ORIGINAL RESEARCH

A histopathological study of soft tissue tumors in tertiary care centre

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ABSTRACT

Introduction: Soft tissue is defined as nonepithelial extraskeletal tissue of the body. Soft tissue tumors are a heterogeneous group of tumors and the pathogenesis most of which is not known. They are diverse neoplasms with overlapping clinical and radiological features so histopathology is needed for appropriate diagnosis.

Objectives: The main objectives of the present prospective study are to analyze histopathological patterns of soft tissue tumors to study the frequency of distribution of soft tissue tumors in terms of age, gender and sites in the body.

Materials and Methods: This is a prospective study carried out specimens of soft tissue tumors which includes biopsy as well as surgically excised specimens were received in histopathology department of GMERS Medical College, Gandhinagar, Gujarat during 6 months study period from 1st September, 2023 to 29th February, 2024. The formalin fixed specimens are processed and examined under the microscope.

Result: Out of 50 cases 88% are benign and 12% are malignant tumors and majority were lipomatous tumor (64%) followed by tumor of uncertain differentiation (10%). Incidence of cases found more in male with male to female ratio of 1.5:1. Most common age group was 31-40 years both in male and female, comprising total 17 (34%) cases followed 51-60 years comprising 10 (20%) cases. Most common site observed was thigh comprising 9 (18%) cases followed by back comprising 7 (14%) cases.

Conclusion: Soft tissue tumors pose diagnostic challenges due to confounding morphological characteristics. Hence histopathological examination is gold standard tool soft tissue tumors' diagnosis.

Key Words: Soft tissue, Lipomatous tumor, Histopathology, Undifferentiated Sarcoma, Epithelioid Sarcoma

INTRODUCTION

Soft tissue is defined as nonepithelial extraskeletal tissue of the body exclusive of the reticuloendothelial system, glia and supporting tissue of various parenchymal organs. Soft tissue tumors (STTs) are a heterogeneous group of tumors classified according to the line of differentiation of adult soft tissues, and the pathogenesis most of which is not known [(1)]. STTs are classified according to the tissue that they recapitulate or principally based on line of differentiation of tumors, rather than the type of tissue from which they developed. They include tumors of voluntary muscle, fat, fibrous tissues, tumors of vessels serving them and peripheral nervous tissues. However, in some STTs, no corresponding normal counterpart is known [(2)]. They are diverse neoplasms with overlapping clinical and radiological features [(3, 4)]. Hence histopathology is needed for appropriate diagnosis. Soft tissue tumors (STTs) arise anywhere in the body, about (50%) occur in the extremities (arm, legs, hands or feet), (40%) occur in the trunk (chest, hips, back, shoulders and abdomen) and (10%) occur in the head and neck [(5)]. Depending on the biological behavior, soft tissue tumors are classified into benign and malignant tumors, which arise nearly everywhere in the body. Benign tumors, which closely resemble normal tissues from which they arise, have limited capacity for autonomous growth. Benign soft tissue tumors are usually slow growing, superficial, well-defined, well-encapsulated, painless and any soft tissue tumor is considered malignant if they increase in size with size>5cm, are deep to deep fascia and

painful [6,7]. The overall incidence of soft tissue tumors is relatively high in case of benign soft tissue tumors with the annual incidence being 3000 per million populations while the incidence of malignant soft tissue tumors is 30 per million populations [8, 9]. The mainstay of diagnosis of soft tissue tumor depends on the use of characteristic diagnostic techniques employed in diagnosis of soft tissue tumors with various sampling techniques being excisional, incisional and core biopsy with preferred technique for diagnosing the soft tissue masses over the extremities persistently remaining open biopsy which is considered as gold standard [10-12].

AIM AND OBJECTIVES

- To analyze patterns of soft tissue tumors in histopathology.
- To study the frequency of distribution of soft tissue tumors in terms of age, gender and sites in the body.

MATERIALS AND METHODS

The prospective study was conducted from 1st September, 2023 to 29th February, 2024 at Pathology Department, GMERS Medical College, Gandhinagar, Gujarat. A total 50 specimens of soft tissue neoplasms, which includes biopsy as well as surgically excised specimens were received in histopathology department during 6 months study period. Detailed data including the age, gender and site of the lesion were collected from histopathology request forms. The gross examination of the specimens received was carried out , after bisecting of specimen, 10% formalin was used for fixation of the tissues overnight and paraffin blocks were prepared from the tissue blocks submitted for tissue processing, which were sectioned and stained with routine Haematoxylin and Eosin (H and E) stains.

INCLUSION CRITERIA

Benign as well as malignant tumors of various soft tissues.

EXCLUSION CRITERIA

Tumor like lesions of soft tissues.

RESULTS

The present study is done by examining surgically removed soft tissue tumor specimens submitted in the Department of Pathology at GMERS Medical College, Gandhinagar. Total 50 cases were included in this study. The results of this study are as follows:

TABLE 1: NATURE OF SOFT TISSUE LESIONS BASED ON HISTOPATHOLOGY

SR NO.	SOFT TISSUE LESION	TOTAL (PERCENTAGE)
1	Benign	44 (88%)
2	Malignant	6 (12%)
	TOTAL	**50 (100%)**

Majority (88%) of the soft tissue tumors were benign in nature while 12% were malignant in nature.

TABLE 2: DISTRIBUTION OF CASES ACCORDING TO AGE & GENDER

AGE GROUP (In Years)	GENDER	
	MALE	FEMALE
1-10	0	0
11-20	1	2
21-30	4	2
31-40	11	6
41-50	2	5
51-60	6	4
61-70	5	0
71-80	1	1
TOTAL CASES	**30(60%)**	**20 (40%)**

Among 50 cases, 30 (60%) cases found in males and 20 (40%) cases in females with male to female ratio of 1.5:1. Most common age group was 31-40 years both in male and female, comprising total 17 (34%) cases in which male consist 11 (22%) cases while female consist 6 (12%) cases.

TABLE 3: HISTOPATHOLOGICAL SPECTRUM OF SOFT TISSUE LESIONS

Sr No.	TYPE OF LESION	NO. OF CASES	PERCENTAGE
Adipocytic Tumors (64%)			
1	Lipoma	31	62%
2	Myolipoma	1	2%
Fibroblastic/My of ibroblastic Tumor (8%)			
1	Fibroma	1	2%

2	Fibromatosis	2	4%
3	Angiofibroma	1	2%
Fibrohistiocytic tumor (2%)			
1	Malignant Fibrous histiocytoma	1	2%
Vascular Tumor (6%)			
1	Capillary Hemangioma	1	2%
2	Cavernous Hemangioma	2	4%
Smooth muscle tumor (2%)			
1	Leiomyoma cutis	1	2%
Peripheral nerve sheath tumor (8%)			
1	Schwannoma	1	2%
2	Neurofibroma	3	6%
Tumor of uncertain differentiation (10%)			
1	Epithelioid Sarcoma	2	4%
2	Clear cell Sarcoma	1	2%
3	Undifferentiated Sarcoma	2	4%
	TOTAL CASES	**50**	**100%**

Out of 50 benign soft tissue lesions, most common is lipoma which consist 31 (62%) cases. Out of 6 malignant soft tissue lesion, 2 cases from Epithelioid Sarcoma and undifferentiated sarcoma each and single case from malignant fibrous histiocytoma and clear cell sarcoma each.

TABLE 4: DISTRIBUTION OF CASES ACCORDING TO SITE		
SITE OF INVOLVEMENT	**NO. OF CASES**	**PERCENTAGE**
Finger and Thumb	4	8%
Neck	3	6%
Axilla	5	10%
Pelvis	2	4%
Thigh	9	18%
Knee	1	2%
Shoulder	3	6%
Forehead	1	2%
Arm	5	10%
Gluteal region	3	6%
Wrist	1	2%
Abdominal wall	2	4%
Back	7	14%
Scalp	2	4%
Breast	1	2%
Neural tissue	1	2%

Among 50 cases, most common site observed was thigh comprising 9 (18%) cases followed by back comprising 7 (14%) cases.

TABLE 5: COMPARISON OF PRESENT STUDY WITH OTHER STUDIES					
Point to be compared	**Presentstudy**	**Naik V et al**	**Dr. Kinjal Bera et al**	**Jain P et al**	**Bharati G. Ramnani et al**
Common age group	31-40 years	31-40 years	30-50 years	51- 60 years	31-40 years
Gender distribution	Male> Female	Male> Female	Male> Female	Male> Female	Male> Female
Benign/ Malignant	Benign> Malignant	Benign> Malignant	Benign> Malignant	Benign> Malignant	Benign> Malignant
Common site of tumors	Thigh	Upper extremities	Trunk	Extremities, head and neck	Trunk
Most common tumor	Lipoma	Lipoma	Lipoma	Lipoma	Lipoma
Lipoma incidence (%)	62.0%	55.7%	56.48%	50.27%	50.8%

Figure 1: Histopathology of Lipoma

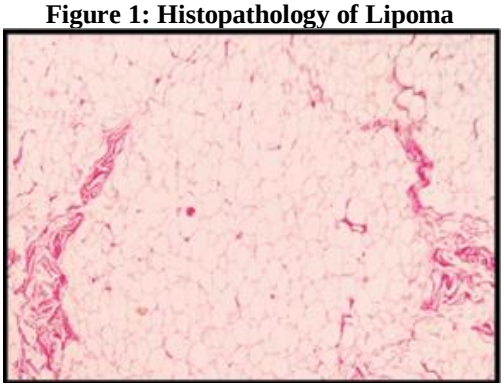


Figure 2: Histopathology of Neurofibroma

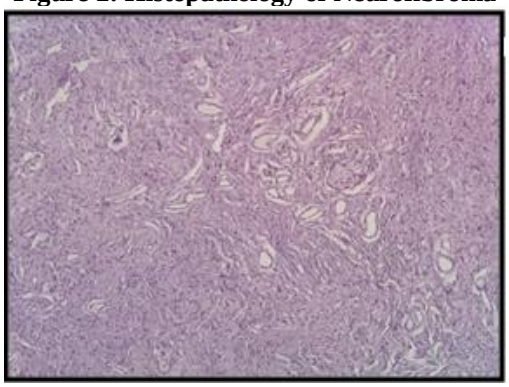


Figure 3: Histopathology of Schwannoma

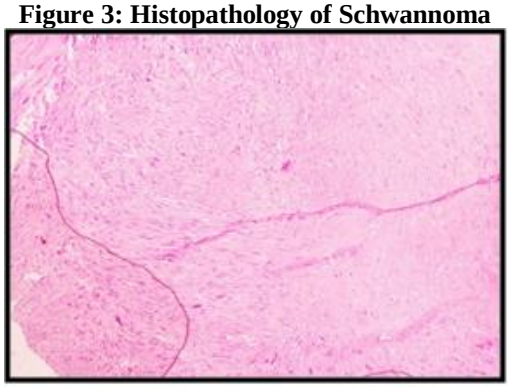
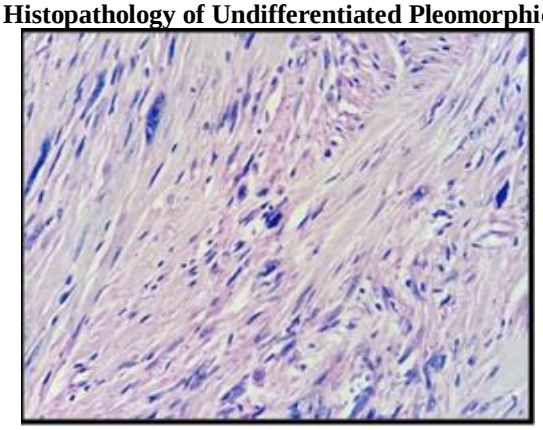


Figure 4: Histopathology of Undifferentiated Pleomorphic Sarcoma



DISCUSSION

Soft tissue tumors (STTs) constitute a heterogeneous group of neoplasm that involves fat, muscles, fibrous tissue and peripheral nerves.The purpose of present study was to assess data of benign and malignant soft tissue tumors with respect to gender, age and site of distribution and to compare it with other similar studies.In this study benign tumors are more common

comprising 88% than malignant tumor comprising 12% which is similar to incidence of benign and malignant tumors found in Dr. Kinjal Bera et al [15], Jain P et al [8], GoGi AM et al [9], Bharati G. Ramnani et al [6] and Naik V et al [13] study.In present study lipomatous tumors are more common comprising 64% cases which is comparable to Dr. Kinjal Bera et al [15], Jain P et al [8], Bharati G. Ramnani et al [6], Naik V et al [13] and Choudhary S et al[14] study while second most common tumor in our study is tumor of uncertain differentiation comprising 10 % cases while Jain P et al [8], Bharati G. Ramnani et al [6], Mirza et al [16] and Naik V et al [13] study showed second most common tumors are vascular tumors.31-40 years age group was most common in our study which is comparable with Agaravat et al [17], Baig MA et al [18], Jobanputra et al [4], Kinjal Bera et al [15], Bharati G. Ramnani et al [6], Naik V et al [13] and Choudhary S et al[14], while the study of Jain S et al [19], and Jain P et al [8] showed maximum cases in 21-30 yrs and 51-60 yrs respectively.

Male patients outnumbered females with a 1.5:1 male to female ratio in our study, which is comparable to the studies conducted by Mirza et al [16], Jemal et al [20], Harpal et al [3], Kinjal Bera et al [15], Jain P et al [8], Bharati G. Ramnani et al [6] and Naik V et al [13].

In present study most common site involved was thigh comprising 18% cases followed by back comprising 14% cases while the study by Harpal et al [3] the most common site of involvement is head and neck (29%) followed by upper limb (25.5%). Kinjal Bera et al [15], Jain P et al [8], Bharati G. Ramnani et al [6] and Naik V et al [13] study showed most common site of involvement was trunk, extremities and head & neck, trunk and upper extremities respectively.

LIMITATIONS

This is a hospital based study, hence the patients included in the study cannot be considered to be the random sample of the population under study.

CONCLUSION

Soft tissue tumors are diverse neoplasms and most of tumors can be diagnosed by light microscopy. Hence histopathological examination is gold standard tool soft tissue tumors' diagnosis. In present study soft tissue tumors are more common in 31- 40 years age group with male predominance. Benign tumors are more common as compare to malignant tumors and most common site of these tumors is thigh followed by back. In benign tumors lipoma is more common than other benign tumors.

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CONFLICTS OF INTEREST

None.

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