Original Research Article

5 years study of soft tissue sarcomas at Gandhi Hospital, Hyderabad - A tertiary care centre

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Abstract

Background: Soft tissue sarcomas are uncommon malignant mesenchymal tumours, of unknown etiology, accounting for less than 1% of the all the malignant neoplasms, with a median age of occurrence at 65 years, having male preponderance, 3/4th of them occurring in the deep soft tissues, especially thigh, with median diameter of 9 cm. 2/3rd of them metastasizing to the lung. Sarcomas need thorough evaluation by radiology to assess the extent, depth and neurovascular involvement. Morphology has to be correlated with histochemistry and immunohistochemistry.

Aim: To study the prevalence, in relation to age, sex, site and size. To correlate histopathological findings with immunohistochemistry marker studies at our institution, studying and comparing with changing overviews and evolving literature.

Materials and methods: All the soft tissue mass specimens submitted to the Department of Pathology, Gandhi Hospital, Hyderabad, from January 2011 to December 2015, were subjected to routine processing and those cases on histopathology, suspected to be sarcomas were included in the study, analyzed with ancillary techniques to arrive at final diagnosis.

Results: A total of 40 sarcomas were encountered out of 20460, histopathology biopsy load at Gandhi Hospital, Hyderabad, constituting an incidence rate of 2%. Majority of the tumours were seen in the age groups of 40-49 years and 60-69 (20% each) with male preponderance (67.5%), occurring mostly in the trunk region (50%), with average size of 10 cm and constituting 0.6% of cancer incidence. Liposarcoma was the commonest soft tissue sarcoma in the present study.

Conclusion: Liposarcoma was the commonest soft tissue sarcoma in the present study followed by Undifferentiated Pleomorphic sarcoma and Leiomyosarcoma. Most of the tumors presented with

mass lesion, pressure symptoms and incidentally detected on imageology. FNAC was not very helpful in present study. Prediction of the course of the disease was difficult as most of the patients were referred to cancer institutions in the city, for further management.

Key words

Soft tissue sarcomas, Histomorphology, Special stains, Immunohistochemistry.

Introduction

Soft tissue is defined as nonepithelial extra skeletal tissues of the body exclusive of the reticulo-endothelial system, glia and supportive tissue of various parenchymal organs and inclusive of peripheral nervous system [1]. It is composed of fibrous connective tissue, adipose tissue, skeletal muscle, smooth muscle, blood vessels, lymphatics and peripheral nervous system. Soft tissue sarcomas are uncommon neoplasms and comprise about 2% or less of surgical pathology bulk [2] and 2% of all cancer deaths. Most of them arise from deep soft tissues of the lower extremities, occurring in the older age groups, exceeding 5cm in diameter in size on an average and commonest tumour being liposarcoma. However there are some tumours specifically occurring in children like embryonal rhabdomyosarcoma, neuroblastoma, atypical teratoid rhabdoid tumor and mucosal based tumors like botryoid sarcoma. Though sarcomas appear well circumscribed on gross, they invariably reveal infiltration into the surrounding structures and spread at a faster rate to metastasize commonly to the lungs. Areas of cystic degeneration, necrosis and hemorrhages are common findings in sarcomas. Lymph node metastasis is also on record for tumours like synovial sarcoma and epitheloid sarcoma. Aetiology of soft tissue sarcomas is unknown. Trauma, radiation therapy, family predisposition, chemical oncogens like vinyl chloride for angiosarcoma and viruses like HTLV III, HIV 1, EBV [3], CMV, HHV 8 (Kaposi sarcoma) [4], have been implicated in the genesis of sarcomas.

Materials and methods

Biopsy specimens of all the soft tissue masses, received and submitted to the Department of Pathology, Gandhi Hospital, Hyderabad, from January 2011 to December 2015 and diagnosed as sarcomas on histopathology were included in the study. All the specimens were fixed in 10% formalin for 24 hours.

Each specimen was grossed thoroughly. The weight, size, capsule, cut surface and other changes were recorded in the grossing format and analyzed. Representative bits were taken, subjected to routine processing, embedded in paraffin, stained with routine H and E. Special histochemical stains like PAS, Vangieson and PTAH, and specific immunohistochemical panel markers were used based on the cell type and close differential diagnosis for age and site. Histopathological findings were analyzed with clinical data, radiological findings, special stains to arrive at final diagnosis and results were compared with literature (**Figures – 1 to 9**).

Results

A total of 40 sarcomas out of biopsy load of 20460 and cancer load of 6200, constituting an general incidence and cancer incidence of 2% and 0.6% respectively. Male to female ratio was 2:1. Majority of the tumors occurred in the age groups of 40-49 and 60-69, constituting 20% each seen in the trunk region, constituting 50% and liposarcoma being the commonest neoplasm of the series as per **Table – 3**. Soft tissue sarcomas based on the cell type and histopathology was as per **Table – 2**. Age, sex, site, size and histology type of soft tissue sarcomas was as per **Tables –1, 3**. Panel of IHC markers used for spindle cell soft tissue sarcomas was as per **Table – 4**. Panel of IHC markers for epitheloid cell soft tissue sarcomas was as per **Table – 5**. Panel of IHC markers for round cell soft tissue sarcomas was as per **Table – 6**. Panel of IHC markers for pleomorphic soft tissue

Sarcomas was as per **Table – 7**. Primary panel of IHC markers for undifferentiated neoplasms of as per **Table – 8**. Distribution based on cell type and lineage as per **Table – 9**. Re-classifying of pleomorphic sarcomas after specific IHC marker studies was as per **Table – 10.**

Table – 1: Age, Sex, Site distribution of Soft Tissue Sarcomas

Age (Years)	M:F	UE	LE	H&N	Chest	Abd	RP	Others	Total	%
<10	1:2	-	-	1	1	-	-	1	3	7.5
10-19	0:1	-	-	-	1	-	-	-	1	2.5
20-29	6:0	1	2	-	1	1	1	-	6	15
30-39	4:2	1	4	-	-	1	-	-	6	15
40-49	4:4	-	2	-	2	1	3	-	8	20
50-59	4:1	-	1	-	1	1	2	-	5	12.5
60-69	5:3	1	4	-	2	-	1	-	8	20
>70	3:0	-	3	-	-	-	-	-	3	7.5
	27:13	3	16	1	8	4	7	1	40	100

(UE: Upper Extremities, LE: Lower Extremeties, H&N: Head & Neck, Abd: Abdomen, RP: Retroperitoneum, Others including urinary bladder, %: Percentage) Note : Mediatinum included in chest

Table – 2 : Soft Tissue Sarcomas Based on The Cell Type And Histopathology

Spindle cell (10)		Epitheloid cell (1)		Round cell (9)		Pleomorphic cell (12)		Others (8)	
Type	No	Type	No	Type	No	Type	No	Type	No
FS	2	LMS	1	NB	1	LS	2	BP/SS	1
LMS	2	-	-	E/RMS	2	LMS	2	WD/LS	6
MP/SS	2	-	-	1ADSRCT	2	MPNST	1	ES/CS	1
MPNST	2	-	-	PD/SS	1	DD/LS	2	-	-
e-GIST	1	-	-	pPNET/EWS	2	MFH/UPS	5	-	-
RMS	1	-	-	B/RMS	1	-	-	-	-

(FS: Fibrosarcoma, LMS : Leiomyosarcoma, MP/SS: Monophasic Synovial sarcoma, MPNST: Malignant Peripheral Nerve Sheath Tumor,e-GIST : Extraintestinal Gastrointestinal tumor, RMS : Rhabdomyosarcoma, NB: Neuroblastoma, E/RMS: Embyonal Rhabdomyosarcoma, IADSRCT: Intraabdominal desmoplastic small round cell tumor, PD/SS: Poorly Differentiated Synovial sarcoma, pPNET : Peripheral Primitive neurectodermal tumor, B/RMS: Botryoid Rhabdomyosarcoma, BP/SS : Biphasic Synovial sarcoma, WD/LS : Well differentiated Liposarcoma, ES/CS: Extraskeletal Chondrosarcoma,)

Discussion

WHO classification of soft tissue sarcomas [5]

Adipocytic tumors:
Dedifferentiated liposarcoma
Myxoid liposarcoma
(incl. Round cell variant)
Pleomorphic liposarcoma
Liposarcoma, NOS

Fibroblastic tumors:
Adult fibrosarcoma
Myxofibrosarcoma
Low grade fibromyxoid sarcoma
Sclerosing/ Epitheloid fibrosarcoma

So Called Fibrohistiocytic tumors:
Malignant Tenosynovial Giant cell tumor

Smooth muscle tumors:
Leiomyosarcoma (excluding skin/ Cutaneous)
Well differentiated Leiomyosarcoma
Myxoid Leiomyosarcoma
Epitheloid Leimyosarcoma
Pleomorphic Leiomyosarcoma

Table – 3: Age, Sex, Site, Size and Histology Type of Soft Tissue Sarcomas

Age (Years)	Male	Female	Site	Size in cm	Sarcomas on Histology and by IHC
0-9 (3)	1		Mediastinum	2x1x1	SRBCT/Neuroblastoma
		1	Neck	1x4x3	SRBCT/Embryonal Rhabdomyosarcoma
		1	Urinary bladder	3x2x2	Botryoid Rhabdomyosarcoma
10-19 (1)		1	Chest	2x2x1	SRBCT/Embryonal Rhabdomyosarcoma
20-29 (6)	1		Left Knee	7x7x3	Poorly differentiated Synovial Sarcoma
	1		Abdomen	6x6x2	Intraabdominal Desmoplastic SRCT
	1		Chest	2x1	Peripheral primitive neuroctdermal / pPNET Tumor/ EWS-Ewings Sarcoma
	1		Thigh	4x3x3	Monophasic spindle Synovial Sarcoma
	1		Right Shoulder	5x3x2	Spindle cell/ Rhabdomyosarcoma
	1		Retroperitoneum	5x4x3	Malignant Peripheral Nerve Sheath Tumor
30-39 (6)	1		Left Shoulder	4x3x2	pPeripheral neurectoderm tumor
	1		Lower Thigh	16x9x7	Biphasic Synovial Sarcoma
		1	Thigh	7x4x3	Well differentiated Liposarcoma
	1		omentum	25x11x8	Intraabdominal Desmoplastic SRCT
		1	Right Thigh	4x4x2	Fibrosarcoma
	1		Right Knee	3x3x2	Monophasic spindle Synovial Sarcoma
40-49 (8)		1	Mesentry	5x5x4	Extra Intestinal Gastrointestinal Stromal tumor
	1		Right leg	7x7x3	Leiomyosarcoma
		1	Retroperitoneum	25x10x8	Dedifferentiated Liposarcoma
	1		Left Thigh	2x1	Fibrosarcoma
		1	Retroperitoneum	30x30x10	Well differentiated Liposarcoma
	1		Retroperitoneum	30x20x16	Well differentiated Liposarcoma
	1		Chest wall	6x3x3	Pleomorphic/ MPNST
		1	Mediastinum	4x3x2	Malignant Peripheral Nerve Sheath Tumor
50-59 (5)	1		Abdominal	7x6x4	Pleomorphic / Undifferentiated
		1	Retro P	14x9x7	Pleomorphic Sarcoma/Leiomyosarcoma
	1		Retro.P	15x15	ChondroSarcoma Extraskeletal
	1		Thigh	17x10x8	Pleomorphic Sarcoma/Liposarcoma
	1		Chest	3x3x1	Leiomyosarcoma
60-69 (8)	1		Left upperarm	18x10x8	Dedifferentiated Liposarcoma
	1		Thigh	12x10x6	Pleomorphic Sarcoma/Liposarcoma
		1	Thigh	8x6x4	Pleomorphic Sarcoma/Undifferentiated
	1		Thigh	7x5x4	Well differentiated Liposarcoma
	1		Back	5x5x3	Well differentiated Liposarcoma
		1	Retro.P	20x18x14	Well differentiated Liposarcoma
	1		Chest wall	9x6x3	Leiomyosarcoma
		1	Right Knee	6x3x2	Pleomorphic / Undifferentiated
>70 (3)	1		Thigh	2x2x1	Pleomorphic/ Undifferentiated
	1		Right Leg	17x13x13	Pleomorphic/Leiomyosarcoma
	1		Thigh	2x2x1	Pleomorphic / Undifferentiated

Table – 4: Panel of IHC Markers used for Spindle cell Soft tissue Sarcomas							
Sarcoma	SMA	Myogenin	S100	EMA	CK-7	CD117/DOG1	Caldesmon-H
Fibrosarcoma	-	-	-	-	-	-	-
Leiomyosarcoma	+	-	-	-	-	-	+
Synovial sarcoma	-	-	-	+	+	-	-
Neurofibroma	-	-	+	-	-	-	-
e-GIST	-	-	-	-	-	+	-

(SMA: Smooth muscle actin , EMA: Epithelial membrane antigen, CK-7: Cytokeratin 7)

Table – 5: Panel of IHC Markers for Epitheloid Soft tissue Sarcomas				
Sarcoma	S100	CDII7	CD34	Caldesmon-H
e-GIST	-	+	+	+
E/LMS	-	-	-	+

(e-GIST: Extraintestinal Gastrointestinal stromal tumor, E/LMS : Epitheloid LMS)

Table – 6: Panel of IHC Markers for Round cell Soft tissue Sarcomas						
Sarcoma	NSE	Myogenin	CK	Desmin	CD99	EMA
Neuroblastoma	+	-	-	-	+	-
Embyonal Rhabdomyosarcoma	-	+	-	+	+	-
IADSRCT	+	-	+	+	+	-
Poorly Diff SS	-	-	+	-	-	+

(IADSRCT: Intraabdominal desmoplastic small round cell tumor; NSE : Neuron specific enolase)

Table – 7: Panel of IHC Markers for Pleomorphic Soft tissue Sarcomas		
Sarcoma	S100	Caldesmon-H
Liposarcoma	+	-
Leiomyosarcoma	-	+
MPNST	+	-

(MPNST: Malignant peripheral nerve sheath tumor)

Table – 8: Primary Panel of Markers for Undifferentiated Neoplasms – To Identify the Lineage						
IHC-Marker	Carcinoma	Sarcoma	Melanoma	Lymphoma	Germ cell Tumours	Mesothelioma
CK	+	-	-	-	+/-	+
LCA	-	-	-	+	-	-
S100/SOX10	-/+	-	+	-	-	-
SALL4	-	-	-	-	+	-
Vimentin	-/+	+	+	+	-	+/-

{<5% positive (-), <50% positive (-/+), >75% positive (+), 50-75% positive(+/-). CK: Cytokeratin, LCA: Leukocyte common antigen, SALL 4: Sal like protein}

Pericytic/ perivascular tumors:
Malignant Glomus tumor

Skeletal muscle tumors:
Embryonal rhabdomyosarcoma (incl. botryoid, anaplastic)
Alveolar rhabdomyosarcoma (incl. solid, anaplastic)
Pleomorphic rhabdomyosarcoma
Spindle/ Sclerosing rhabdomyosarcoma

Vascular tumors:
Epithelioid haemangioendotheliosarcoma
Angiosarcoma of the soft tissues

Peripheral nerve sheath tumors:
Malignant Peripheral Nerve Sheath Tumor
Epitheloid MPNT
Malignant Triton
Malignant Granular cell tumor
Ectomesenchymoma
Gastrointestinal **S**tromal tumor
Malignant GIST

Table – 9: Distribution Based on Cell Type Morphologically & Lineage/ Tissue Of Origin/

Morphological cell type	No	Sarcoma Type
Small Round Cell Tumours (22.5%)	**09**	NB, PNET/ES/EWS, ERMS, B/ERMS, IADSRCT, PD/SS
Spindle Cell Tumours (27.5%)	**11**	FS, MP/SS, e GIST,MPNST, LMS
Pleomorphic Tumours (30%)	**12**	MFH, MPNST, LMS, LS
Other Tumours (20%)	**08**	BP/SS, ES/CS, WD/LS, DD/LS

(NB: Neuroblastoma, PNET/EWS: Primitive Peripheral Neuroectodermal/ Extra skeletal Ewings Sarcoma, ERMS: Embryonal Rhabdomyosarcoma, B/ERMS: Botryoid type Embryonal Rhabdomyosarcoma, IADSRCT: Intraabdominal Desmoplastic Small Round Cell Tumour, PD/SS: Poorly differentiated Synovial Sarcoma, FS: Fibrosarcoma, MP/SS: Monophasic Spindle cell Synovial Sarcoma, e GIST: Extraintestinal Gastrointestinal Stromal Tumour, MPNST: Malignant Peripheral Nerve Sheath tumour, LMS: Leiomyosarcoma, MFH: Malignant Fibrous Histiocytoma (Undifferentiated Pleomorphic Sarcoma),LS: Liposarcoma(WD: Well Differentiated/DD: Dedifferentiated), BP/SS: Biphasic Synovial Sarcoma, ES/CS: Extraskeletal Chondrosarcoma)

Table – 10: Re-classifying Pleomorphic Sarcomas after specific IHC Studies

Result	Negative	Positive			
	Undifferetiated Pleomorphic Sarcoma	Leimyosarcoma	MPNST	RMS	Liposarcoma
IHC Marker	Negative	H-Caldesmon	S100	Myogenin	S100 MDM2/CDK4/p16 -Dediiferentiated LS

Figure – 1: Dedifferentiated Liposarcoma. **1A:** H&E, 4X View – Showing both Atypical Liposarcoma and High grade sarcoma. **1B, 1C:** 10X View of same. **1D:** 40X View of same. **1E:** 10X View - High grade, Pleomorphic Non lipogenic Sarcoma. **1F:** IHC Positive for p16.

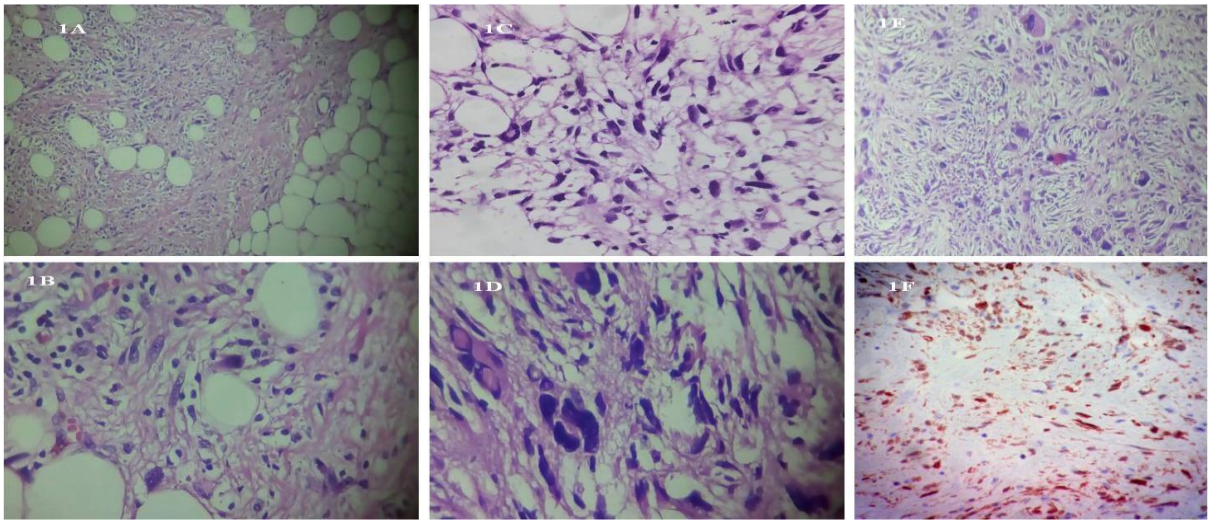


Figure – 2: Synovial Sarcoma. **2A:** H&E, 10X View – Biphasic Type showing glands and spindle fascicles. **2B:** Poorly Differentiated showing small round cells. **2C:** 40X View - Monophasic Spindle cell type. **2D:** EMA Positivity.

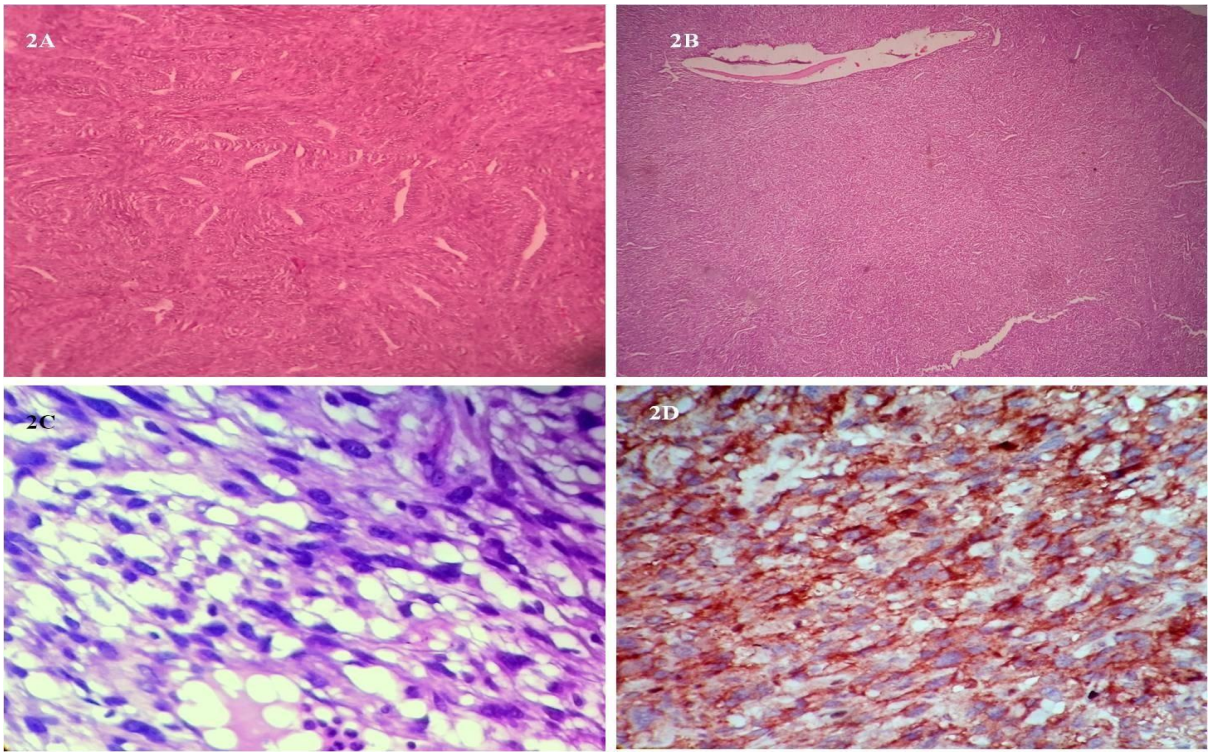


Figure – 3: Extraskeletal Ewings Sarcoma. **3A:** H&E, 40X View and IHC - Showing Monotonous population of small round cells with hyperchromatic nuclei and strongly positive for CD99. **Figure – 4:** Intra abdominal Desmoplastic small round cell tumour. **4A:** H&E, 4X View - Showing small round cells in lobules of varying sizes separated by desmoplastic stroma. **4B:** IHC Positive for NSE.

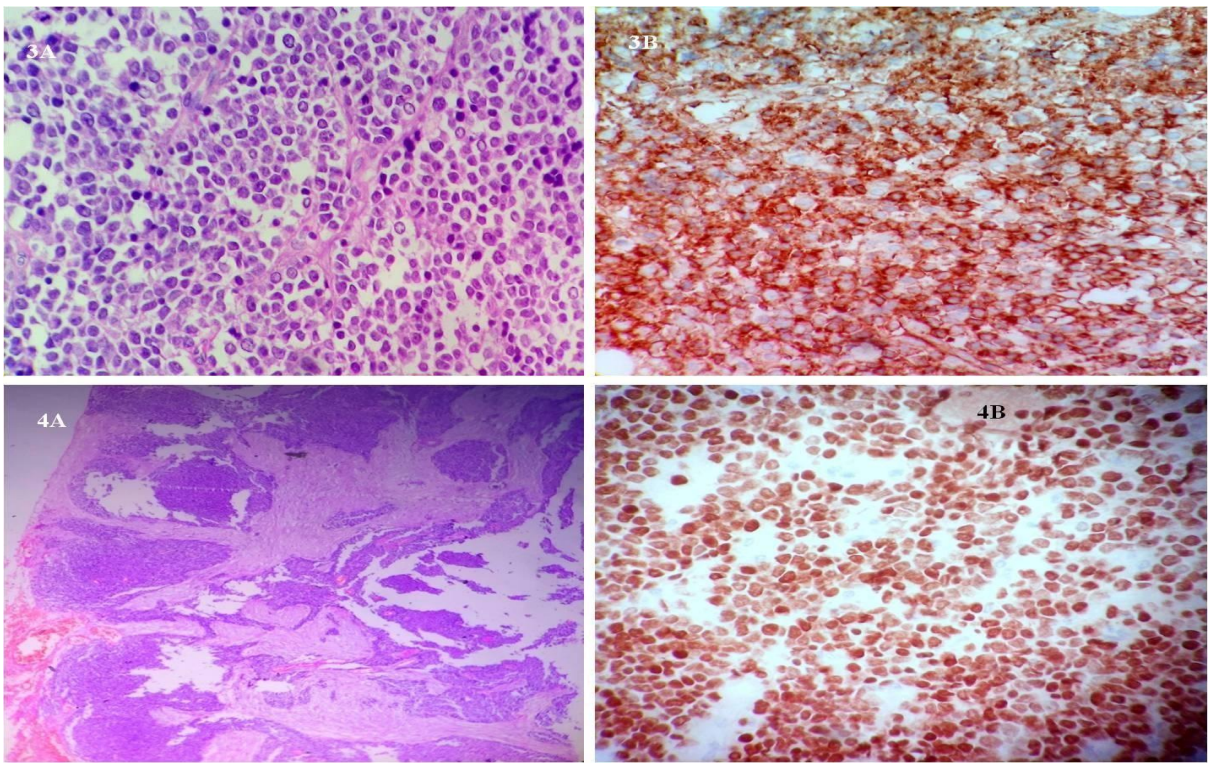


Figure – 5: Leiomyosarcoma. H&E, **5A, 5B** and **5C:** 40x Views of Spindle, Epitheloid and Pleomorphic variants respectively. **5D:** IHC Positive for Smooth muscle actin.

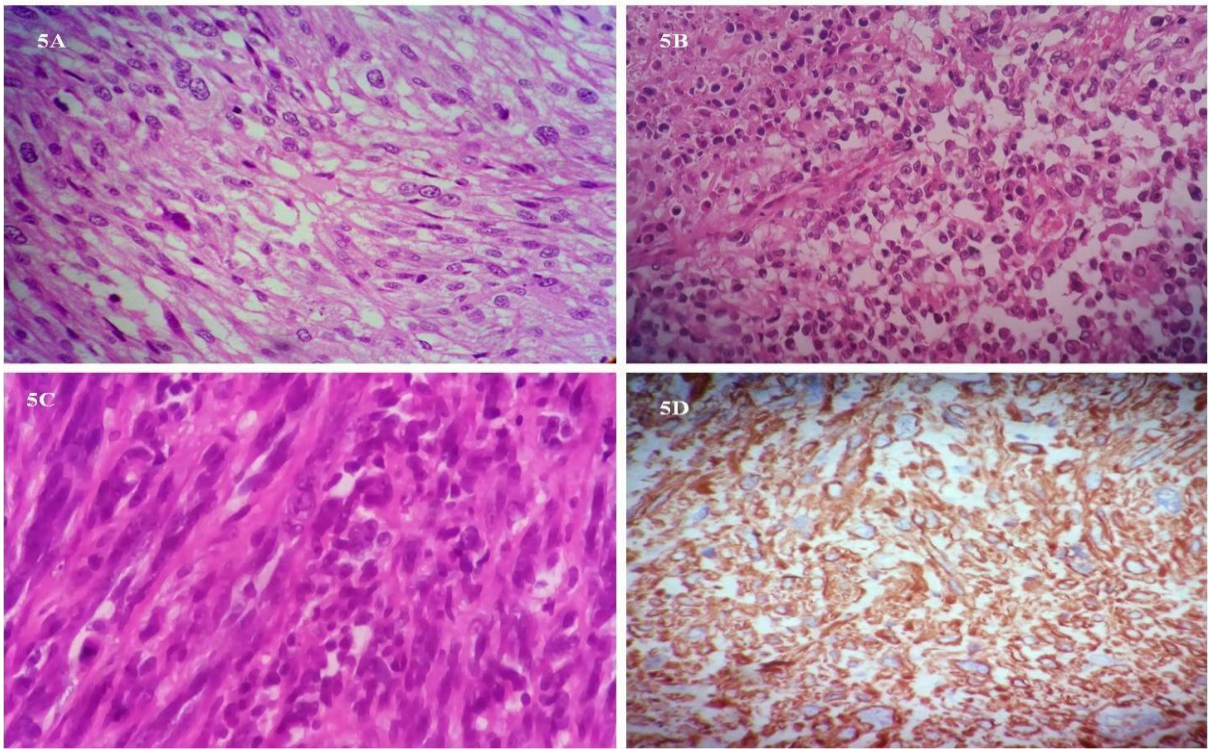


Figure – 6: Rhabdomyosarcoma. H&E, **6A:** 10X View: Showing Botryoid type with classic Nicholsons cambium layer beneath the surface transitional epithelium with squamous metaplastic change. **6B:** 40 View of the same. **6C:** Showing loose areas of low cellularity and myxoid change. **6D:** Spindle cell type with focal rhabdomyoblastic differentiation. **6E:** Embryonal type with small round cell population of neoplastic cells. **6F:** IHC Positive for Myogenin.

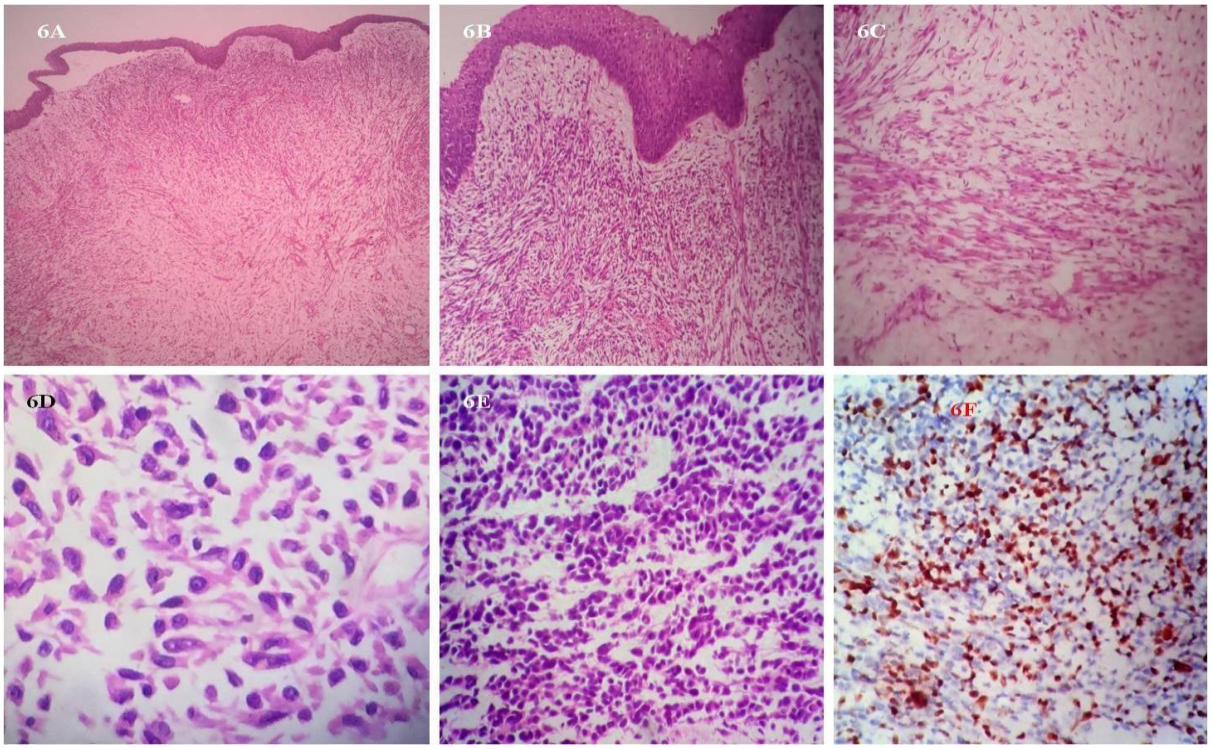
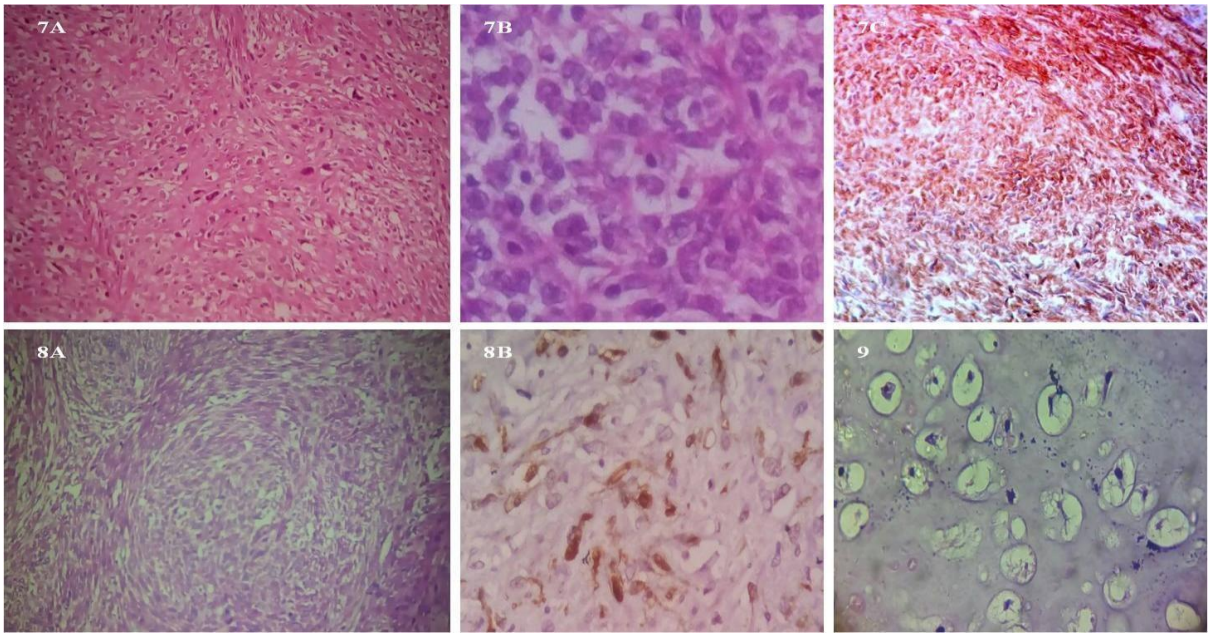


Figure – 7: Extraintestinal Mesenteric Gastrointestinal tumour (e GIST. **7A, 7B:** H&E, 10X & 40X Views showing of Spindle and epitheloid areas respectively. **7C:** IHC Positive for CD117. **Figure – 8:** Malignant Perpheral nerve sheath tumour (MPNST). **8A:** H&E, 10X View showing spindle celled tumor arranged in fascicles. **8B:** IHC Positive for S100 Protein.
Figure – 9: Extra skeletal Chondrosarcoma. Low grade.



Tumors of uncertain differentiation:
Synovial sarcoma
Epithelioid sarcoma
Alveolar soft part sarcoma
Clear cell sarcoma of soft tissue
Extraskeletal myxoid chondrosarcoma ("chordoid" type)
Extraskeletal Ewing tumor/ pPNET
Desmoplastic small round cell tumor
Extra-renal rhabdoid tumor
Malignant PECOMA
[Neoplasms with perivascular epithelioid cell differentiation (PEComa)]
Intimal sarcoma

Undifferentiated / Unclassified Sarcomas
Undifferentiated Spindle cell sarcoma
Undifferentiated Pleomorphic sarcoma
Undifferentiated Round cell sarcoma
Undifferentiated Epitheloid sarcoma & NOS

FNCLCC grading system: definition of parameters for Soft tissue Sarcomas [6]

Tumor differentiation
Score 1: sarcomas closely resembling normal adult mesenchymal tissue (e.g., low grade Leiomyosarcoma).
Score 2 : Sarcomas for which histological typing is certain (eg : Myxoid Liposarcoma)
Score 3: Embryonal and Undifferentiated sarcomas, sarcomas of doubtful type, synovial sarcomas, osteosarcomas, PNET.

Mitotic count
Score 1: 0-9 mitoses per 10 HPF
Score 2: 10-19 mitoses per 10 HPF
Score 3: >20 mitoses per 10 HPF

Tumour necrosis
Score 0: no necrosis
Score 1: <50% tumour necrosis
Score 2: >50% tumour necrosis

Histological grade
Grade 1: total score 2, 3
Grade 2: total score 4, 5
Grade 3: total score 6, 7, 8

Other grading system is the Enneking system, which is also applied to soft tissue sarcomas of the extremities and are grouped according to anatomic settings (T1, intracompartmental, or T2, extracompartmental); grades (G1, low, and G2, high) and presence or absence of metastases [8].

Soft tissue sarcomas are bioplogically and histologically, heterogenous, uncommon group of malignant mesenchymal neoplasms arising throughout the body [2], from various locations as extremities, head and neck, trunk wall and internal trunk (mediatinum, intra- thoracic and intra abdominal areas, retroperitoneum), pelvis and orbital spaces. Genetic susceptibility is noted with mutations of p53, NF1, 2 genes in Malignant peripheral nerve sheath tumour. Soft tissue sarcomas are associated with Li-fraumeni syndrome [1].

In the study undertaken by S. Salas, et al., age above 60 years and predominance of tumours in the trunk region were comparable, whereas largest size encountered in their study was accounting to 37.3% ranging from 6-10 cm as compared to 30 cm in our study. M: F ratio prevalence was almost 1:1 in their study as compared to 2:1 in our study. Thus size and M: F sex ratio study was not comparable [7]. In the study by Sylvie, et al., median size of 18 cm and largest size of 60 cm, median age of occurrence at 57 years, with metastasis of 3%, commonest tumour being Liposarcoma were comparable with the present study excepting for M : F ratio of 1: 1 as against 2:1 in our study [8].

Features of differentiation of soft tissue sarcomas are varied, like blunt ended/ cigar shaped nuclei with vacuoles at the ends in leiomyosarcomas (Smooth muscle), racquet/ tadpole/ rhabdomyoblasts characterized by abundant eosinophilic cytoplasm with cross striations (Skeletal muscle), serpentine/wavy/elongated nuclei (neural), vacuolated abundant cytoplasm in (lipomatous) tumors. Soft tissue sarcomas may have biphasic growth patterns including spindle cell and epitheloid cell morphologies as seen in malignant peripheral nerve sheath tumours, leiomyosarcoma, extra intestinal gastro intestinal stromal tumour. Dual population of cells are seen in Biphasic Synovial sarcoma characterized by spindle cell mesenchymal fascicles encircling and separating the glandular structures lined by cuboidal epithelial cells. Botryoid sarcoma presented as a polypoidal mass filling almost the cavity of urinary bladder in a 7 year old female child, who was admitted with urinary disturbances and urinary tract infection.

Varied patterns of arrangements are noted in sarcomas like, classic herring bone pattern in fibrosarcoma, interlacing bundles in leiomyosarcoma, alveolar pattern in rhabdomyosarcoma, peritheliomatous in ewings sarcoma, storiform pattern in malignant fibrous histiocytoma, haemangiopericytomatous pattern characterized by stag horn, branched, ectatic vessels as in synovial sarcoma. Some of them are matrix producing tumours like leiomyosarcoma and fibrosarcoma. Fibrillary background is noted in Neurobastomas and rosettes in Ewings sarcoma and Neuroblastoma.

Histological variants are recognized in almost in all types of sarcoma, which have been already enumerated in the classification. There are genetic mutations seen in sarcomas like MDM2 amplification and p53 mutations in Dedifferentiated Liposarcoma, Rb-cyclin D pathway abnormalities in Leiomyosarcoma, t (1;13) & t (2;13), translocations in alveolar rhaddomyosarcoma & t (11;22) translocation in Ewings Sarcoma (FLI-EWS fusion gene), and Desmoplastic small round cell tumour (EWS-WT1 fusion gene), t(9;22) in extraskeletal chondrosarcoma CHN-EWS fusion gene), t (X; 18) IN Synovial sarcoma (SYT-SSX fusion gene) [9].

FNCLCC histologic grade is an independent predictive factor for metastasis development in most adult soft tissue sarcomas [9]. Pleomorphic sarcomas are highlighted by lack of differentiation on histology, high gade tumours with plenty of bizarre, hyperchroamtic nuclei, prominent nucleoli, marked nuclear pleomorphism with giant and monstrous forms along with bi and multinucleation admixed with plenty of mitotic figures including atypical forms intermingling with necrosis. These tumors are re-classified, based on their specific immunohistochemistry positivity. Special stains

also supplement in instances like identifying glycogen by PAS stain in Rhabdomyosarcoma and Ewing sarcoma and crystals in alveolar soft part sarcoma, Phosphotunstic acid haematoxylin (PTAH) in Rhabdomyosarcoma, especially high lights the cross striations and, collagen deposition is picked up by Vangeison stain showing the yellow muscle fibres and red coloured collagen. FNAC though useful, could not give a definitive diagnosis, in our study as only few cases came for prior cytology. We could only categorise them based on the cell type, age and site of occurrence. Immuno- histochemistry has a great role to play in the diagnosis of Soft tissue sracomas, enabling the clinician to give right therapy. Synovial sarcoma is positive for EMA and CK. Rates of growth vary, some slow growing and some diagnosed with metastasis in the lungs,by the time of admission. All our pleomorphic sarcomas were having metastasis. With special reference to recent development in updation of new IHC markers are NKN2.2 in Ewings sarcoma/ PNET group, MDM2/CDK4/p16 in Dedifferentiated LS.

Conclusion

A total of 40 sarcomas were encountered out of 20460, histopathology biopsy load at Gandhi Hospital, Hyderabad, constituting an incidence rate of 2%. Majority of the tumours were seen in the age groups of 40-49 years and 60-69 (20% each) with male preponderance (67.5%), occurring mostly in the trunk region (50%), with average size of 10 cm. Liposarcoma was the commonest soft tissue sarcoma in the present study (25%), followed by Undifferentiated Pleomorphic sarcoma and Leiomyosarcoma constituting 25% each and 10% by Rhabdomyosarcoma and rest less than 10%. Based on cell type each of them roughly constituted 10% each. Most of the tumours presented with mass lesion, pressure symptoms and incidentally detected on imageology. Prediction of the course of the disease was difficult as most of the patients were referred to other cancer institutions for further management. Site occurence of tumors tallied with that described in the conventional text books of Enzinger, Fletcher D.M and WHO Cassification of Soft tissue tumours. To sum up, IHC plays a vital role in the diagnosis of sarcomas, supplemented by histochemistry and cytogenetics.

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