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A Clinicopathological Study of Soft Tissue Tumours in Correlation with Immunohistochemistry

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Abstract:
Background: *Soft tissue tumors are a diverse and heterogeneous group of tumors. The sub classification of these tumors is of importance for both prognosis and treatment. Classically, sub-categorization is based purely on histomorphological grounds , but as new techniques evolve, a more conclusive and accurate diagnosis can be made. This study records the incidence ,age ,sex and site distribution of soft tissue tumors at Narayana medical college , Nellore and to study gross, histology of both benign , malignant soft tissue tumors and confirmation of morphological diagnosis by Immunohistochemistry .The comparision of these findings with the workers doing similar studies.*
Materials And Methods: *The study included 105 cases of soft tissue tumors in four years duration at the histopathology laboratory of Narayana medical college. Where indicated , tumors were stained with a panel of antibodies using the PAP technique.*
Results: *Of these , 92(87.6 %) were benign and 13 cases (12.3%) were malignant . The incidence of both benign and malignant soft tissue tumors was more common in males than in females. The peak incidence of benign soft tissue tumors was observed in the age group of 21 to 30 yrs (30.43%) (P=0.025) and that of malignant tumors 51 to 60 yrs (53.8%) of the age group. Benign tumors were more common in age group less than 30 years (60.86%) and malignant tumors were more common between 30 -60 years (69.25%)(P=0.006). The most common site of occurrence for benign tumors was head & neck (52.17%) and for malignant tumors was the lower extremity (69.23%). Lipomas formed major bulk of benign soft tissue tumors (34.7 %). The most frequently diagnosed sarcomas were liposarcoma and leiomyosarcoma (15.3%).Cases were further analyzed using IHC and confirmed by IHC. A Chi-square test was performed, which proved that these results were statistically significant.*
Conclusions: *Soft tissue tumors is one of the key areas in surgical pathology where immunohistochemistry plays an important role in both precise diagnosis and sub-categorization*
Keywords: *Benign, incidence, immunohistochemistry, malignant, soft tissue tumors.*

I. Introduction

Soft tissue is defined as non epithelial extraskeletal tissue of the body exclusive of the reticuloendothelial system, glial and supportive tissue of various parenchymal organs. It is composed of connective tissue, adipose tissue, skeletal muscle, smooth muscle, blood vessels, lymphatics and peripheral nervous system. Soft tissue tumors are uncommon and comprise about 2% or less of surgical pathology cases (1, 2). A diagnosis already reached or suspected by light microscopy is supported by help of electron microscopy, immunohistochemistry and tissue cultures. The role of special stains in soft tissue tumor pathology may be variable, inconclusive or may substantiate the light microscopic diagnosis. Various modes of therapy are surgery, radiotherapy and chemotherapy.

Tumors and tumor like lesions of soft tissue continues to be a challenge to both the surgeons and pathologists due to their biological behaviour and histogenesis. The wide variation that many of the soft tissue tumors exhibit in their histological patterns extends the pathologists diagnostic ability to a limit. Perhaps in no other field of diagnostic pathology has there been such a proliferation of newly described entities as in the areas of soft tissue pathology in the last 10-20 years. This rarity, variability and diversity have interested us to take up the study on soft tissue tumors.

II. Materials And Methods

The present study was a four year retrospective and prospective study done from January 2006 to December 2009 conducted in the department of pathology, Narayana medical college, Nellore.

A total number of 105 soft tissue tumors were received during this period. Information regarding the clinical data, age, sex and site distribution were recorded from the clinical records. Site distribution of soft tissue tumors has been described under head and neck, upper and lower extremities and trunk.

The features like capsule, size, consistency, areas of necrosis, hemorrhage, calcification, ossification and adhesion to the adjacent structures were noted. Multiple sections were taken, processed and stained with

haematoxylin and eosin. Special stains like Vangeison's, PAS, Masson's trichome and PTAH were carried out wherever necessary. The sections were studied under light microscopy for features like the cell type, arrangement, cellular and nuclear pleomorphism , number of mitotic figures per 10 high power field, tumor giant cells, necrosis and hemorrhage.

Immunohistochemistry was done to confirm the diagnosis. The intermediate filaments (10nm thick) which are IHC markers are vimentin , cytokeratins , desmin, neurofilament protein. Other markers are EMA, myoglobin and factor VIII AG.

Inclusion criteria:

Both benign and malignant tumors of various soft tissue were included and classified according to WHO classification

Exclusion criteria: The following were excluded from the study

1. Tumor like lesions.
2. Uterine and gastrointestinal soft tissue tumors were not included in our study

III. Results

Among 105 cases of soft tissue tumors, 92 cases (87.6%) were benign and 13 cases (12.3%) were malignant.

Out of 92 cases of benign soft tissue tumors, 59 (64.13%) were found in males and 33 (35.86%) were found in females. Out of 13 malignant tumors there were 7 males (53.8%) and 6 (46.15%) females. The incidence of both benign and malignant soft tissue tumors were more common in males than females.

Benign tumors were more common in age group less than 30 years (60.86%) with a peak incidence in 3rd decade (30.43%) while malignant tumors were more common between 30 -60 years (69.25%)

(P=0.006) with a peak incidence during 51- 60 yrs (53.8%).

The most common site of occurrence for benign tumors was head and neck (52.17%) , followed by trunk (22.82%) and extremities (24.9%) while for malignant soft tissue tumors was lower extremity (69.23%) , followed by head and neck.

Lipomas (34.7%) formed major bulk of benign soft tissue tumors. Head and neck (62.5%) was the common site for lipomas. Lipomas were more common in age group greater than 60 years (28.1%). Variants of lipomas like hibernoma (3.1%),fibrolipoma (9.3%) , myolipoma (3.1%) and angiomyolipoma (6.2%) were seen. Lipomas showed positivity with S-100 marker including Hibernoma , fibrolipoma and myolipoma. Angiomyolipoma showed positivity for HMB -45.

Haemangiomas were the commonest benign soft tissue tumours in childhood constituting 45% of cases between age 0-10 years with the common site being Head and neck (50%) and were positive for CD-34.

Schwannomas and neurofibromas were more common in age group 21-30 years constituting 45%, 50% respectively and the most common site was head and neck with positivity to S-100 marker.

Other benign tumours were fibromatosis , glomus tumours which were positive for SMA and lymphangiomas for CD34.

Most common malignant tumours encountered in our study are liposarcomas and leiomyosarcomas each constituting incidence of 15.3% of all the malignant tumours. Liposarcomas seen were well differentiated and pleomorphic liposarcoma which showed positivity for S-100 marker. Leiomyosarcomas showed positivity for SMA and desmin.

Other malignant tumors of one case each encountered were synovial sarcoma , fibrosarcoma, rhabdomyosarcoma , extraskeletal ewings sarcoma , malignant haemangioendothelioma , malignant fibrous histiocytoma , dermatofibrosarcoma protruberance, extraskeletal chondrosarcoma and epithelioid sarcoma . Synovial sarcoma was positive for EMA , cytokeratin and reticulin stain. There was a single case of embryonal rhabdomyosarcoma which was positive for desmin and myogenin. Epithelioid sarcoma showed positivity with vimentin.

IV. Discussion

Soft tissue tumors are not a common biopsy material of surgical pathology. Enzinger F.M. & W.W. Weiss 1983, Robbins et al 1994, Myhre Jenson et al 1981 reported an incidence of soft tissue tumors as 0.8-1%, 0.8% and < 2% respectively. There are several studies covering individual tumor types but collective studies covering all tumors are relatively less, but some studies have been conducted in the past so as to know the incidence, age, sex and site distribution of soft tissue tumors. Though follow up data provides important information on the ultimate biological behaviour of the tumors, due to various reasons, in our study, this could not be obtained. Hence, the study was limited to documenting the information about incidence, age, sex and site

distribution of soft tissue tumors and confirming the morphological diagnosis with immunohistochemistry and special stains.

Benign soft tissue tumors were more common than malignant tumors in our study, similar to the studies done by Stout, AP & Lattes R, Angerwall et al 1987, Enzinger, F. M. S. W. Weiss 1988 reported a benign to malignant ratio as 5:1 and 18.5 to 100:1 respectively.

In the present series, benign soft tissue tumors were found more commonly in males than females (M:F = 1.8:1), similar observations were made by Dev et al**.** Cotran et al 1994 reported an incidence of 58% in males, Costa j et al 1984 reported an incidence of 55-60% in males(6). Mythre Jenson O et al 1983, Torjani et al 1984, Tsuji Moto M et al 1988, reported an incidence of 55-60% in males which is almost comparable to the present study in which the male sex incidence was found to be 62%(7,8).

The general site distribution of benign soft tissue tumors site incidence as reported by Robbin et al 1994 is 10% in head and neck region, 30% in Trunk, 20% in upper extremities, 40% in lower extremities. According to Costa J et al 1984, W.L. Natrajanm et al 1987, the site distribution of benign soft tissue tumors was 4-9% in head & neck, 32% in trunk and 60-64% in extremities(9). In the present study the site distribution of soft tissue tumors was found to be 52.17% in head & neck, 22.82% in trunk, 14.13% upper extremities, 10.86% lower extremities.

The rise in incidence of soft tissue tumors in head & neck region was due to the higher incidence of haemangiomas accounting to 10 cases out of the total 20 cases of haemangiomas.

The commonest type of benign tumour was found to be lipoma (34.7%), followed by hemangioma and schwannoma (21.7%) which is comparable to Stout's study. Lipomas are common in 5^{th} and 6^{th} decade a mean of 42-50yrs as per FE Adair 1932, TK Das Gupta 1969, Rydholm A Berg No 1983(10,11,12). The common site of lipoma was head and neck in our study as compared to trunk in Dev at al series. In year 1991 Pea et al identified HMB-45 immunoreactivity in angiomyolipoma. We had also seen similar finding in our study.

Two cases of fibromatosis were noted in the 20-30yrs old females, one of them complained of scapular swelling, firm in consistency 4-5cms in diameter. Another case of fibromatosis presented with swelling over the palm. Both the cases showed positivity to vimentin and SMA.

Haemangiomas (20) cases (21.7%) were the next common benign tumors. The peak incidence was in the age group of 0-10 yrs and the common site was head and neck. Similar observations were made by Dev et al.

Present study showed 2 cases of lymphangiomas under the age of 10yrs, both occurred in head & neck region. This was similar to studies done by Willis 1967 and Watson & McCarthy 1940.

Glomus tumors occur in adults of all ages and sometimes in children, as per the study of Kohout & Stout (1961) (13). In the present study we had 2 cases of glomus tumor constituting about 2% of benign soft tissue tumors, with the age range of 20-30yrs. In a review of 20 cases of Riversos & Pack 1950, 15 cases (75%) occurred in the upper extremity, out of which 7 cases (35%) were noticed subungually, 8 cases (40%) occurred in lower extremity and 2 cases (10%) in trunk & 1 case (1%) in head & neck region. The site distribution in present study revealed that both the cases occurred in upper extremity.

Sex incidence of peripheral nerve tumors was observed to be equal in both sexes which was in comparision with studies done by Evans 1980, Enzinger FM 1988, Oberman & Sullenger 1967(14,15).

In the present study the age incidence of neurilemoma was between 20-30yrs which is in agreement with Enzinger FM 1988 and site predilection in this study was flexor aspects of extremities which is in comparison with Enzinger 1988 and Don O Gore (16). In the present study we found 6 cases (30%) in trunk region: 1 case (5%) in lower extremities and 11 cases (55%) in head and neck; 2(10%) cases in upper extremities. The secondary changes commonly seen in Neurilemomas were haemorrhages, foamy histiocytes, hyalinization of blood vessels. We had 1 case of cellular schwannoma and 1 case of melanotic schwannoma.

The solitary Neurofibroma is a localized tumor that by definition occurs in a patient who does not have Vonreckling Hausen's disease. In the series by Geschickter 1935 about 90% neurofibromas were of solitary type (17). On reviewing our material we could see out series agreeing with above author all 14 cases were solitary neurofibromas which is a fractionally higher incidence.

Out of the 14 cases of solitary neurofibromas in our series, 5 occurred in the extremities which is one of the conventional sites.The neurofibromas appear during childhood or adolescence and occurred between the age of 20-30yr. In the present study we had 1 case of multiple neurofibromas occurring in age of 9 years which is in close association with all other reports in the world.

Weiss et al, Mentzel et al in their study of 46 and 24 cases reported hemangioendothelioma in deep soft tissues. In present study we had only one case seen in upper extremity in a female patient of 41 to 50 years. Immunohistochemistry showed positivity for CD34 in our study .

The incidence of liposarcoma reported by Costa J et al 1988 was 10-25% among soft tissue tumors. In the present study 2 cases were seen with an incidence 15.3% with both the cases encountered between 51-60 yrs. Similar findings were found in studies done by AFIP, Reszel et al 1966 and Spittle et al 1974. Stout AP &

Lattles R and Kindblomtt et al 1978 reported a male preponderance. Sex incidence was equal in present in study of only 2 cases. In present study both the cases showed positivity for S-100.

Fibrosarcoma comprise 5-10% of sarcomas according to Markhede G et al 1981 (18).In the present study fibrosarcomas accounted 1 case out of 13 sarcomas and constituted an incidence of 7.6% of all soft tissue sarcomas. Enzinger FM & Weiss SW 1988 reported fibrosarcomas in the average age as 45yrs. Iwasaki H & Enjoji M 1979, reported an age incidence ranging from 40-70yrs with an average at 47.7yrs(19). In the present study fibrosarcomas occurred in the age group of greater than 60 yrs.

In a review of 695 cases at AFIP 1970-79, 10% in head and neck, 17% trunk, 28% in upper extremities & 45% in lower extremities. Bizer LS 1971 noted a site distribution of 7.8% in head and neck, 51% in trunk, 17% in upper extremities & 23% in lower extremities (20). Hidayat AA 1983(21) and Enzinger FM & SW Weiss 1988 reported site distribution of 85-90% in extremities in which 50-60% were in lower extremity, 10-15% occurred in head and neck and trunk region. In present study one case occurred in lower extremity.

Gutierez G et al 1984 reported incidence of 1.1% of Dermatofibrosarcoma protruberance of all the soft tissue sarcomas and 0.06% of all malignant tumors (22). In the present study they constituted about 7.6%of all the soft tissue sarcomas. Gutierez G et al 1984 reported an age incidence between the ages of 30-50yrs. In the present study there was one case that occurred at 60 yrs. Gutierez G et al 1984 reported a male predominance accounting to 36%. Males are more frequently affected as reported by Enzinger FM & Weiss SW 1988. In the present study a male patient was involved. In a review of 853 cases at AFIP 1960-79 the site distribution was noted to be 14.5% in head and neck, 47.4% in trunk, 18.2% in upper extremities,19.9% in lower extremities. In the present study 1 case was noted in the lower extremity. CD34 positivity is expressed in dermatofibrosarcoma protruberance, solitary fibrous tumors and gastrointestinal stromal tumours. In the present case there is positivity seen.

In the study done by Anders Rydholm 1986, out of 278 soft tissue sarcomas, 22% were malignant fibrous histiocytoma(23). Hashimoto H et al 1984, Costa j et al 1984 & Lawrence et al 1987 stated that 12-33% of soft tissue sarcomas were MFH (24). Present study disclosed an incidence of 7.6% of MFH out of all soft tissue sarcomas. As per Enzinger et al 1978 , in an analysis of 200 cases of MFH an age range was obtained between 50-70yrs. Kyriakos M 1972 & Hashimoto H 1984 have the same age incidence. In the present study the age of the patient was 45 years. Rooser B et al 1991 reported a sex incidence of M:F 1.1:1. Obrein and Stout 1964, De Rosai & Lattes reported major site as in lower extremity & followed by chest wall, upper extremity and retroperitoneum. In the present study the single case was seen in lower extremity in thigh.

Dimitris P, Agamandis in 1986 reported an incidence of Rhabdomyosarcoma as 19% of all soft tissue malignancies. In the present study, we encountered 1 case of Rhabdomyosarcomas constituting an incidence of 7.6% of all soft tissue sarcomas.

AFIP study of 558 cases during a 10yrs period from 1970-79 reported more than 50% incidence of embryonal type of Rhabdomyosarcoma below 10yrs of age and a 2^{nd} peak at 15-20yrs (Alveolar type).

Bale PM 1983 reported an incidence of 66% below 10yrs of age. In the present study there was only one case of embryonal rhabdomyosarcoma, which was under 10yrs and was positive for desmin, myogenin and PAS. A number of markers in immunodiagnosis of RMS have been developed like vimentin, desmin, Myoglobin, Alpha-actinin, Titin .

Russel WO et al, 1977, Hashimoto H et al 1985 quoted an incidence of about 7% of leiomyosarcomas out of all soft tissue tumors. A study by Alan G et al 1981 revealed 28 cases of leiomyosarcomas(25). Out of 28 cases, 16 cases occurred in the retroperitoneum, 3 arising in blood vessels and 9 from peripheral deep soft tissues, forming incidence 57%, 11% and 32% respectively. AFIP, Enzinger FM, Wess SW 1988, Anderson 1990, reported female predominance. A striking female preponderance was observed in the groups of retroperitoneal tumors, in contrast to the male predominantly in vascular and peripheral soft tissue leiomyosarcoma.

Only 2 cases of Leiomyosarcomas was encountered in our study of 105 soft tissue tumors, constituting an incidence 15.3%of soft tissue sarcomas. One of them in lower extremity and one was noted in the trunk females of 50-60 yrs age.

A study of 80 cases of leiomyosarcomas by Helwig & Field 1977 revealed the site distribution of 45% in lower extremities. In a review of 250 leiomyosarcomas of soft tissue filed in surgical pathology of Columbia University 1977 revealed 116 cases arising from lower extremity including gluteal region (46.4%).

Synovial sarcoma constitutes about 6-15% of all sarcomas as per Coasta. J. et al 1988. In the present study the incidence was 7.6% of all soft tissue sarcomas.

In a review of 418 cases, Geiler found the average age to be at 35yrs and 2.6% incidence under 10 yrs of age. Zito in review of 48 cases and Leslie A et al 1986, found that synovial sarcoma occurred in young adults. In the present study a single case was seen between 50-60yrs.

Studies by Mackenzie DH 1977, revealed M:F ratio to be 1.4:1 to 2:1, Cagle LA et al 1987 reported roughly equal incidence in both sexes(26,27). In the present study there was only 1 case seen in male.

Review by Leslie A et al 1986 of 63 cases, found lower extremities to be the common sites(28). In a review of 141 cases on the records of surgical pathology division of Columbia university revealed 61 cases (43.3%) in lower extremities including 9 cases in foot, 44 cases (31.2%) in trunk and 13 cases (9.2%) in head& neck region.

In the present study there was only single case which occurred in lower extremity. In immunohistochemical study of 100 synovial sarcomas by Guillou et al,focal positivity for EMA and cytokeratin was found in 97% and 69% of cases. In present study only one case was encountered which was in the age 50-60 yrs in male in lower extremity and positive EMA and cytokeratin.

Extraskeletal Ewing's sarcoma is a rare soft tissue tumor that is morphologically indistinguishable from Ewings sarcoma of Bone. It is usually found in young adults (younger than 30 years) and has slight predominance in male patients. Few cases affecting patients beyond 50years were reported by Carol C.Cheung, Rita.A ,Kandel, Robert S.Bell , Raymound, E.Mathews. In Present study there was one case of extraskeletal ewings sarcoma seen in lower extremity in a male patient of age 25 years. Extraskeletal ewings sarcoma frequently involves soft tissue of chest wall, paravertebral region , extremities and retroperitoneum as given by Enzinger. In series by Pitchard et al 1975 , patients ranged in age from 14 months to 59 years 70% were younger than 10 years(29).

Extraskeletal chondrosarcoma is a tumour first described as a distinct entity by Enzinger and Shiraki in 1972. It is more common in men of age group 44 to 49 years. . It arises primarily in extremities as given by Brooks JSJ in Disorders of soft tissue tumours and Sternberg. An intra-abdominal case was reported by Farah Gaudier, year 2003. In present study patient was of age 50years seen in lower extremity and focally positive for S-100 ,synaptophysin and vimentin.

Epithelioid sarcoma is a rare sarcoma seen primarily in hand and wrist described by Evans HL ,Baer SC. Females usually outnumbered males as studied by Mirra JM, in 1972. In study documented by William B. Laskin, there was activity of tumour cells to mixed polyclonal and monoclonal antibodies directed against keratin, antiepithelial membrane antigen and anticarcinoembryonic antigen. Immunohistochemically these cells stained for epithelial keratin and vimentin.Improved newer techniques such as immunocytochemical,cytogenetics and electron microscopic study has now been widely applied in few research centers as useful diagnostic tools to solve the difficult cases of soft tissue tumors.

V. Conclusions

Improved newer techniques such as immunocytochemical , cytogenetics and electron microscopic study has now been widely applied in few research centers as useful diagnostic tools to solve the difficult cases of soft tissue tumors.Although these methods are more reliable, the non availability due to their high cost is the major drawback, immuncytochemical methods also has a limitation of significant overlapping in their findings among different soft tissue tumors and no single marker alone can reliably be used to substantiate the presumptive diagnosis.

Majority of the soft tissue tumors can be diagnosed by their individual characteristics on routine haematoxylin and eosin sections under light microscopy. By using certain histological parameters such as tumor differentiation, necrosis and mitotic activity, it also helps in both evaluating the malignancy and predicting the prognosis of the patients. Hence the light microscopy still remains as the basic method of diagnosis of the soft tissue tumors and other disease entities in majority of the institutes

Table 1: Distribution of benign soft tissue tumours according to age

Sr.No	Tumors	Total N=92 S	0-10yrs	11-20yrs	21-30 yrs	31-40 yrs	41-50 yrs	51-60 yrs	>60yrs
1	Lipoma	32	02 (6.25%)	05 (15.62%)	06 (18.75%)	05 (15.62%)	05 (15.62%)	-	09 (28.1%)
2	Haemangioma	20	09 (45%)	04 (20%)	02 (10%)	02 (10%)	-	02 (10%)	01 (5%)
3	Schwannoma	20	01 (5%)	01 (5%)	09 (45%)	02 (10%)	04 (20%)	03 (15%)	-
4	Neurofibroma	14	02 (14.2%)	02 (14.2%)	07 (50%)	02(14.2%)	01(7.14%)	-	-
5	Lymphangioma	02	02 (100%)	-	-	-	-	-	-
6	Glomus tumors	02	-	-	02 (100%)	-	-	-	-
7	Fibromatosis	02	-	-	02 (100%)	-	-	-	-
	Total	92	16	12	28	11	10	05	10
								P=0.025	

Table 3: The incidence of Benign tumor

S.No	Tumors	No of Cases	Percentage
1	Lipoma	32	34.7%
2	Haemangioma	20	21.7%
3	Schwannoma	20	21.7%
4	Neurofibroma	14	15.2%
5	Lymphangioma	02	2.1%
6	Glomus tumor	02	2.1%
7	Fibromatosis	02	2.1%

Table 4: Immunohistochemistry in Benign soft tissue tumors:

Tumors	Markers showing positivity
Lipoma - Hibernoma -	S100 S100
Hemangioma – Capillary, cavernous	CD34
Schwannoma – cellular schwannoma Melanotic Schwannoma	S100 S100 HMB 45
Neurofibroma	S100
Lymphangioma	CD34
Glomus tumor	SMA
Fibromatosis	Actin

Table 5: Immunohistochemistry in Malignant soft tissue tumors:

Tumors	Markers showing positivity
Fibrosarcoma	Vimentin
Liposarcoma	S100
Synovial Sarcoma	Cytokeratin, EMA
Rhabdomyosarcoma	Desmin, Myogenin
Extraskeletal Ewings sarcoma	Vimentin
Leiomyosarcoma	SMA, Desmin
Malignant Hemangio endothelioma	CD34
Malignant fibrous histiocytoma	EMA, Desmin
Dermatofibrosarcoma Protruberance	CD34
Extraskeletal Chondrosarcoma	Vimentin, S100
Epithelioid sarcoma	Vimentin, Cytokeratin, CD34

Table 6: Distribution of malignant tumors according to Age group:

S.No	Sarcomas	Total n=13	0-10 yrs	11-20 yrs	21-30 yrs	31-40 yrs	41-50 yrs	51-60 yrs	>60 yrs
1	Fibrosarcoma	01							01 (7.6%)
2	Liposarcoma	02						02 (15.3%)	
3	Synovial sarcoma	01						01 (7.6%)	
4	Rhabdomyosarcoma	01	01 (7.6%)						
5	Extra-skeletal Ewing's sarcoma	01			01 (15.3%)				
6	Malignant haemangioendothelioma	01					01 (7.6%)		
7	Leiomyosarcoma	02						02 (15.3%)	
8	Malignant fibrous histiocytoma	01					01 (7.6%)		
9	Dermatofibrosarcoma protuberans	01							01 (7.6%)
10	Extraskeletal chondrosarcoma	01						01 (7.6%)	
11	Epithelioid sarcoma	01						01 (7.6%)	

Table 7 : Distribution of Malignant tumors according to site

S.no	Sarcomas	Total n=13	Head & Neck	Extremities		Trunk
				Upper	Lower	
1	Fibrosarcoma	01			01 (7.6%)	
2	Liposarcoma	02			02 (15.3%)	
3	Synovial sarcoma	01			01 (7.6%)	
4	Rhabdomyosarcoma	01	01 (7.6%)			
5	Extra-skeletal Ewing's sarcoma	01			01 (15.3%)	
6	Leiomyosarcoma	02		01 (7.6%)	01 (7.6%)	01(7.6%)
7	Malignant haemangioendothelioma	01				
8	Malignant fibrous histiocytoma	01			01 (7.6%)	
9	Dermatofibrosarcoma protuberans	01			01 (7.6%)	

10	Extraskeletal chondrosarcoma	01		01 (7.6%)	01 (7.6%)	
11	Epithelioid sarcoma	01				

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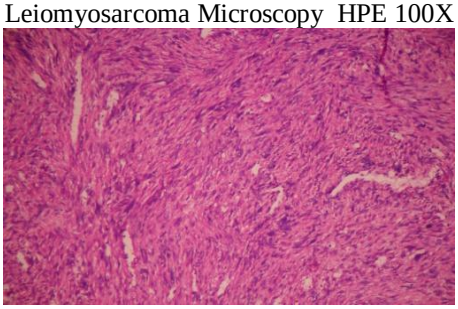
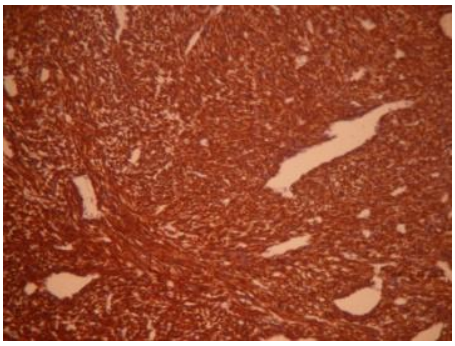
Leiomyosarcoma gross photo

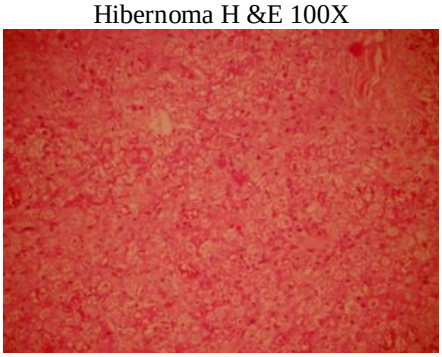
Leiomyosarcoma Microscopy HPE 100X

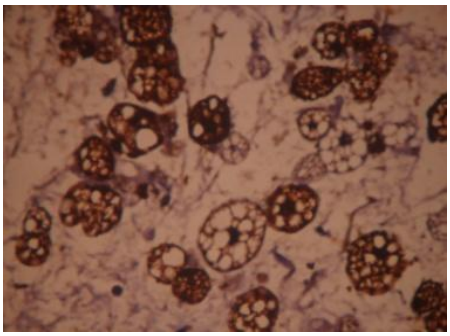


Leiomyosarcoma IHC SMA HPE 100X

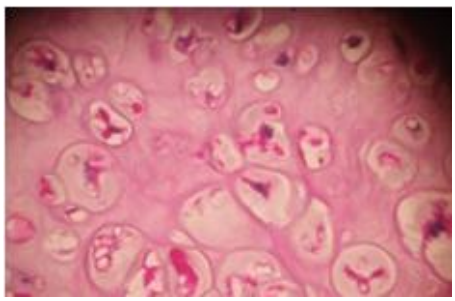


Hibernoma H &E 100X

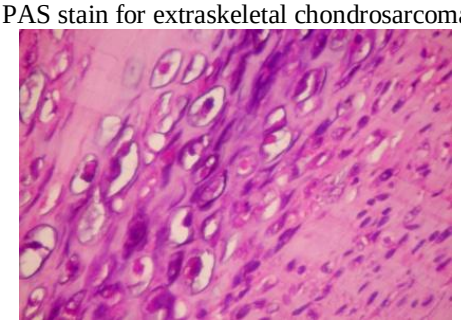




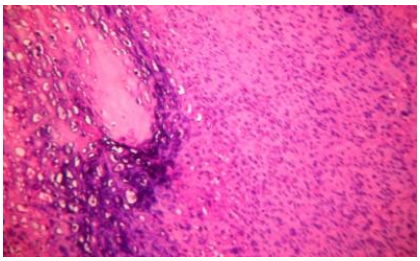
Hibernoma IHC S100 400X



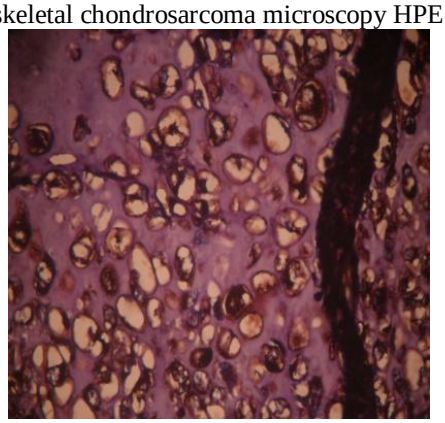
PAS stain for extraskeletal chondrosarcoma



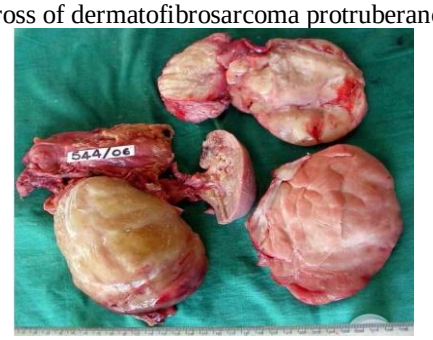
PAS Stain for extraskeletal chondrosarcoma HPE 400X



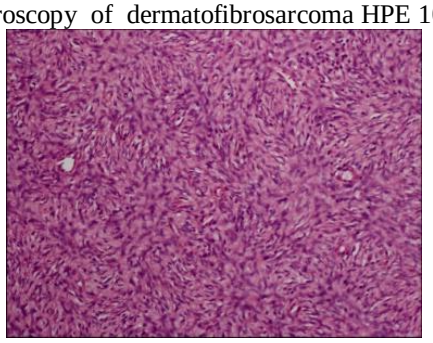
Extraskeletal chondrosarcoma microscopy HPE100X



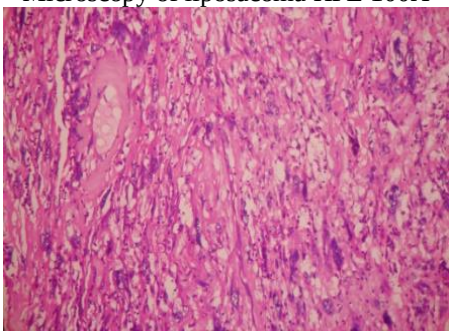
Gross of dermatofibrosarcoma protruberance



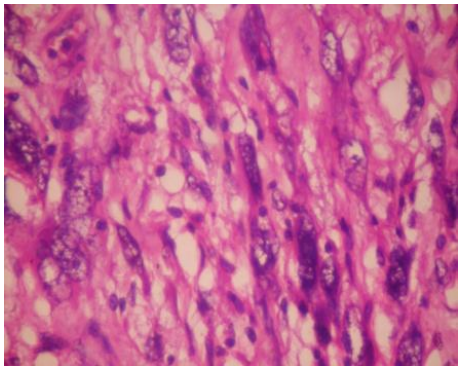
Microscopy of dermatofibrosarcoma HPE 100X

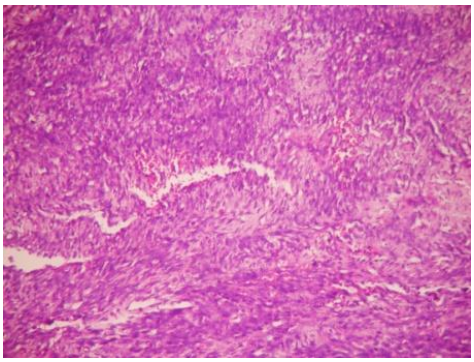


Microscopy of liposacoma HPE 100X



Microscopy of liposarcoma HPE 400X





H &E 100x Synovial sarcoma