

A Hospital-Based Clinic-Pathological Assessment of the Soft Tissue Tumors

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Abstract

Aim: In the present study, we recorded detailed clinical history with examination of patients from records including age, sex, site of tumor.

Methods: The present study was conducted in the Department of Pathology, Darbhanga medical college and Hospital, Darbhanga Bihar, India. Total 200 Soft tissue tumors were obtained in the six months. We record parameter like age, sex, and anatomical location of tumor from clinical record and history. All these tumors we categorized under extremities, trunk-abdomen and head and neck region.

Results: The highest prevalence of benign soft tissue tumors was in third decade while malignant tumors had in fifth decade. Soft tissue tumors had slightly male preponderance having male to female ratio been 1.3:1. Male to female ratio in benign tumors was 1.2:1 and among malignant tumors ratio was 2:1. Extremities were the commonest location for both benign and malignant soft tissue tumors there after head and neck region was common. The most common benign tumor in this study was Adipocytic (27.5%) from all benign tumors followed by vascular tumors (17.5%), peripheral nerve sheath tumors (14%), fibrous tumors (3%), fibrohistiocytic tumors (5%) smooth muscle tumors and tumors of uncertain differentiation (12.5%). Among the malignant soft tissue tumors Adipocytic (5%) was commonest, followed by vascular tumors (2.5%) malignant peripheral nerve sheath tumors (1.5%).

Conclusion: The clinic-morphological evaluation of soft tissue tumors is gold standard in present days also for diagnosis and management especially in the institute where the new techniques like IHC & molecular pathology are not available. But the immunohistochemistry is needed for proper diagnosis, further management of patients and correct classification of tumors.

Keywords: soft tissue, benign, malignant, tumors

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Introduction

Soft tissue tumors (STTs) are a complex group of pathologically diverse childhood and adult neoplasms with differentiation

towards mesenchymal tissue, which may arise almost anywhere in the body. [1] Soft tissue sarcomas seem to show an upward trend, possibly because of increase in

incidence, rising interest in tumor and better diagnostic capabilities. Overlap between clinical, radiological and histological patterns of benign, malignant and non-malignant lesions makes careful histopathological examination with supportive investigations like immunohistochemistry (IHC) almost essential in many cases. [2]

Soft tissue is a non-epithelial extra skeletal tissue of the body wherein reticuloendothelial system, glia and supporting tissue of parenchymal organs are excluded. It is constituted by voluntary muscles, fat, fibrous tissue and supplying blood vessels. Peripheral nervous system is included under soft tissue by convention. They are derived principally from embryonic mesoderm with some contribution from neuroectoderm. Frequency of neoplastic process arising in tissues of mesenchymal origin is far less compared with tumors of ectodermal and endodermal origin. [3,4]

Even though soft tissue tumors can appear at any age, there is a relation between patient's age, gender, location and the type of tumor. [5,6] Lipoma which form one-third of the benign tumors is very uncommon in children, while angiolipomas are most common in young men and painful angioleiomyomas are common in middle-aged women. Rhabdomyosarcoma is seen generally in children and young adults while malignant fibrous histiocytoma and liposarcoma occur frequently in older adults. [7] The overall incidence of soft tissue sarcomas increases with age and it is higher in males compared to females. Most soft tissue tumors are classified as either benign or malignant, but still there is an intermediate group which typically shows locally aggressive behavior and a low to-moderate chance for metastasis. Benign mesenchymal tumors outweigh soft tissue sarcomas by a factor of 100. The annual incidence benign soft tissue tumors are

estimated up to 3000/million while that of sarcoma is only around 30/ million. [3]

Soft tissue tumor and tumor like lesions have very wide variety and close histopathologic findings between certain tumors with little difference detect at close examination under microscope, so it appeal to give diagnostic challenge to histopathologist. Light Microscopic evaluation of hematoxylin-eosin stained section is still the standard technique for the diagnosis of these tumor malignancies. [8] Grading of malignant tumors is the most established criteria for predicting the biological behaviour of these tumors which is not essential to give proper therapy, [9] but it is confirmed by immunohistochemistry, cytogenetics and electron microscopy for the precise role diagnosis. [10]

In the present study, we recorded detailed clinical history with examination of patients from records including age, sex, site of tumor.

Materials and Methods

The present study was conducted in the Department of Pathology, Darbhanga medical college and Hospital, Darbhanga ,Bihar, India. Total 200 Soft tissue tumors were obtained in the nine months. We record parameter like age, sex, and anatomical location of tumor from clinical record and history. All these tumors we categorized under extremities, trunk-abdomen and head and neck region.

The Gross examination done in detail with tumor size, consistency, presence of necrosis, haemorrhage, calcification, status of capsule, surgical margin of resection and invasion or adhesion of tumor to the adjacent structures.

Several sections were taken and stained with haematoxylin and eosin. Detailed microscopic analysis was done including type of tumor cell, arrangement, and pleomorphism. We also examined for necrosis, mitosis, lymphovascular

embolism, haemorrhages. Special stains like orcein, reticulin, PAS, Masson's trichrome and PTAH were conducted wherever necessary. [11] Immunohistochemistry was done in 15 cases. Markers used are vimentin, cytokeratin, desmin, neurofilament protein, EMA, Myoglobin, CD31, CD34, BCL2, S100 and SMA. The tumors were classified according to WHO classification. [12]

We include benign and malignant soft tissue tumors of various parts of body, except uterine and gastrointestinal soft tissue. Tumor like lesion also excluded. A chi-square test was used, which showed that these results were statistically significant.

Results

Table 1: Age & sex incidence in soft tissue tumors

Age in years	Sex		Total
	Male	Female	
0-10	10	5	15
11-20	15	7	22
21-30	30	20	50
31-40	20	25	45
41-50	15	16	31
51-60	10	8	18
>60	10	9	19
Total	110	90	200

The highest prevalence of benign soft tissue tumors was in third decade while malignant tumors had in fifth decade.

Table 2: Sex incidence

Tumors	Sex				Total	%
	Male	%	Female	%		
Adipocytic	35	17.5	30	15	65	32.5
Fibrous	4	2	5	2.5	9	4.5
Fibrohistiocytic	6	3	7	3.5	13	6.5
Smooth muscle	10	5	8	4	18	9
Skeletal muscle	5	2.5	8	4	13	6.5
Blood vessels	25	12.5	15	7.5	40	20
Peripheral nerve sheath tumors	20	10	10	5	30	15
Tumors of uncertain differentiation	5	2.5	7	3.5	12	6
Total	110	55	90	45	200	100

Soft tissue tumors had slightly male preponderance having male to female ratio been 1.3:1. Male to female ratio in benign tumors was 1.2:1 and among malignant tumors ratio was 2:1.

Table 3: Site distribution of Benign and Malignant soft tissue tumors

Site	Benign	Malignant	Total
Extremities	75	10	85
Head and Neck	50	4	54
Back and Shoulder	25	3	28
Trunk and Abdomen	15	5	20
Others	10	3	13
Total	175	25	200

Extremities were the commonest location for both benign and malignant soft tissue tumors there after head and neck region was common.

Table 4: Incidence of benign and malignant

Tumors	Benign	Malignant	Total
Adipocytic	55 (27.5%)	10 (5%)	65 (32.5%)
Fibrous	6 (3%)	3 (1.5%)	9 (4.5%)
Fibrohistiocytic	10 (5%)	3 (1.5%)	13 (6.5%)
Smooth muscle	16 (8%)	2 (1%)	18 (9%)
Skeletal muscle	11 (6.5%)	2 (1%)	13 (6.5%)
Blood vessels	35 (17.5%)	5 (2.5%)	40 (20%)
Peripheral nerve sheath tumors	28 (14%)	2 (1%)	30 (15%)
Tumors of uncertain differentiation	9 (4.5%)	3 (1.5%)	12 (6%)
Total	170	30	200 (100%)

The most common benign tumor in this study was Adipocytic (27.5%) form all benign tumors followed by vascular tumors (17.5%), peripheral nerve sheath tumors (14%), fibrous tumors (3%), fibrohistiocytic tumors (5%) smooth muscle tumors and tumors of uncertain differentiation (12.5%). Among the malignant soft tissue tumors Adipocytic (5%) was commonest, followed by vascular tumors (2.5%) malignant peripheral nerve sheath tumors (1.5%).

Discussion

Soft tissue tumors always have fascinated clinicians and pathologists for many years. This heterogeneous group includes a large variety of tumors that show close histopathological similarities with only very few differences which is revealed only on accurate and careful microscopic examination. By definition soft tissue represents the non-epithelial extra skeletal tissue of the body exclusive of glia, reticuloendothelial system and supporting connective tissue of parenchymal organs. Adipose tissue, voluntary muscles, vessels and fibrous tissue forms the soft tissue structures of the body.

Soft tissue tumors are very rarely obtained samples in histopathology department. In our study we received 200 soft tissue tumors; we recorded clinical data which includes age, sex, and location of tumor. Along with also record the incidence and

different microscopic pattern of soft tissue tumors.

Soft tissue tumors found more often in male than female, ratio is 1.3:1 in present study, which is similar to Myher Jensen et al [13] 1981, M J Kransdorf et al [14,15] 1995, Beg et al [16] in 2012 reported an incidence as 1:1,1.2:1, and 1.8:1 respectively.

The average age of malignant tumors is 45.5 years which is similar to studies done by Myher Jensen et al [13] 1981, Bashar et al [17] in 2010, Agravat et al [18] 2010, Lazim et al [19] in 2008, and Peterson et al [20] 2011 reported average age 49.5,39.1,64,30.5, and 63 years respectively.

In our study commonest site of benign tumors is an extremity (37.5%) mainly lower extremities, followed by head and neck region (25%), which is comparable with Beg et al in 2012 study showing common location of benign tumors in extremities (40.9%) then head and neck (35.5%). [21] M.J. Kransdorf et al 1995 also reported the same site incidence as 60.6% in extremities, 13.8% in head and neck. [14,15]

In present study malignant tumors frequently observed in extremities (40%), mainly lower extremities which is followed by trunk and abdomen (20%) which is similar to M.J. Kransdorf study.

[14,15] Also comparable with Lazim et al [19] in 2008, Zhi-wei et al, [22] Beg et al. [21]

Soft tissue tumors form a vast and heterogeneous group of neoplasms. The diagnosis of soft tissue tumors requires a team approach. Careful examination of gross specimen and adequate sampling is very essential. Light microscopic examination of H&E-stained sections are usually sufficient for the diagnosis. In doubtful cases other techniques like special stains, IHC and electron microscopy can also be used. [23]

Conclusion

Soft tissue sarcomas occur rarely, presented as painless mass, so it should be diagnosed quickly for the sake of better management and good prognosis of patients. Diagnosis and management is a team work of clinicians and pathologist. Careful gross examination with appropriate sampling of soft tissue tumor is essential. New advance techniques like special stains, immunohistochemistry, and molecular studies are useful in addition to routine light microscopic exact diagnosis. But higher cost of these tests is the main limitation. The clinic-morphological evaluation of soft tissue tumors is gold standard in present days also for diagnosis and management especially in the institute where the new techniques like IHC & molecular pathology are not available. But the immunohistochemistry is needed for proper diagnosis, further management of patients and correct classification of tumors.

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