tissue tumors, both benign and malignant were included in this study.

Results: Benign soft tissue tumours formed 87.5% of all soft tissue tumours while malignant soft tissue tumours constituted 12.5% .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. The commonest benign tumour was lipoma (52%) of all benign tumours of soft tissue followed by vascular tumours (19.5%) peripheral nerve sheath tumours (18%), fibrous tumours (2.5%), fibrohistiocytic tumours (3.5%) smooth muscle tumours (1.5%) 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 (48.5%) followed by vascular tumours (17.5%). Benign tumours of smooth muscle (0.5%) and tumours of uncertain differentiation are nil encountered. The malignant tumours of adipose tissue accounted for majority of malignant soft tissue tumours (3.5) followed by tumours of skeletal muscle, blood vessels and peripheral nerve.31.5% benign soft tissue tumours were seen in extremities followed by head and neck 29% 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

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 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, Patna medical college and Hospital, Patna, Bihar, India for 15 months. after taking the approval of the protocol review committee and institutional ethics committee. After taking informed consent detailed history was taken from the patient or the relatives if the patient was not in good condition. Total 200 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 was 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	175	87.5%
Malignant	25	12.5%
Total	200	100%

Table 2: Age & Sex incidence in soft tissue tumours

Age in yrs	Sex		Total
	Male	Female	
Below 10	7	9	16
10-20	19	12	31
20-30	10	8	18
30-40	12	8	20
40-50	19	14	33
50-60	20	17	37
above 61	27	18	45
Total	114	86	200

Table 3: Sex Incidence of All SSTS

Category	Sex		Total
	Male (%)	Female (%)	
Benign	100(50%)	75 (37.5%)	175
Malignant	14(7%)	11(5.5%)	25
Total	114 (57%)	86 (43%)	200

Table 4: Incidence of Benign & Malignant Soft Tissue Tumors

Type	Category of Soft tissue tumors		Total (%)
	Benign (%)	Malignant (%)	
Adipocytic	97 (48.5%)	7 (3.5%)	104 (52%)
Fibrous	5 (2.5%)	0	5 (2.5%)
Fibrohistiocytic	04 (2%)	3 (1.5%)	7 (3.5%)
Smooth Muscle	01 (0.5%)	2 (1%)	3 (1.5%)
Skeletal Muscle	0	04 (2%)	4 (2%)
Blood Vessels	35 (17.5%)	04(2%)	39 (19.5%)
Peripheral nerve sheath tumors	33 (16.5%)	03(1.5%)	36 (18%)
Tumors of uncertain differentiation	0	02(1%)	02(1%)
Total	175 (87.5%)	25 (12.5%)	200 (100%)

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

Sl. No.	Site	Benign	Malignant	Total
1.	Extremities	63	12	75
2.	Head and Neck	58	04	62
3.	Back and Shoulder	37	02	39
4.	Trunk and Abdomen	15	07	22
5.	Others	02	00	2
Total		175	25	200

Total 200 cases of soft tissue tumours were included in this study. Its slightly male preponderance with a male to female ratio was 1.3:1. Benign soft tissue tumours formed 87.5% of all soft tissue tumours while malignant soft tissue tumours constituted 12.5%. 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 (52%) of all benign tumours of soft tissue followed by vascular tumours (19.5%) peripheral nerve sheath tumours (18%), fibrous tumours (2.5%), fibrohistiocytic tumours (3.5%) smooth muscle tumours (1.5%) 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 (48.5%) followed by vascular tumours (17.5%). Benign tumours of smooth muscle (0.5%) and tumours of uncertain differentiation are nil encountered. The malignant tumours of adipose tissue accounted for majority of malignant soft tissue tumours (3.5) followed by tumours of skeletal muscle, blood vessels and peripheral nerve.31.5% benign soft tissue tumours were seen in extremities followed by head and neck 29% 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 87.5% and malignant tumours was 12.5% 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 45 % 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 many 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 114 males and 86 females out of total 200 causes of soft tissue tumour with male to female ratio 1.3:1 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. 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. Agravatet 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 (52%) are most common soft tissue tumours followed by vascular tumours (19.5%) and peripheral nerve sheath tumours (18%). 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 (48.5%) followed by vascular tumours (17.5%). Benign tumours of smooth muscle (0.5%) and tumours of uncertain differentiation are nil encountered. The malignant tumours of adipose tissue accounted for majority of malignant soft tissue tumours (3.5) 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 31.5% benign soft tissue tumours were seen in extremities followed by head and neck 29% 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 if angiosarcoma and found moet 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 immmuno histochemical features of pleomomphic liposarcomas and found lower extremities as most common site of occurrence. Studies by Olivera AM etal[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.

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. A careful gross examination of the specimen and adequate sampling of the tumour is essential.

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