IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 14, Issue 7 Ver. II (July. 2015), PP 82-85
www.iosrjournals.org

A Histopathological Study of Soft Tissue Tumors

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Abstract: *Soft tissue tumors are defined as Nonepithelial Extraskeletal tissue of the body exclusive of the reticuloendothelial system, glia, and supporting tissue of various parenchymal organs.Even in these days of brown revolution with the advent of Immunohistochemistry, Hematoxylin and Eosin (H&E) Stain examination is still an important diagnostic procedure to evaluate the soft tissue tumors.The exactness of the diagnosis is then compared by using immunohistochemistry where necessary.The study has once again proved that careful and thorough study of H&E Sections is still a most important step in the evaluation of soft tissue tumors.*

Key words: *Soft tissue tumor(STT),Hematoxylin&Eosin stain(H&E stain),Immunohistochemistry(IHC)*

I. Introduction

The field of soft tissue tumors (STT) is enormously vast, and yet relatively undiscovered. The rarity of primary tumors of soft tissue and large range of different types of tumors,the diagnosis and classification of soft tissue tumors become most difficult areas in surgical pathology . STT are defined as mesenchymal proliferations that occur in the extraskeletal , non epithelial tissues of the body ,excluding the viscera, coverings of the brain, and lymphoreticular system .Benign tumors are more common than malignant ones in ratio of 100:1.[1]H&E sections act as a useful diagnostic technique in the initial diagnosis of tumors . Present study was performed with the aim of diagnosing STT on H&E sections and determining the accuracy of detecting the exact type of the tumor with the respective immunohistochemistry results where required.

II. Materials and Methods

The study was undertaken in the Department of Pathology,kamineni institute of medical sciences ,Narketpally from july 2012 to june 2014.A total of 95cases of soft tissue tumors were included in this histopathological study .Complete clinical details, examination findings, and radiological investigations of all patients were studied. The excised tissue specimens of all the above cases were processed routinely and stained with Hematoxylin and Eosin and examined, while special stains like Immunohistochemistry was performed as required. Diagnostic results from patients were compared for diagnostic concordance using immunohistochemistry results as the gold standard where ever required.

III. Results

82% (78/95) of patients had benign lesions, 18% (18/95) had malignant lesions. The commonest age group for benign soft tissue lesions was between 2ndand4th decades and for malignant lesions was between 4th and 5thdecades of life.54% (52/95) of cases with soft tissue tumors including both benign and malignant were males and 46% (43/95) were females. The commonest site of involvement of the benign tumors was trunk 28% (22/78) cases, followed by head and neck region;however for malignant lesions it was the lower extremities followed by trunk region.

The current WHO classification is used for the categorization of tumors[2].The commonest benign lesion was lipoma in 52% (41/78) followed by vasoformative lesion, hemangioma in 19% (15/78). The biopsy of lipoma constituting 43% revealed mature adipocytes separated into lobules. Specimen of Angiolipoma constituting 1% revealed dilated capillaries prominent at the periphery of the lobules with occasional thrombi .Fibrolipoma constituting 1% showed replacement of fat by dense trabeculae and septa of richly collagenous fibrous connective tissue. Liposarcoma constituting 2% showed lipoblasts with significant pleomorphism , with focal areas showing adipocytic nuclear atypia, and the diagnosis of well differentiated liposarcoma was given. The biopsy of hemangioma that constituted 16% of cases showed a lobular pattern with uniformly sized capillary vessels in 11% of the cases which were called as capillary hemangiomas .In the rest of 5% of cases a pattern of dilated thin walled blood vessels with inconspicuous endothelial lining was seen which were called as cavernous hemangiomas.1% of cases was made of lymphangiomas that showed irregularly dilated channels composed of luminal proteinaceous fluid and lymphocytes.

There has been a substantial revision in the classification of vasoformative lesions into vascular neoplasms or malformations based on glucose transporter1(GLUT1) immunoreactivity in the majority of vascular neoplasms and its absence in malformations[3,4]

Among the 3% of cases of hemangioendothelioma,one case presented as non healing ulcer and gave a diagnostic difficulty as squamous cell carcinoma and malignant melanoma were in close differential diagnosis.IHC was done for CD-34 and its diffuse positivity in the cells lining the blood vessels and the epitheloid configuration of the cells gave the diagnosis o epitheloid

Hemangioendothelioma(Fig 1,2)

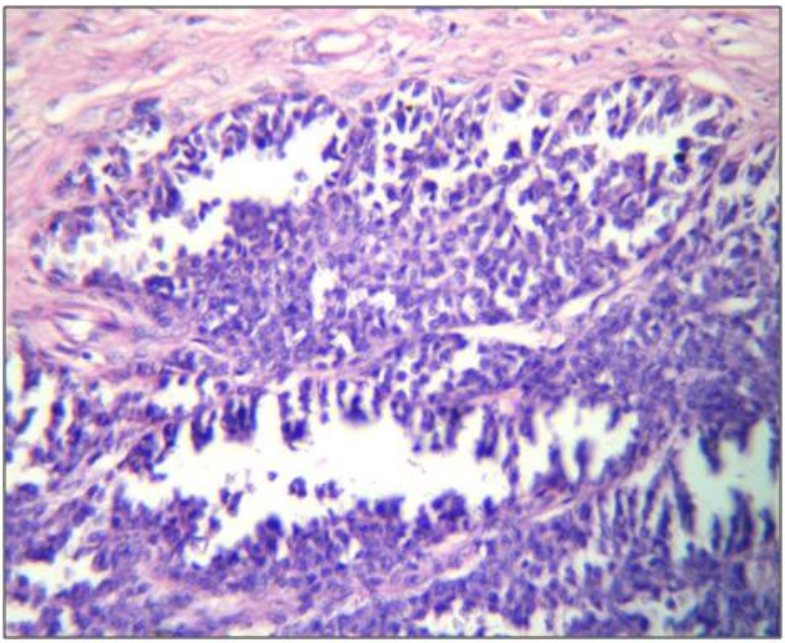

Fig 1: showing plump looking endothelial cells lining vascular spaces.

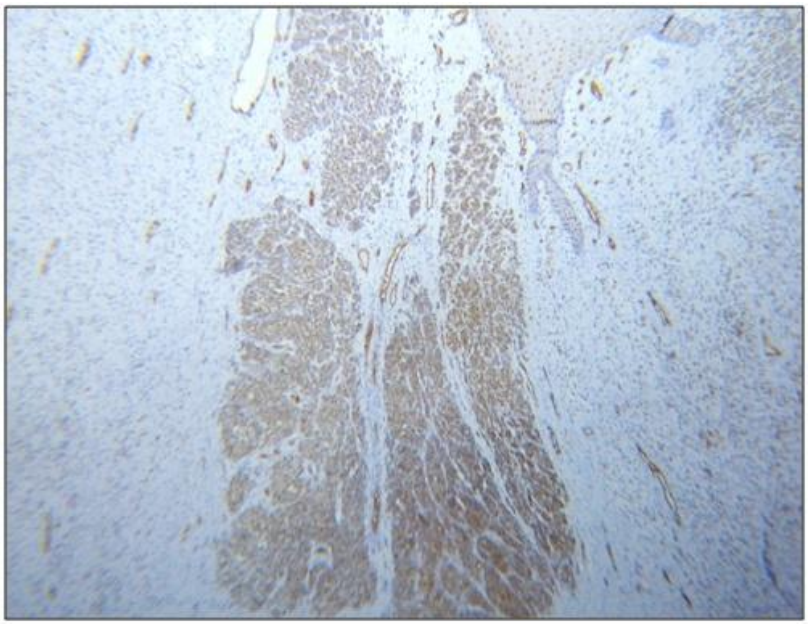

Fig 2: showing CD34 positivity proving vascular origin of the tumor

2% of cases constituted angiosarcoma which showed enlarged atypical endothelial cells with prominent mitotic figures and occasional formation of vascular channels.CD-34 was positive and the vascular origin was confirmed. Pericytic tumors were composed of glomus tumor that constituted 1%.

8% of cases constituted benign fibroblastic tumors. Depending on clinical and histological features,these fibroblastic tumours were classified as 3 cases of Dermatofibroma, 2 cases of fibromatosis and one case each of Nuchal fibroma, Myofibroblastic tumour and Angiomyofibroblastoma.

2% of malignant fibroblastic tumors were composed of Dermatofibrosarcoma protruberans which showed typical cart-wheel pattern with extension into subcutis. Occasional mitotic figures and mild atypia are found. Among the 2% of fibro histiocytic tumors, the diagnosed entities were benign fibrous histiocytoma, Giant cell tumour of tendon sheath.. The malignant category was composed of 3 cases of malignant fibrous histiocytoma of pleomorphic type that showed oval to spindle shaped cells in fascicles,atpical mitoses , necrosis and areas of myxoid degeneration(Fig 3).

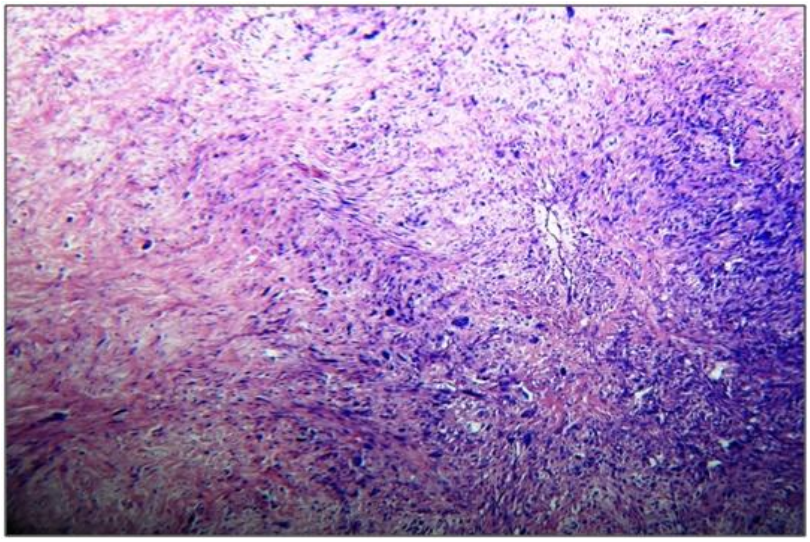

Fig 3: showing oval to spindle shaped cells in a case of MFH

Considerable reassessment and revisionism have been directed toward the question of whether MFH represents a specific tumor type or a final common pathway of high grade sarcomas[5,6,7].

The benign neuronal tumors that constituted 6% were composed of schwannomas that showed a characteristic histological appearance with Antoni A and Antoni B areas. There was no atypia or atypical mitotic figures. Malignant peripheral nerve sheath tumor constituted 2% of cases and showed alternating light and dark areas with broad sweeping fascicles of cells with wavy nuclei.

Ewing's sarcoma,synovial sarcoma were included in the category of "tumors of uncertain differentiation" as per WHO classification [2]. A soft tissue tumor was encountered in the small intestine of a 65 yr old female that caused much diagnostic confusion.IHC showed c-kit (CD117) positivity and was diagnosed as gastrointestinal stromal tumor(GIST) and was included in the classification under "others" group (Fig 4,5).

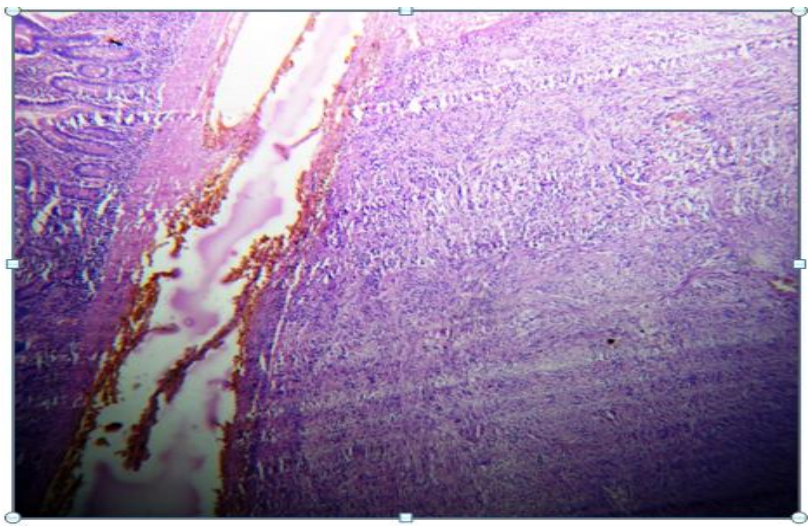

Fig 4: showing stromal tumor with overlying mucosa

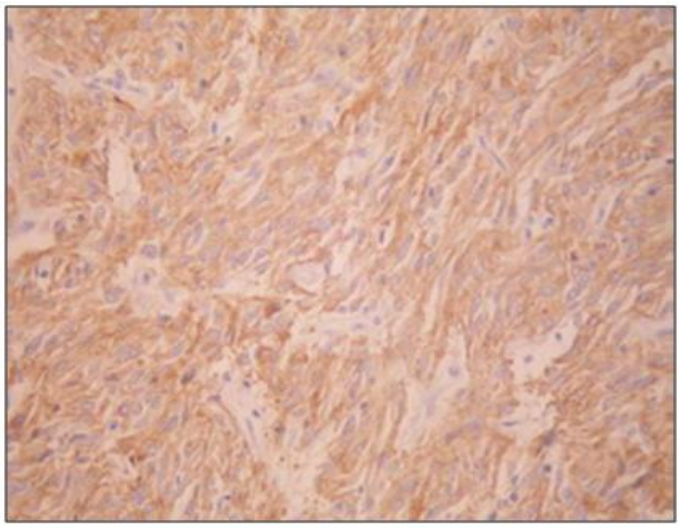

Fig 5 :showing CD 117 positivity

IV. Discussion

The benign tumors are more common than malignant tumors with a ratio of 100:1[1],and in the present study, ratio was 4:1. Roy et al, observed that benign STT were relatively common above third decade of life, while malignant STT occurred in patients of all ages [8]. Rekhi et al. observed that the commonest age group is 21–30 years for STT [9]. In present study, the commonest age group was 21–30 years and 40–50 years for benign and malignant STT,respectively. In present study,thecommonest site for benign and malignant STT was upper extremities followed by trunk and the lower extremities followed by trunk region, respectively. Roy et al. observed that benign tumors are roughly equally distributed across all parts of the body with a slight predilection for the upper parts and the commonest site of involvement of the malignant tumors was trunk [8], in contrast to present study. Roy et al, [8] also observed that the most common benign tumour was lipoma followed by Neurofibroma and Haemangioma and Parajuli and Lakhey [10] observed lipoma followed by benign mesenchymal tumor followed by benign fibrohistiocytic tumor, while in present study Adipocytic tumours were commonest followed by vascular tumours and fibroblastic tumors. In malignant cases, Roy et al observed malignant fibrous histiocytoma followed by Rhabdomyosarcoma and Liposarcoma[8].In the present study, MFH and Hemangioendothelioma were the commonest tumors.

V. Conclusion

H&E study of soft tissue tumors is an important step in the diagnosis and even in these days of brown revolution it still retains the pivotal role .IHC however helps in establishing the lineage of the tumor in cases of diagnostic dilemma and in confirmation of H&E diagnosis.

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