Section: Pathology

Original Research Article

HISTOPATHOLOGICAL STUDY OF SOFT-TISSUE TUMORS IN A TEACHING HOSPITAL

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ABSTRACT

Background: Soft tissue tumors constitute a large and heterogeneous group of neoplasms. Clinically soft tissue tumors range from benign, self limited lesions to intermediate grade to highly Aggressive. Most of soft tissue tumors are benign, while few of them are malignant in nature. **Aims and Objectives:** To assess the histopathological pattern of various soft-tissue tumors.
Materials and Methods: Prospective study was conducted for a period of 2 years in the Department of Pathology, Mamata academy of medical sciences, Bachupally, Hyderabad, Telangana. A total of 165 samples from patients with soft-tissue tumors, including both benign and malignant tumors were analyzed and classified primarily as per the WHO classification of soft-tissue tumors.
Results: Most of the cases 41-50years age group 55(33.3%) Adipocytic tumors were most common constitutung 57.5% and next common was vascular tumors consituting 15,1% tumors. Most common benign soft tissue tumor reported was Lipoma (57.5%) followed by Hemangioma (25.1%).
Conclusion: Overall soft-tissue tumors are a rare category of tumors with benign tumors vastly outnumbering malignant tumors. . Proper examination of the gross specimen and careful sampling of the tumor is required for the correct diagnosis. Hematoxylin- and Eosin-stained sections remain very important for the diagnosis of soft-tissue tumors along with immunohistochemistry and molecular markers.
Keywords: Soft-tissue; Immunohistochemistry.

INTRODUCTION

Soft tissue is defined as the supportive tissue of various organs and the nonepithelial, extra skeletal structures exclusive of lymphohematopoietic tissues. It includes fibrous connective tissue, adipose tissue, skeletal muscle, blood/lymph vessels, and the peripheral nervous system. Soft-tissue tumors constitute a large and heterogeneous group of neoplasms. Traditionally, tumors have been classified according to histogenetic features. However, histomorphologic, immunohistochemical, and experimental data suggest that most sarcomas arise from primitive, multipotential mesenchymal cells .Within the various histogenetic categories, soft tissue tumors are usually divided into benign and malignant forms.[1]
The large majority of soft tissue tumours 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 tumours but they are life threatening and may pose a significant diagnostic and therapeutic challenges Since there are more than 50 histological subtypes of soft tissue tumours which are often associated with unique clinical, prognostic and therapeutic features. Immunohistochemistry is used to detect tumor specific alterations which add significantly to histological interpretation, but several groups of tumors still lack reliable immuno-histochemical markers.[2]
Light microscopic evaluation of hematoxylin-eosin-stained sections remains the standard technique for the initial diagnostic approach to these tumors and is sufficient in the majority of the cases.[1] And a biopsy is mandatory to establish malignancy and assess the histological type, subtype, and grade and is recommended in clinical practice guidelines for all deep-seated tumors >5 cm.[3]

The etiology of most benign and malignant tumors of soft tissue is unknown. In rare cases (<10%), genetic and environmental factors, irradiation, viral infections, and immunodeficiency are associated with the development of usually malignant soft tissue tumors.[3]

Benign tumors of soft tissue are more common than benign tumors of bone. They can occur at almost any site, both within and between muscles, ligaments, nerves, and blood vessels. These tumors vary widely in appearance and behavior. Some tumors can be quite aggressive. Invasion of nearby tissues increases the chance of an incomplete excision and the possibility that the tumor will come back.[4]

Soft tissue tumors are relatively rare and constitute less than 1% of all the cancers. Benign mesenchymal tumors outnumbered sarcomas by the factor of at least 100.

The annual clinical incidence of benign soft tissue tumors has been estimated up to 3000/million population i.e.-less than 1% of all the malignant tumors.[5]

Lipomas are the most common neoplasm of mesenchymal origin arising in any location where fat is present. At least one third of benign tumors are lipomas, one third are fibrohistiocytic tumors and fibrous tumors, 10% are vascular and 5 % are nerve sheath tumors.[6]

Aim of the study: To study the histopathological pattern of soft-tissue tumors.

Its Objectives

1. To assess the histopathological pattern of various soft tissue tumors.
2. To assess the age-wise distribution of soft-tissue tumors.
3. To assess the gender-wise and site-wise distribution of soft-tissue tumors.

MATERIALS AND METHODS

The present study was conducted for a period of 2 years in the Department of Pathology, Mamata academy of medical sciences, Bachupally, Hyderabad, Telangana. Ethical clearance for the study was obtained from the Institutional Ethics Committee, A total of 165 samples from patients with soft-tissue tumors, including both benign and malignant tumors were analyzed and classified primarily as per the WHO classification of soft-tissue tumors.

Inclusion Criteria

- Those patients who are willing for the study.
- Specimens more than 6 mm in size.
- Specimens sent in proper fixative.

Exclusion Criteria

- Those patients who are not willing for the study.
- Specimens <6 mm in size.
- Specimens not sent in proper fixative.

Methodology

The resected surgical specimens that were sent to the department of pathology were fixed in 10% buffered neutral formalin fixative. The specimens were grossed and multiple representative bits from the tumor, and any other relevant areas were submitted for processing. Thin sections of 3–4 microns were cut from the paraffin block. The slides prepared were routinely stained by hematoxylin and eosin stain and evaluated by light microscopy.

Statistical Analysis

Data obtained were entered into Microsoft Excel Spreadsheet and statistically analyzed using SPSS software.

RESULTS

Age distribution: Total number of cases were 165. The patient age ranged from 20 years to more than 70 years. Most of the cases 41-50years age group 55(33.3%) followed by 31-40years 40(24.2%),20-30 years constituted 20(12.1%), 51-60years 30(18.1%)61-70years 18(10.9%), More than 70 years 2(1.2%).

Gender distribution: There were 90 (54.5%) male patients and 75 (45.4%) female patients. The male to female ratio was 1.2:1.

Site distribution: The most common site of presentation was at Lower limbs 75(45.5%) next common was at Upper limb 35 (21.2%) and other sites included. Head and neck 10(6.06%), Chest wall 5(3.30%),Abdomen 10(6.06%),Back 30(18.1%).

Soft tissue tumors: Out of total 165 cases, 145 cases (87.8%) were benign and 30 cases (12.1%) were malignant.

Table 1: Distribution of soft tissue tumors

Benign tumors	Benign	Malignant
Adipocytic tumors	95(57.5%)	-
Vascular tumors	25(15.1%)	2(1.2%)
Fibrous tumors	11(6.6%	9(5.4%)
Neural tumors	12(7.2%)	2(1.2%)
Smooth muscle tumors	2(1.2%)	-
Skeletal muscle tumors	-	1(0.6%)
Mesenchymal tumors	-	6(3.6%)
Total	**145(87.8%)**	**20(12.1%)**

In the present study adipocytic tumors were most common constitutung 57.5% and next common was vascular tumors consituting 15,1% tumors.

Table 2: Distribution of Benign soft tissue tumors

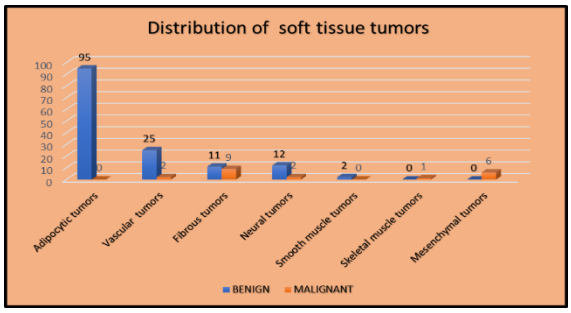
Benign tumors	No. of cases	Percentage
Lipoma	95	57.5
Hemangioma	20	12.1
Lymphangioma	05	3.03
Dermatofibroma	05	3.03
Benign fibrous histiocytoma	06	3.6
Schwanomma	07	4.2
Neurofibroma	05	3.03
Leiomyoma	02	1.2
Total	**145**	**100%**

In the present study most common benign soft tissue tumor reported was Lipoma (57.5%) followed by Hemangioma (25.1%).

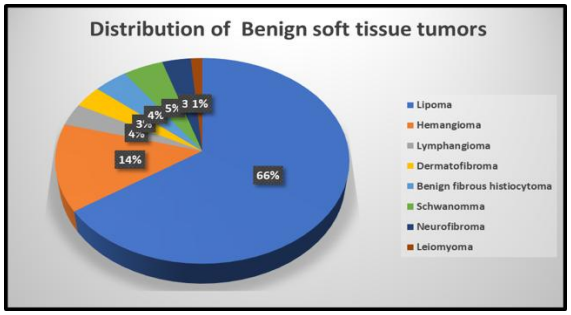
Table 3: Distribution of Malignant soft tissue tumors

Malignant soft tissue tumors	No. of cases	Percentage
Angiosarcoma	02	1.2
Fibrosarcoma	01	0.6
Rhabdomyosarcoma	01	0.6
Malignant fibrous histiocytoma	08	4.8
Synovial sarcoma	06	3.6
MPNST	02	1.2
Total	**20**	**100%**

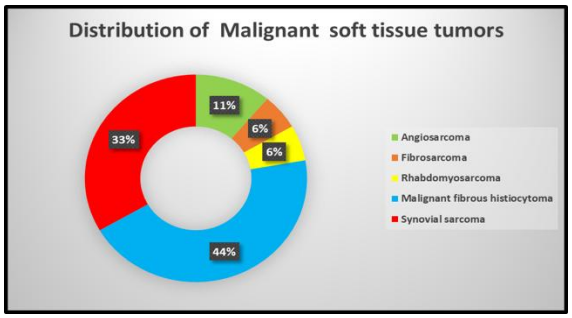
In the present study most common maligant soft tissue tumor reported wasMalignant fibrous histiocytoma (4.8%) followed by Synovial sarcoma (3.6%).



Graph 1: Bar diagram showing distribution of soft tissue tumors



Graph 2: Pie diagram showing distribution of BENIGN soft tissue tumors



Graph 3: Pie diagram showing distribution of MALIGNANT soft tissue tumors

DISCUSSIONS

Soft tissue tumors are diagnosed in Excisional biopsy of tumor mass and it is most appropriate method of diagnosis of Soft tissue tumors. The histological diagnosis and grading is mandatory as it has therapeutic and prognostic relevance.

Age Distribution

In the Present study the patient age ranged from 20 years to more than 70 years. Most of th45.6e cases 41-50years age group 55(33.3%) followed by 31-40years 40(24.2%) Mean age of the patients was 46.5 ± 12.5 years, similar findings were noted in Jyothi et al,[8] study where most common was in the 41–50 years age group.In Hena et al study,[7] the mean age of patients 36.6 ± 17.7 years.

Gender Distribution

In the present study Majority were male patients 90 (54.5%) compared to females 75 (45.4%) female patients. The male to female ratio was 1.2:1 .Similar findings noted in Jyothi et al study,[8] Piyush et al,[9]

and Simon et al study[10] with males (53.29%) , (54.1%) . (50.6%) respectively.

Distribution of site

In the present study the most common site of presentation was at Lower limbs 75(45.5%) next common was at Upper limb 35 (21.2%) and other sites included Head and neck 10 (6.06%), Chest wall 5(3.30%),Abdomen 10(6.06%), Back 30(18.1%). In Jyothi et al,[7] of all 152 cases, the most common site of soft-tissue tumors was trunk (30.92%), followed by head and neck (29.61%), lower extremity (23.03%), and upper extremity . In Piyush et al study,[9] the most common site of soft tissue tumours as a whole is head and neck, followed by upper limb. Although benign tumours were seen to be maximum in head &neck, where as intermediate in upper limb, and malignant tumours showed a predilection for lower limb. In Simon et al,[10] study the head and neck was the commonest primary site affected by soft tissue tumors which were found in 29.7% (71) of the patients . The lower extremity was the second most common site and was noted in 21.8% (52) patients, followed by upper extremity 11.7% (28) and abdominal region in 10% (24) patients.

Histopathology

In the present study adipocytic tumors were most common constituting 57.5% and next common was vascular tumors consituting 15,1% tumors.

Adipocytic Tumors

In the present study Benign adipocytic tumors (n 95) included mostly lipomas (n = 95) and angiolipomas (n = 11). In Hena et al,[7] study Benign adipocytic tumors included mostly lipomas (n = 64) and angiolipomas (n = 11). malignant ones which included, liposarcoma NOS (n = 3), dedifferentiated, and round cell liposarcoma (n = 1 each). In Jyothi et al,[8] study lipoma was the most common , i.e., 60.52% of all soft-tissue tumors. One case of pleomorphic lipoma was diagnosed.

Vascular Tumors

In the present study hemangioma (n = 20) and lymphangioma (n = 5) cases were seen .In Hena et al,[7] study hemangioma (n = 44) and lymphangioma (n = 4) were seen , while 2 cases of angiosarcoma (n = 2) was seen.In Jyothi et al study.[8] Hemangioma was the most common diagnosis and there was a total of 16 cases . It was followed by lymphangiomas which were seen in 6 cases.Piyush et al,[9] study the vascular tumours were the 2nd most common soft tissue tumours , the majority of which was hemangiomas.

Fibroblastic Tumors

In the present study Dermatofibroma (n =5) , Hena et al,[7] study Benign cases (fibroma; n = 8) , (fibromatosis; n = 6 and myofibroblastic sarcoma; n = 1) .In Jyothi et al study 4 cases of adult fibrosarcoma were diagnosed. 6 cases of benign fibrous histiocytoma were seen .In Piysuh et al,[9] Among the 4 benign cases, 1case benign fibrous tumor, 1 nodular fasciitis, 1 angiomyofibrblastoma, 1 fibromatosis.

Neural Tumors

In the present study Schwanomma (n=7)and neurofibroma (n=5),In Jyothi et al[8] study Schwannoma was the most common diagnosis, seen in 7 cases. . in Piyush et al,[9] study 11 cases were benign ,1 malignant, out of which 10 cases were of schwannoma and 1neurofibroma. In Hena et al,[7] study Benign PNSTs (n = 27) included schwannoma (n = 14), neurofibroma (n = 10), and traumatic neuroma (n = 3). Simon et al,[10] study Lipoma 30 (20.7%) followed by hemangioma 19 (13.1%), pyogenic granuloma 18 (12.4%), neurofibroma 16 (11%), and schwannoma 12 (8.3%) respectively

Smooth muscle tumors

In the present study leiomyoma (n=2),Hena et al,[7] study Leiomyosarcomas(LMS) formed the majority (n = 11; 84.6%) and were the second most common malignant STTs (4.07%).

CONCLUSION

In the present study Soft tissue tumors are more common in the fourth decade of life and have a slight male preponderance. Adipocytic tumors were most common constitutung 57.5% and next common was vascular tumors consituting 15,1% tumors.

Most common benign soft tissue tumor reported was Lipoma (57.5%) followed by Hemangioma (25.1%) .Most common maligant soft tissue tumor reported was Malignant fibrous histiocytoma (4.8%) followed by Synovial sarcoma (3.6%).

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