

A Study on Clinico-Pathological Evaluation of Soft Tissue Tumours and Tumour Like Lesions

Geetanjali Jeevangi¹, Aaisha Anjum Risaldar², Ayesha Fatima³

¹Associate Professor, Dept. of Pathology, Faculty of Medical Sciences- Khaja Banda Nawaz University

²Consultant Pathologist, Shoaib Clinical Laboratory

³Associate Professor, Dept. of Pathology, Raniganj Institute of Medical Sciences, West Bengal, India

Received: 26-04-2026 / Revised: 17-05-2026 / Accepted: 10-06-2026

Corresponding Author: Dr. Ayesha Fatima

Conflict of interest: Nil

Abstract:

Background: Soft tissue mass lesions with morphologic heterogeneity occur in the non-epithelial extra skeletal tissue. Soft tissue tumours and tumour like lesions posed diagnostic difficulties as they exhibit similar clinical and radiological features. The clinical presentation is myriad with benign lesions masquerading as malignant tumours such as sarcomas, lymphomas and metastatic carcinoma. This study was undertaken to evaluate soft tissue tumours and tumour like lesions and characterise their distribution in a tertiary care centre of South India

Methods: Data was obtained from clinical records of patients diagnosed as soft tissue mass lesions. Corresponding surgical specimens were processed to paraffin block and sectioned. The slides were stained with routine Haematoxylin and eosin stain. Appropriate special and immune- histochemical stains were performed to confirm histopathological diagnosis. The soft tissue tumours were categorized according to the WHO 2020 classification and graded by FNLCC grading system. The proportion of subjects was distributed according to epidemiological and histopathological features and statistically evaluated. The data was represented in terms of frequency distribution tables. The categorical and counting variables were presented by frequencies and percentages.

Results: Among 284 soft tissue lesions, 241 (15.43%) were soft tissue tumours and 43 (2.75%) were tumour like lesions. Benign soft tissue tumours 220(91.29%) were more common than malignant 19 (7.88%) and intermediate soft tissue tumours 2(0.82%). The most common benign soft tissue tumours were from adipocytic group and the mean age was 40.27 years with a male to female ratio of 132:88(1.50). The common site was upper limb. The most common malignant tumour was Liposarcoma. Among the tumour like lesion ganglion cyst was more common followed by synovial cyst.

Conclusions: Adipocytic tumours were the most common soft tissue tumours both benign and malignant. Histopathological examination is necessary for unmasking the true biological nature of tumours as they masquerade clinically as benign or malignant entities.

Keywords: Soft tissue tumours, Tumour like lesions.

DOI: 10.25258/ijpqqa.17.6.54

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

Soft tissue mass lesions are a spectrum of histologic entities. Soft tissue tumours may be mesodermal in origin (e.g., fat, muscle, connective tissue, vessels) excluding bone and cartilage, ectodermal in origin (Peripheral nerve sheaths), and from cells like interstitial cells of Cajal (Gastrointestinal stromal tumors which have neural and smooth muscle features).[1,2]

These tumours are diagnostically challenging as they are characterized by heterogeneity with overlapping clinico-pathological features and can masquerade as malignant entities.[3,4]

Given that morphologic complexity, immuno-histochemical staining and molecular results are interpreted in a clinico-pathological context.[5,6]

The aim of this study was to evaluate soft tissue tumours and tumour like lesions and characterise their distribution in a tertiary care centre of South India

Methods

Appropriate special and immune-histochemical stains were done wherever necessary. The tumours were categorized according to the WHO 2020 classification and graded by FNLCC grading system.

Inclusion criteria: All the Soft tissue surgical specimens were studied as per epidemiological and histomorphological data. **Exclusion criteria:** Skin and adnexal tumours were excluded. The surgical samples were processed to paraffin block and sectioned. The

slides were stained with routine Haematoxylin and eosin stain

Results

Soft tissue tumors constituted only about 15.43 % of all neoplasms during the study period. A total of 284 (18.18%) were included in this study. The patients presenting with soft tissue lesions ranged in age, the most common age group was 20-40 year There was male sex preponderance in the distribution of Soft tissue mass lesions (males=132;females=88) with a ratio of 1.5) The most common soft tissue lesions were benign tumors which constituted 91.27% of cases followed by Tumor like Lesion 15.14%,Malignant tumours 7.88% and Intermediate tumors 0.84%. Most of the benign tumors occurred in the upper extremities and malignant tumors were seen on lower limb. Amongst benign tumors Adipocytic tumors constituted 73.64% of cases followed by Vascular tumors (10.45%) and the most common benign Adipocytic tumor subtype was Lipoma (68.18%). There were two cases of an Intermediate grade STT which were Inflammatory My ofibroblastic tumor(0.82%). Malignant soft tissue tumors

encountered were Adipocytic tumor which included Low grade Myxoid Liposarcoma and Liposarcoma (3.63%). Others, were Undifferentiated Sarcoma (2.27%), GIST (0.9%), Leiomyosarcoma (0.9%), Fibrosarcoma (0.45%) and Angiosarcoma (0.45%). FNCLCC grading showed Grade I Low grade Liposarcoma and Grade II Undifferentiated Sarcoma, Leiomyosarcoma, fibrosarcoma and Angiosarcoma Among Tumor like lesions Ganglion cysts (9.50%) were more common followed by Synovial cysts (2.81%), Abscess, and Axillary tail of breast (1.40%).

Clinico-pathological correlation showed that most of the clinically suspected benign STT were in concordance with Histopathological diagnosis except for three cases which revealed malignancy. Fourty three cases of suspected STT were found out to be Tumor like lesions and two cases with clinical suspicion of malignant STT were Benign STT. Histopathological diagnosis was confirmed by Immuno-histochemistry in four cases.

Table 1: Incidence of stt and tumour like lesion

Total Number of Tumors Studied	1562	100%
Soft Tissue Tumor	241	15.43%
Tumor Like Lesions	43	2.75%

Table 2: Sexwise distribution of STT

	Male	Female	Total
Benign	132(54.77%)	88(36.51%)	220(91.29%)
Intermediate	1(0.41%)	1(0.41%)	2(0.82%)
Malignant	9(3.73%)	10(4.15%)	19(4.6%)
Total	142(58.9%)	99(41.07%)	(100%)

Table 3: Age wise distribution of benign soft tissue tumor

Neoplasms	0-20Y	20-40Y	40-60Y	60-80Y	Total
Adipocytic Tumor	13	67	55	27	162
Vascular Tumor	4	5	10	4	23
Fibro/Myoblastic Tumor	1	8	4	0	13
Fibro Histiocytic Tumor	0	5	3	1	9
Peripheral Nerve Sheath Tumor	2	5	2	0	9
Tumor of uncertain differentiation	1	0	2	0	3
Pericytic Tumor	0	0	0	1	1
	21	90	76	33	220

Table 4: Sex wise distribution of benign soft tissue tumor

Neoplasms	Male	Frequency	Female	Frequency	Total
Adipocytic Tumor	100	45.45%	62	28.18%	162
Vascular Tumor	16	7.27%	7	3.18%	23
Fibro/Myoblastic Tumor	9	4.09%	4	1.81%	13
Fibro Histiocytic Tumor	3	1.36%	6	4.58%	9
Peripheral Nerve Sheath Tumor	3	1.36%%	6	4.58%	9
Tumor of uncertain differentiation	1	0.45%	2	0.90%	3
Pericytic Tumor	0	0.00%	1	0.45%	1
	132		88		220

Table 5: Anatomical site wise distribution of benign soft tissue tumor

Neoplasms	U Limb	L Limb	Trunk	Head & Neck	Total
Adipocytic Tumor	84	28	36	14	162
Vascular Tumor	4	6	4	9	23
Fibro/Myoblastic Tumor	9	2	0	2	13
Fibro Histiocytic Tumor	6	3	0	0	9
Peripheral Nerve Sheath Tumor	7	2	0	0	9
Tumor of uncertain differentiation	0	3	0	0	3
Pericytic Tumor	0	0	0	1	1
	110	44	40	26	220

Table 6: Incidence of intermediate grade and malignant soft tissue tumor

Intermediate Soft Tissue Tumor			
Inflammatory Myofibroblastic Tumor	2	0.82%	0.82%
Malignant Soft Tissue Tumor in Present Study (Total-19)			
Adipocytic Tumors			3.32%
Liposarcoma	3		
Myxoid Liposarcoma	5		
Tumors of Uncertain Differentiation			
Undifferentiated Sarcoma	5		2.07%
Smooth Muscle Sarcoma			
Leiomyosarcoma	2		0.83%
GIST-Spindlecell Type			
	2		0.83%
Fibroblastic and myofibroblastic tumors			
Fibrosarcoma	1		0.41%
Vascular tumors			
Angiosarcoma	1		0.41%

Table 7: Sex wise distribution of intermediate and malignant soft tissue tumor

Intermediate STT	Male	Frequency	Female	Frequency	Total
Inflammatory Myofibroblastic Tumor	1	0.41%	1	0.41%	2
Adipocytic Tumor	3	1.24%	5	2.07%	8
Tumor of uncertain differentiation	3	1.24%	2	0.82%	5
Leiomyosarcoma	1	0.41%	1	0.41%	2
GIST	1	0.41%	1	0.91%	2
Fibroblastic and myofibroblastic tumor	1	0.41%	0	0	1
Vascular tumor	1	0.41%	0	0	1
	11		10		21

Table 8: Age wise distribution of intermediate and malignant soft tissue tumor

	0-20Y	20-40Y	40-60Y	60-80Y	Total
Inflammatory Myofibroblastic Tumor	0	1	1	0	2
Adipocytic Tumor	0	3	1	4	8
Tumor of Uncertain Differentiation	0	1	3	1	5
Leiomyosarcoma	0	0	1	1	2
GIST	0	0	1	1	2
Fibroblastic and myofibroblastic tumor	0	0	1	0	1
Vascular tumor	0	0	1	0	1
	0	5	9	7	21

Table 9: Anatomical site wise distribution of intermediate and malignant soft tissue tumor

	U Limb	L Limb	Trunk	Head & Neck	Total
Inflammatory Myofibroblastic Tumor	0	0	1	1	2
Adipocytic Tumor	3	4	1	0	8
Tumor of uncertain Differentiation	1	1	3	0	5
Leiomyosarcoma	0	1	1	0	2
GIST	0	0	2	0	2
Fibroblastic and myofibroblastic tumor	0	1	0	0	1
Vascular tumor	0	1	0	0	1

Table 10: Incidence of tumor like lesions

Tumor Like Lesions	Number	Percent
Ganglion	13	4.58%
SynovialCyst	11	3.87%
Abscess	10	3.52.%
Axillary tail of breast	9	3.16.%
TOTAL	43	15.14%

Table 11: Age wise distribution of tumor like lesions

Tumor Like Lesion	0-20Y	20-40Y	40-60Y	60-80Y	Total
Ganglion	5	3	4	1	13
Synovial Cyst	0	0	0	11	11
Abscess	0	6	0	4	10
Axillary tail of breast	0	4	5	0	9

Table 12: Sex wise distribution of tumor like lesions

Tumor Like Lesion	Male	Frequency	Female	Frequency	Total
Ganglion	5	27.90%	8	30.23%	13
Synovial Cyst	7	11.62%	4	6.97%	11
Abscess	5	4.65%	5	4.65%	10
Axillary Tail of Breast	0	0.00%	9	9.30%	9

Table 13: Anatomical site wise distribution of tumor like lesions

Tumor Like Lesion	U Limb	L Limb	Trunk	Head & Neck	Total
Ganglion	4	9	0	0	13
Synovial Cyst	0	11	0	0	11
Abscess	0	8	2	0	10
Axillary tail of breast	9	0	0	0	9

Table 14: Correlation between clinical diagnosis and histopathologic examination of soft tissue tumors (STT)

Clinical Diagnosis	HPE Diagnosis	Total	Nature
Lipoma	Lipoma	149	Benign STT
	Myxolipoma	4	Benign STT
	Myolipoma	3	Benign STT
	Fibroma of Tendon sheath	1	Benign STT
	Axillary Tail of Breast	9	TUMORLIKELESION
	Liposarcoma	1	Malignant STT
	Low Grade Myxoid Liposarcoma	2	Malignant STT
	Nodular Fasciitis	1	Benign STT
	Ganglion	3	Tumor Like Lesion
Soft Tissue Swelling	Lipoma	4	Benign STT
	Myofibroblastoma	1	Benign STT
	Fibrosarcoma	1	Malignant STT
	Fibroma	10	Benign STT
	Deep benign fibrous histiocyoma	7	Benign STT
	Giant cell tumor of tendon sheath	2	Benign STT
	Ganglion	10	Tumor Like Lesion
	Actinomycotic abscess	4	Tumor Like Lesion
	Inguinal region abscess	6	Tumor Like Lesion
Soft Tissue Neoplasm	Cavernous Hemangioma	2	Benign STT
	Undifferentiated Sarcoma	2	Malignant STT
	Schwannoma	4	Benign STT
	Synovial Cyst	11	Benign STT
	Sialo lipoma	1	Benign STT
	Pyogenic Granuloma	19	Benign STT
	Squamous Cell Carcinoma	1	Benign STT
	Hemangioma	4	Benign STT
	Gastric GIST	2	Malignant STT

Neurofibroma	Neurofibroma	5	Benign STT
Fibroma	Angiofibroma	2	Benign STT
Fibro lipoma	Spindle cell lipoma	1	Benign STT
Soft tissue sarcoma	Leiomyosarcoma	2	Malignant STT
	Angiosarcoma	1	Malignant STT
	Liposarcoma	5	Malignant STT
	Undifferentiated Sarcoma	3	Malignant STT

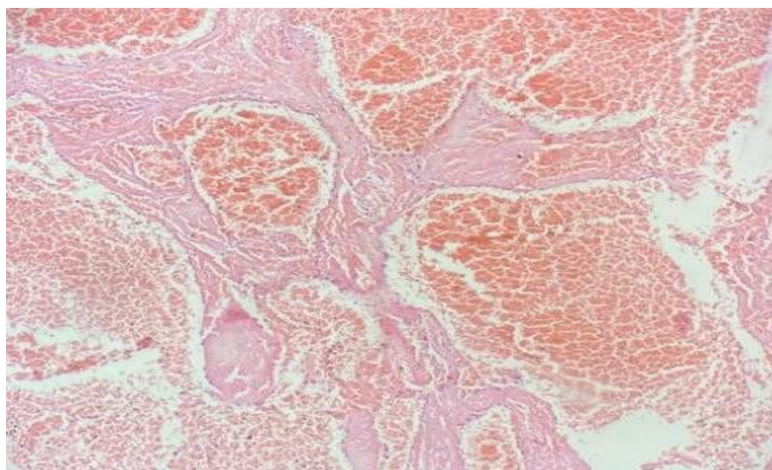


Figure 1: Photomicrograph of Cavernous Hemangioma showing dilated thick-walled vessels

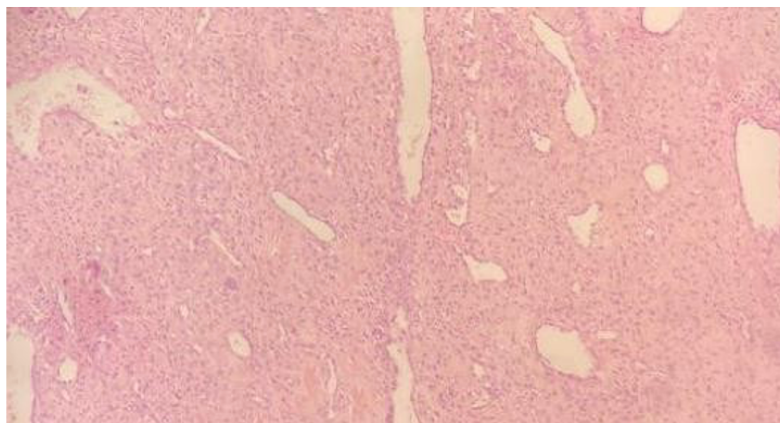


Figure 2: Photomicrograph of Angiofibroma

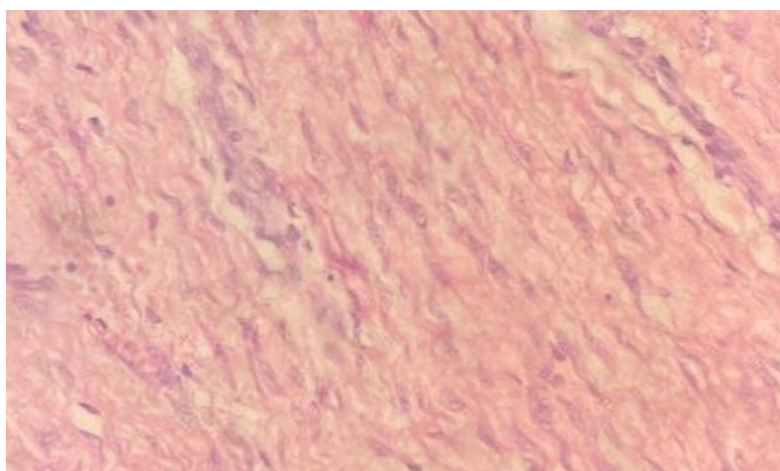


Figure 3: Photomicrograph of Myofibroblastoma

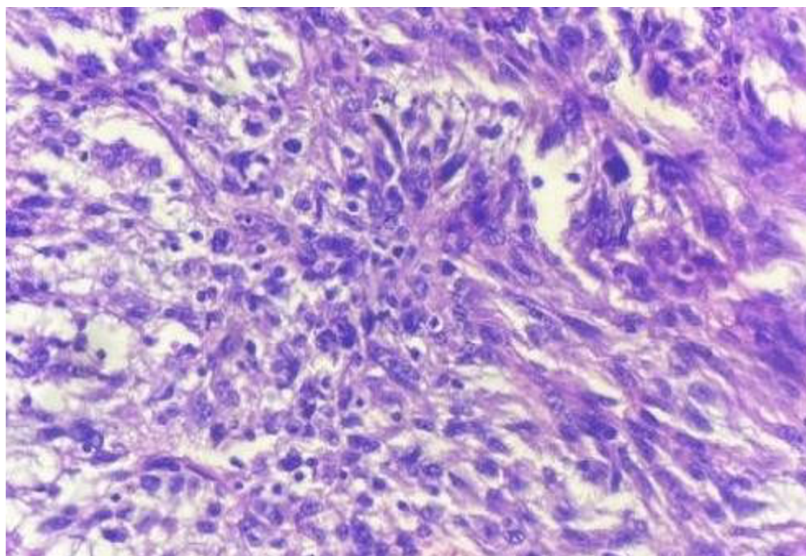


Figure 4: Photomicrograph of Undifferentiated Pleomorphic sarcoma with bizarre multinucleate tumor giant cells.

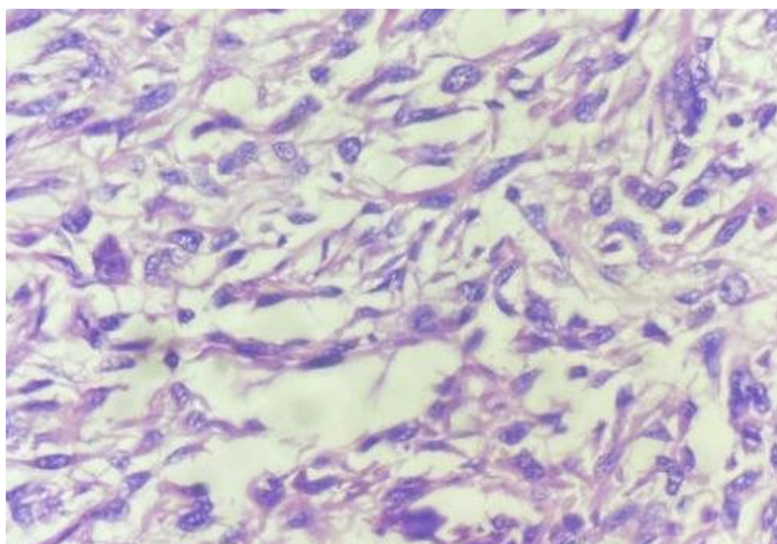


Figure 5: Photomicrograph of Leiomyosarcoma

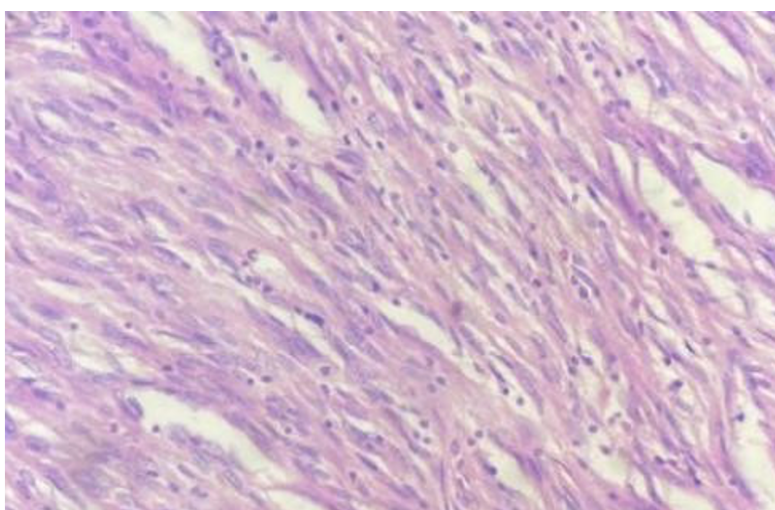


Figure 6: Photomicrograph of Inflammatory myofibroblastic tumor

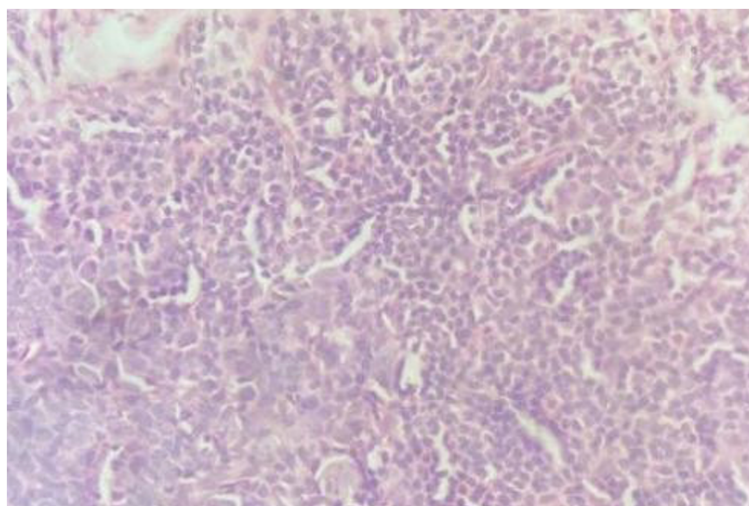


Figure 7: Photomicrograph of Glomus tumor

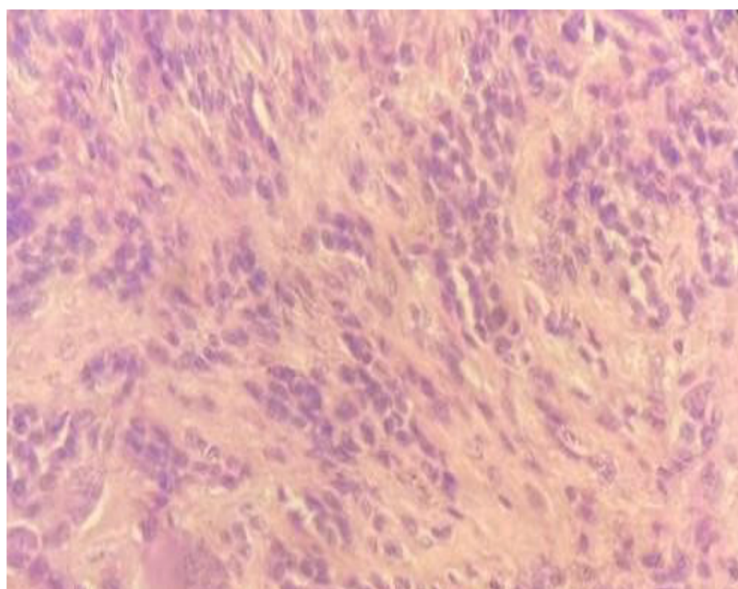


Figure 8: Photomicrograph of Tenosynovial giant cell tumor

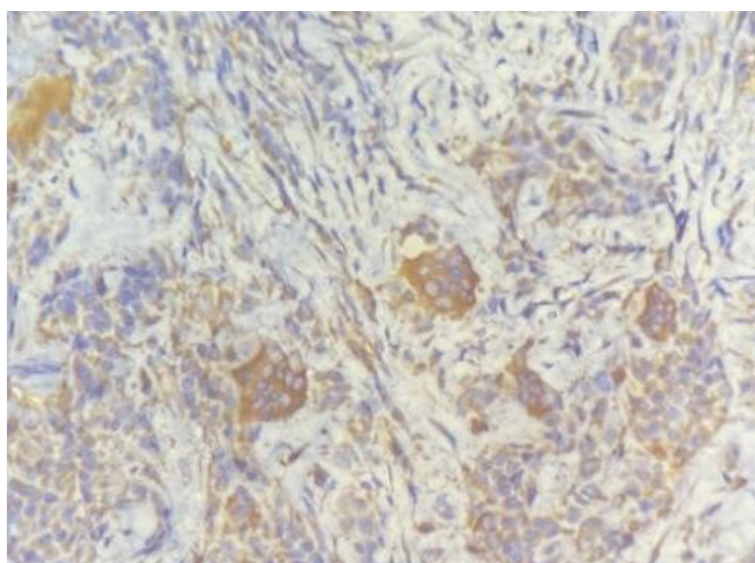


Figure 9: Photomicrograph of Tenosynovial giant cell tumor showing CD 68 positivity

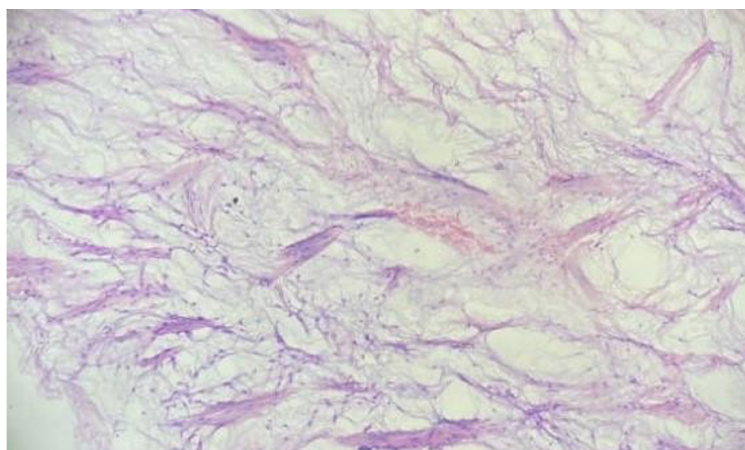


Figure 10: Photomicrograph of Myxoma

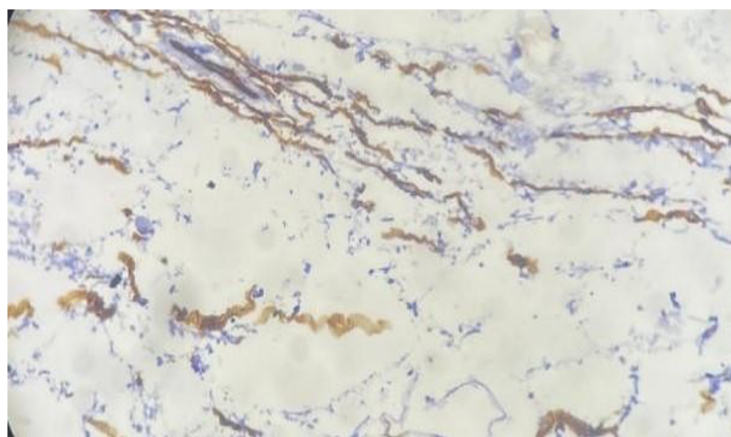


Figure 11: Photomicrograph of Myxoma showing CD34 Positivity

Discussion

Soft tissue mass lesions are heterogeneous lesions presenting usually as swelling/pain. Histopathological examination is crucial in the description and diagnosis of the various histological subtypes of soft tissue tumors and exclude reactive processes.[7,8,9] The present study was undertaken to analyze soft tissue tumors and tumor like lesions

Among 1562 specimens received, 284 cases of soft tissue lesions were reported during 18 months of study. Incidence of soft tissue tumors in the present study was comparable with study by V Narhire et al.[10]

Incidence of Tumor like lesion was comparable with study by Bashar et al Benign soft tissue neoplasms were commonest accounting for 91.29% of soft tissue tumours whereas Malignant Soft tissue tumors were 7.88% and Tumor Like soft tissue lesion were 15.14% [11]. In the present study Adipocytic tumor was the common benign STT with similar reports by Narhari et al, Harpal et al, Janaki et al and Mirza Baig et al. [10,12,13,14]

V Narhari et al Harpal et al and Janaki et al described a high incidence of vascular STT and Peripheral nerve sheath tumours. [10,12,13]

Literature search reveals that Malignant STT were sparse but studies by Janaki et al, Agraval et al, Harpal et al Mirza baig et al have described a high incidence of malignant STT and the common Malignant tumours were of Adipocytic origin and Agraval et al Malignant STT were predominantly Fibrous histiocytic and Peripheral nerve sheath in origin.[13,3,12,14]

The sex distribution soft tissue tumors showed male predominance in the present study which was comparable to studies of V Narhari and Harpal et al.[10,12]. In the present study, benign STT and benign adipocytic tumors had a predilection to Upper limb, Similar findings were observed by V Narhari et al and Janaki et al whereas Janaki et al reported Lower limbs as the common site for malignant STT compared to trunk.[10,13]. In the present study, forty three cases of Tumor like lesion were seen with Ganglion cyst being the commonest compared to Agravat et al, Bashar et.al and Begum F et al. [3,11,15]. Histopathological examination is crucial as clinical -pathological correlation of soft tissue mass lesions in the present study showed discrepancy in the clinically assigned cases and Histopathological examination. In the present study ,three benign STT were Malignant STT, two Malignant STT

were Benign STT and forty three soft tissue lesions were Tumour like lesions.

Conclusion

Soft tissue tumor's with different histological subtypes with varying behaviors are confusing to treat hence Histopathological examination is a reliable guide for unmasking the malignant entities from benign entities and reactive processes. Demographics help for better clinical approach to diagnosis.

References

1. Weiss SW, Goldblum JR General considerations Enzinger and Weiss's Soft tissue tumors. 5th edition: 2008.
2. Andrew Horvai. Bones Joints and Soft Tissue Tumours. Chapter 26. Robbins and Cotran. Vol 2. 1179-1218.
3. Agravat A H, Dhruva G A, Parmar S A. Histopathology study of human's soft tissue tumours and tumour like lesions. Journal of cell and tissue research 2010; 10(2):2287-2292.
4. Hashimoto H, Daimaru Y, Takeshita S, Tsuneyoshi M, Enjoji. Prognostic significance of histologic parameters of soft tissue sarcomas. Cancer. 1992;70;2816- 22.
5. Tsujimoto M, Aozasa K, Ueda T, Mori Mura Y, Komatsu bra Y, Doi Multivariate analysis for histologic prognostic factor in soft tissue sarcomas. Cancer. 1998;994- 998.
6. Russell WO, Cohen J, Enzinger FM, etal: A clinical and pathological staging system for soft tissue sarcomas. Cancer. 1977; 40:156.
7. Hasegawa T, Yokoyama R, Lee YH, etal: Prognostic relevance of histological grading system using MIB-1 for adult soft tissue sarcoma. Oncology 2000; 58:66. 8.
8. Fletcher, C.D.M., Bridge, J.A., Hagedorn, P., Mertens, F: WHO classification of tumours of soft tissue and Bone, Fifth edition. 2020. Volume 5.
9. Tsujimoto M, Aozasa K, Ueda T, Sakurai, Ishiguro S, Kurata A, et al. soft tissue Sarcomas in Osaka, Japan (1962-1985): review of 290 cases. JPN. J. Clin.Oncol.1988 Sep; 18(3): 231-4.
10. Vikas V Narhire, Arvind N. Bagate, Grace FD Costa. Clinicopathological study of benign soft tissue neoplasms: Experience at rural based tertiary teaching hospital. Indian Journal of Pathology and Oncology,2016:268 -272.
11. Basher A Hassawi, Abdul Karem Y. Suliman, Intisar S Hasan. Soft tissue tumour Histopathological study of 93 cases. Ann Coll. Med. Mosul 2010;36;92-98.
12. Singh Harpal, Richika, Kundal Ramesh. Histopathological pattern of soft tissue tumors in 200 cases. Annals of International Medical and Dental Research ;2016; Vol 2; Issue 6.6-10.
13. M Janaki, K Vijaya Satish Arora, Swaroopa Rani, M Phani Kumar, Sandhya Krupal. Morphological study of soft tissue tumours. International Journal of Research in health Sciences. 2015; Vol 3; 364-368.
14. Mirza Asif Baig. Histopathological Study of Soft Tissue Tumors (Three Years Study). International Journal of Science and Research (IJSR). Volume 4, issue 6 2015 :2319-7064.
15. Begum F, Begum S, Basher MF, Saleh FM, Hossain MA, Kamal M. Soft Tissue tumours and tumour like lesions -Demographic and clinicopathological study of 461 cases from different regions of Bangladesh. Mymen Singh Med J. 2015;24(1):133- 42.