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Pathology

STUDY OF HISTOPATHOLOGICAL SPECTRUM OF SOFT TISSUE TUMORS IN AJMER REGION

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ABSTRACT Soft tissue includes the supportive connective tissue of various organs and the other nonepithelial, extra skeletal structures excluding the lymphoreticular system, viscera and coverings of brain. In the present study we find out the relative frequency of soft tissue tumors and age, sex & site wise distribution of different types of soft tissue tumors. The present study was conducted over a period of January 2016 to December 2018. Total 431 cases of soft tissue tumor specimens were included and processed according to standard protocol and diagnosis was made. Out of 431 cases benign tumors formed 97.9% of all soft tissue tumors whereas malignant tumors constituted 2.1%. The adipose tumors accounted for the majority of soft tissue tumors 266 (61.7%) followed by vascular tumors 87 (20.2%) and fibrous tumors 78 (18.1%). Soft tissue tumors in general showed equal distribution in male & female (1≈1). The benign soft tissue tumor showed predilection for upper extremity (135 cases; 31.3%) and head & neck (112 cases; 25.9%). The malignant soft tissue tumors showed a marked site predilection for the lowere xtremities (6 cases; 66.66%). Majority of fibrosarcomas were grade 2 (3 cases, 33.33%); Majority myxofibrosarcoma and liposarcomas were grade 1. Mean age of all benign and malignant soft tissue tumors were 38.66±14.64 years and 55.22±10.39 years respectively. Soft tissue tumors especially with malignant, intermediate potential and uncertain differentiation pose a diagnostic challenge for histopathologist. A wide spectrum with histomorphological variability increases difficulties for the pathologist and hence for the treating surgical medical oncologists.

KEYWORDS : Soft tissue, Benign, Vascular.

Introduction:

Soft tissue can be defined as nonepithelial extraskeletal tissue of the body, exclusive of the reticuloendothelial system, glia and supporting tissue of various parenchymal organs. It is represented by voluntary muscle, fat, fibrous tissue along with the vessels serving these tissues and the peripheral nervous system. They are derived from the embryonic mesoderm with some contribution from neuroectoderm. [1]

The aetiology of most benign and malignant soft tissue tumors is unknown. In rare cases, genetic and environmental factors, irradiation, viral infections and immune deficiency have been found associated with the development of usually malignant soft tissue tumors. There are also isolated reports of soft tissue tumors arising in scar tissue, at fracture sites and close to surgical implants. Some malignant mesenchymal neoplasms occur in the setting of familial cancer syndromes. Soft tissue tumors can occur at any age. Both benign and malignant soft tissue tumors commonly present as a painless mass. [2], [3]

The common benign soft tissue tumors are lipoma, hemangioma, benign fibrous histiocytoma whereas the common malignant soft tissues tumors are malignant fibrous histiocytoma, liposarcoma, leiomyosarcoma, synovial sarcoma and malignant peripheral nerve sheath tumors. [4],[5]

Soft tissue tumors may arise in any location, approximately 40% occur in lower extremity especially in thigh, 20% in upper extremity, 10% in head and neck and 30% in trunk and retroperitoneum.

The aim of this study to find out histopathological patterns of soft tissue tumours and relative incidence of benign and malignant cases with respect to various clinicopathological parameters.

Material & Methods

This retrospective and prospective study was conducted over a period of January 2016 to December 2018 in department of Pathology, JLN Medical College & Associated Group of Hospitals, Ajmer.This study includes 431 cases of soft tissue tumor specimens.

All the received specimens were fixed in 10% neutral buffered formalin. Multiple sections were taken from representative areas & stained withHematoxylin& Eosin and other special stain like Masson trichrome, Van Gieson's stain, Reticulin, PAS (Periodic Acid Schiff) and IHC were done whenever required.

Observations &Results

In this study total 431 cases were diagnosed as soft tissue tumors, 422 (9.53%) cases were benign and 9 (0.69%) cases were malignant tumors. We recorded the total 5721 tumors were diagnosed, in which 4428 (77.4%) were benign and 1293 (22.6%) were malignant tumors.

Table 1: Incidence of benign and malignant soft tissue tumors

S.No.	Tumor type	Benign	Malignant	Total tumors
1.	Total number of tumors	4428	1293	5721
2.	Total number of soft tissue tumors	422	9	431
3.	% incidence of soft tissue tumors out of all tumors	9.53%	0.69%	7.53%

The adipose tumors accounted for the majority of benign soft tissue tumors 264 (61.3%) followed by vascular tumors 87 (20.2%) and fibrous tumors 71 (16.5%), whereas Fibrous tumors accounted for the majority of malignant soft tissue tumors 7 (1.6%) followed by adipose tumors 2 (0.5%) and no malignant vascular tumors was diagnosed during study period.

Table 2: Distribution of cases according to histopathologic origin of soft tissue tumors

Tumors	Benign	%	Malignant	%	Total	%
Fibrous	71	16.5 %	7	1.6 %	78	18.1%
Adipose	264	61.3 %	2	0.5 %	266	61.7%
Vascular	87	20.2 %	0	0	87	20.2%
Total	422	97.9 %	9	2.1 %	431	100%

The youngest patient in the present study was 1 year old while the

oldest was 76 years old. Majority of the benign tumors occurred in the third (59 cases, 13.98%), fourth (172 cases, 40.76%) and fifth decade (69 cases, 16.35%) with a peak incidence in the fourth decade (172 cases, 40.76%). Age of malignant soft tumors ranges from 41-76 years. Majority of the malignant tumors occurred in the fifth (5 cases, 55.55%), and seventh decade (2 cases, 22.22%) with a peak incidence in fifth decade. Mean age of all malignant soft tissue tumors were 55.22±10.39 years while mean age of malignant fibrous tumors and adipose tumors were 54.57±11.09 years and 57.50±10.61 years respectively. Mean age of all benign soft tissue tumors were 38.66±14.64 years while mean age of benign Fibrous tumors, Adipose tumors, and Vascular tumors were 39.82±14.26 years, 40.89±13.40 years and 30.97±16.09 years respectively.

All soft tissue tumors showed approximately equal male female ratio (1≈1). Benign soft tissue tumors were encountered equal among females and males with male to female ratio of (1≈1). While there was only a slight female preponderance in the case of malignant tumors, Male to female ratio is 1:1.25.

Majority of the soft tissue tumors presented with swelling (416 cases out of 431). 135 cases have complain of pain also.15 cases have complain pain without swelling and 281 cases have complain swelling without pain. The benign soft tissue tumor showed predilection for upper extremity (135 cases; 31.3%) and head & neck (112 cases; 25.9%). Unlike the benign tumor, the malignant soft tissue tumors showed a marked site predilection for the lowerextremities (6 cases; 66.66%).

Majority of benign soft tissue tumors measured less than 5 cm (357 cases, 84.5%), while (5 cases, 55.5%) of malignant tumors measured more than 5cms. The commonest benign tumor was lipoma (222 cases; 52.6%) of all benign tumors of soft tissue followed by vascular tumors (87 cases; 20.2%), fibrous tumors (71cases; 16.8%).The commonest malignant soft tissue tumor was fibrosarcoma (5 cases; 55.55%). Followed by myxofibrosarcoma (2 cases; 22.22%) and liposarcoma (2 cases; 22.22%).

Majority of fibrosarcomas were grade 2 (3 cases, 33.33%), followed by grade 1 (1 case; 11.11%) and grade 3 (1 case; 11.11%). Myxofibrosarcomas were grade 1 (1 case; 11.11%) and grade 2 (1 case; 11.11%). Liposarcomas were grade 1 (2 cases; 22.22%).The commonest benign soft tissue tumor in the first and second decadewas haemangioma.

Discussion

During the study period of 3 years, 431 soft tissue tumor specimens were received in the Department of Pathology, JLN Medical College & Associated Group of Hospitals, Ajmer. They formed 7.53% of all tumors. A total of 431 soft tissue tumors were studied in the present study. Benign soft tissue tumors were 422 in number and malignant tumors were 9 constituting 97.9% and 2.1% respectively.

The percentage of malignant tumors was relatively less than the study of Myhre Jensen (6)(1981), which can be explained by the inherent bias in a referral population. The relative frequency of benign to malignant soft tissue tumors is difficult to estimate accurately since many of the benign tumors cause a few problems and thus the patients do not report to the clinician. The present study benign soft tissue tumors (97.9%) comparable to the studies ofN Narayanan (7), Myhre Jensen (6), Umarani M K (8) and B K Sharma (9), where they constituted (97.25%), (94.6%), (95%) and (91%) respectively. Malignant soft tissue in present study (2.1%), where other studies constituted (2.7%), (5.4%), (5%) and (9%) respectively.

The commonest benign tumor type was the adipose tumor forming 61.3% of benign soft tissue tumors, which is comparable to the studies of Geethadev(10), Myhre Jensen (6), Umarani M K (8) and N Narayanan (7) where they constituted 58.3%, 48.1%, 56% and 61.5% of benign tumors respectively. The second most common benign tumor group was the vascular tumors, which constituted 20.2%, which is comparable to the studies of GeethaDev(10), Myhre Jensen (6). Umarani M K (8) and N Narayanan (7) where they formed 30.3%, 11.7%, 12% and 16.5% respectively. The third histological variant fibrous tumor, which constituted 16.5% in our study, which is comparable to the studies of Geethadev (10), Myhre Jensen (6) and N Narayanan (7) where they constituted 11.4%, 10.5% and 11% respectively.

In the present study the age ranged from 1 year to 76 years. The average age in the case of benign tumors was 38.66±14.63 years and 55.22±10.38 years in the case of malignant tumors, which is comparable to the studies of M Jensen (6).

In the cases of benign soft tissue tumors group there were 212 males and 210 females with a male to female ratio of 1≈1, which is comparable to the studies of Myhre Jensen (6), Pramila Jain (14) and Megha Sharma (12) where the male to female ratio were 0.9:1, 1.2:1 and 1.3:1 respectively. In case of malignant tumors there were 4 males and 5 females with a male to female ratio of 1:1.25, while the studies of M. Jensen (6), Pramila Jain (14) and Megha Sharma (12) where the male to female ratio were 2:1, 1.9:1, and 1.5:1 respectively.

In the present study the commonest site was upper extremity (31.3%) and head & neck (25.9%), which is comparable to the studies of GeethaDev(10), Kransdorf(11),Megha Sharma (12) and Jenna Prabhakar(13). Unlike the benign tumors the malignant soft tissue tumors were observed to have a strong predilection for lower extremities forming 66.66%. This predilection is comparable by the studies of Kransdorf(11), Megha Sharma (12) and Jenna Prabhakar(13).

The commonest benign fibrous tumor was fibroma (29 cases, 6.8%). Followed by fibromatosis (18 cases, 4.2%), hemangiopericytoma (14 cases, 3.3%) and nodular faciitis& myositis ossificans each (5 cases, 1.2%). All type benign fibrous tumors were relatively more common in females (Male: Female Ratio of benign fibrous tumours 0.82:1). Peak occurrence of benign fibrous tumors in the third, fourth, fifth, sixth and seventh decade, which is comparable to the studies of other authors. The single most common site was trunk although it can occur anywhere over the body, which compares favorably with the study of M Jensen (6) and Kransdorf. (11)

Conclusion:

Diagnosis and management of soft tissue tumors require a team perspective. Even though soft tissue sarcomas are rare and usually present just as painless mass, the clinician must be able to diagnose it early for better management.

A careful gross examination of the specimen and adequate sampling of the tumor is essential. Special stains & immunohistochemistry are helpful in addition to the routine Haematoxylin and eosin for the proper diagnosis of STT's.

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