



## Histopathological study of soft tissue tumors: A two years retrospective and prospective study in patients of M.G.M. Indore

Authors

Dr Leena Chouhan<sup>1</sup>, Dr Amrita Tripathi<sup>2</sup>, Dr Ashok Yadav<sup>3</sup>, Dr C.V.Kulkarni<sup>4</sup>

<sup>1</sup>Medical Officer, Civil Hospital, Mhow

<sup>2</sup>Senior Resident, Department of Pathology, MGM Medical College, Indore

<sup>3</sup>Associate Professor, Department of Pathology, MGM Medical College, Indore

<sup>4</sup>Professor and Head, Department of Pathology, MGM Medical College, Indore

Corresponding Author

**Dr Amrita Tripathi**

Senior Resident, Department of Pathology, M.G.M. Medical College, Indore

Email: [tripathiamrita16@gmail.com](mailto:tripathiamrita16@gmail.com), Contact no. - 9993971294

### Abstract

*Soft tissue tumors (STT) can be defined as non-epithelial, extra-skeletal tissues of the body exclusive of the reticulo-endothelial system glia and supporting tissues of various parenchymal organs. Histopathological and immunohistochemical examination of STT assess the value of these techniques in verifying the primary diagnosis and their classification. The main objective of this study was to study the histopathological features of STT and to study the occurrence of STT in relation to age, sex and anatomical site. A total of 186 specimens were received at the Department of Pathology, M.G.M. Medical College, Indore have been studied with a view to carrying out a histopathological analysis. Out of 186 cases of ST, benign tumors were 160 (86.02%) and malignant lesions 26 (13.98%), with ratio of benign to malignant being 6.15:1. Out of 95 STT in males, 78 (41.93%) were benign and 17 (9.14%) were malignant. Out of 91 STT in females 82 (44.09%) were benign and 09 (4.84%) were malignant. Among the benign lesions major histological types in a total of 186 cases were lipoma which comprised 100 (53.76%) followed by hemangioma 26 (13.99%). The malignant lesions, major histological types were fibrosarcoma 13 (6.99%) and liposarcoma 06 (3.23%). Overall most common site for occurrence of STT is upper limb 42 (22.58%) followed by back 41 (22.04%). Most common site for benign STT is back 41 (22.04%) and most common site for malignant tumors is lower limb 13 (6.98%). Benign STT (86.02%) are more common amongst females (44.09%) as compared to males (41.93%). Malignant STT (13.98%) are more common amongst males (9.14%) as compared to females (4.84%).*

**Keywords:** Soft Tissue Tumors (STT), Histopathology.

### Introduction

Soft tissue tumors (STT) are defined as mesenchymal proliferations that occur in extra skeletal non epithelial tissue of the body,

excluding the viscera, coverings of brain, and lymphoreticular system.<sup>[1]</sup> STT are a complex group of neoplasms could benign in all age groups but most arise from large muscle of extremities,

the chest wall, the mediastinum and the retroperitoneum.<sup>[2]</sup> STT more common in older patients, about 15% affect persons younger than 15 years, and 40 % affect persons 55 years or older. STT compared with carcinomas and other neoplasms are relatively rare and constitute less than 1% of all the cancer<sup>[3]</sup>. Although pathologically diverse, they frequently reveal similar clinical presentations and radiological features. Correct histopathological diagnosis is therefore crucial. Immunohistochemistry is used to detect tumor specific alterations which add significantly to histological interpretation, but several groups of tumors still lack reliable immunohistochemical markers<sup>[4]</sup>.

A core biopsy, an excisional biopsy and an incisional biopsy are the appropriate technique used for diagnosing most STT. Open biopsy has long been considered the gold standard for diagnosis of an extremity ST mass.<sup>[5]</sup> Fine needle aspiration cytology has a role to play in the diagnosis of ST lesions and should guide by CT scans in intra-abdominal and retroperitoneal lesions. FNAC is a traumatic and is very useful to document local recurrences of metastasis diagnosed in a STT<sup>[6]</sup>. Yet the foundation of these newer techniques rests upon the histologic diagnosis made on light microscopic evaluation of hematoxylin and eosin stained sections and use of special stains. It is critical to recognize immunohistochemistry as an adjunctive technique, which does not super -cede or replace the traditional morphologic diagnosis.<sup>[7]</sup> STT presents a challenge to the pathologist because of their extremely varied morphology and biologic behavior.<sup>[8]</sup>

It is difficult to study the occurrence of STT in relation to age, sex, site and the frequency of benign to malignant tumor is nearly impossible to determine accurately. Only few Indian researches have been conducted so far on histopathological study of STT.<sup>[8-13]</sup> This has promoted me to undertake the present study. This study has covered all the aspects of STT presented at M.G.M. Medical College and Hospital in a two

year period with the aim to highlight the most common types of tumors, age incidence, sex incidence, site-specific distribution and various spectrums of STT.

### **Aims and Objectives**

Our basic aim to conduct this study to find out Clinico pathological correlation, relative incidence of benign & malignant STT in our institute. as well as to know the frequency of age, sex & site distribution of among these cases along with study of histo-pathological pattern for understanding the classification & type of STT.

### **Material and Method**

This study was conducted in the Department of Pathology, M.G.M. Medical College, Indore. A total of 186 cases of STT were studied during a period of two years from January 2014 to December 2015. The data regarding age of the patient, sex, site of the swelling and radiological diagnosis of the swelling wherever available was recorded. The tissue were fixed in 10% formalin and processed through standard paraffin embedding technique. Sections was taken and stained by routine hematoxylin and eosin. Special stains like PAS and reticulin, PTAH were also done wherever necessary in studies. They were further examined microscopically and grading was done according.

### **Observations & Results**

The present study comprised of 186 cases of STT who presented to M.G.M. Medical College, Indore during a period of two years from 2014 and 2015. All the cases are tabulated under various headings. Sex wise distribution in which there were 95 males (51.07%) and 91 (48.93%) females, in a total of 186 cases (Table 1). Among these cases of STT, 160 (86.02%) were benign and 26 (13.98%) were malignant. Majorities of benign STT were lipoma (53.76%)[Fig;-2] followed by hemangioma (13.99%)[Fig;-1] and majority of malignant STT were fibrosarcoma (6.99%) [Fig;-3] followed by liposarcoma

(3.23%) [Fig;-4]. Out of a total 91 STT in females, 82 (44.09%) were benign and 09 (4.84%) were malignant and out of 95 cases of soft tissue tumors in males, 78 (41.93%) were benign and 17 (9.14 %) were malignant (Table 2).

Most patients with benign lesions were in the fourth decade of life, while malignant lesions are more common in fifth decade. Out of 26 (13.98%)

malignant soft tissue tumors, 17 (9.14%) occurred in males, while 09 (4.84%) cases occurred in females (1male: female = 1.9:1) (Table 3.) Most common site for benign STT was back (41) followed by upper extremities and head & neck (38). While, most common site for malignant STT was lower (13) extremities and abdomen (Table 4).

**Table 1 : Sex wise distribution of reported cases of STT with relation to age**

Age (in years)	Male	Female
0-10	11(5.91%)	14(7.53%)
11-20	15(8.06%)	14(7.53%)
21-30	18(9.68 %)	18(9.68 %)
31-40	12(6.45 %)	21(11.30 %)
41-50	22(11.83 %)	11(5.91 %)
51-60	07(3.77 %)	06(3.22 %)
61-70	04(2.15 %)	06(3.22 %)
Above 70	06(3.22 %)	01(0.54 %)

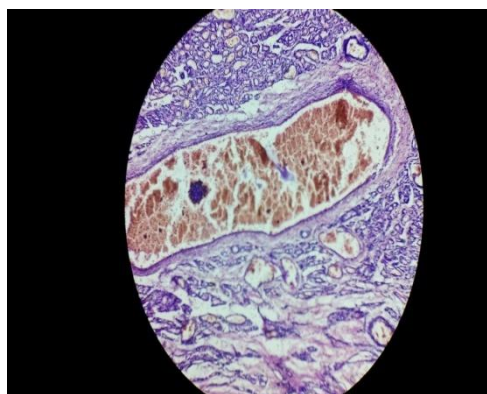
**Table 2: Age-wise distribution of malignant and benign STT in males and females**

Age (years)	Malignant		Benign	
	Male	Female	Male	Female
0-10	02(1.07%)	0(0%)	09(4.84%)	14(7.53%)
11-20	0(0%)	01(0.54%)	14(7.53%)	13(6.99%)
21-30	02(1.07%)	02(1.07%)	15(8.06%)	16(8.60%)
31-40	02(1.07%)	02(1.07%)	12(6.45%)	19(10.21%)
41-50	08(4.32%)	03(1.62%)	14(7.53%)	08 (4.30%)
51-60	02(1.07%)	0(0%)	05(2.69%)	06 (3.22%)
61-70	01(0.54%)	01(0.54%)	04(2.15%)	05(2.69%)
71-80	0(0%)	0(0%)	05(2.69%)	01(0.54%)
Total	17(9.14%)	09(4.84%)	78(41.94%)	82(44.08%)

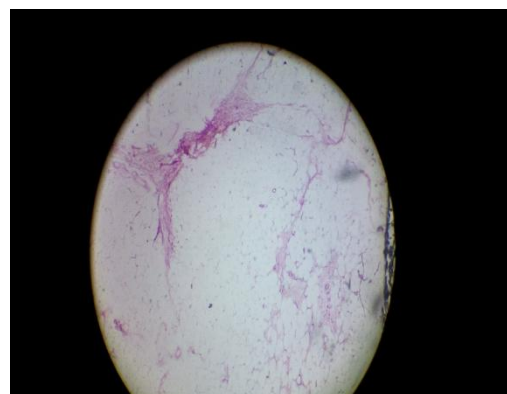
**Table 3: Distribution of malignant and benign STT according to histological type**

Types	Total
<b>Malignant STT</b>	
Fibrosarcoma	13(6.99 %)
Liposarcoma	06(3.23 %)
Rhabdomyosarcoma	02(1.07 %)
Undifferentiated pleomorphic sarcoma	02(1.07 %)
PNET	01(0.54 %)
Dermatofibrosarcoma protuberance	01(0.54 %)
Malignant giant cell tumor of soft part	01(0.54 %)
<b>Benign STT</b>	
Lipoma	100(53.76 %)
Hemangioma	26(13.99 %)
Fibromatosis	09(4.84 %)
Lymphangioma	07(3.76 %)
Fibroma	07(3.76 %)
Angiolipoma	03(1.61 %)
Giant cell tumor	03(1.61 %)
Spindle cell lesion	02(1.07 %)
Hemangiolympfangioma	01(0.54 %)
Hibernoma	01(0.54 %)
Benign fibrous histiocytoma	01(0.54 %)
26(13.98 %)	
160(86.02 %)	

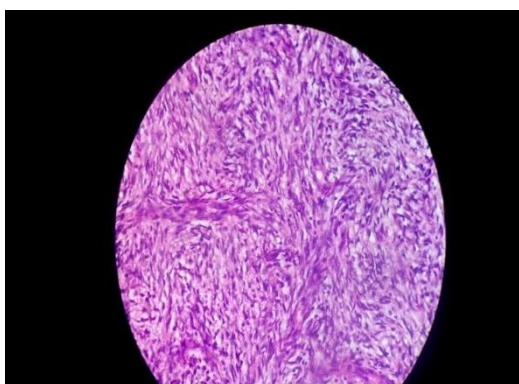
Site involved	No. of tumors		Total
	Benign	Malignant	
Abdomen	14	05	19(10.21 %)
Chest	10	03	13(6.99 %)
Upper limb	40	02	42(22.58 %)
Lower limb	16	13	29(15.59 %)
Back	41	00	41(22.04 %)
Head and neck	38	01	39(20.97 %)
Penis	00	01	01(0.54 %)
Anus & perianal region	01	01	02(1.07 %)



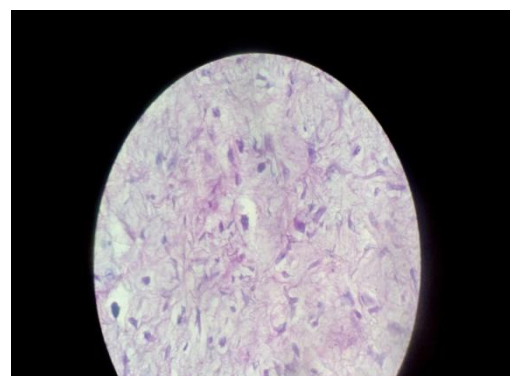
Fig; 1-H&E Stained Section shows high power view of Hemangioma



Fig; 2- H&E Stained Section shows Lipoma



Fig; 3-H&E Stained Section shows high power view of Fibrosarcoma



Fig; 4- H&E Stained Section shows high power view of MyxoidLiposarcoma

**Discussion**

Present study showed that maximum number of cases was benign (86.02%). In this category, maximum number of cases were of lipoma (53.76 %) followed by hemangioma (13.99%). Similar findings were also observed by *Sen et al.*, in a study of 55 cases, 32 (58%) were benign and 23 (42%) malignant lesions.<sup>[10]</sup> Similar findings were observed by *Goyal, et al.* in a study done on 80 patients maximum number of cases recorded were

benign 63 (78.2%), 5 (6.75%) cases of intermediate grade, and 12 (15%) cases of malignant STT were recorded.<sup>[11]</sup>

In the present study male predominance was seen that is 95 males (51.08%) and 91 females (48.92%), in a total of 186 cases. And their respective ratios were 1.04:1. Similar findings were observed in a study done on 80 cases by *Goyal et al.*, males comprised of 47 cases (58.75%). Thus, male: female = 1.4:1.<sup>[12]</sup> In the



present study, majority of benign STT were lipoma (53.76%) followed by hemangioma (13.99%). Similar findings were observed by *Goyal et al.*, in a study done on 80 cases majority of the benign tumors were lipoma (32.5%) followed by hemangioma (10%).<sup>[12]</sup> In the present study, majority of malignant STT were fibrosarcoma (6.99%) followed by liposarcoma (3.23%). However, in the study done on 55 cases by *Sen et al.*, commonest malignant masses were malignant fibrous histiocytoma.<sup>[10]</sup> In the study done by *Goyal et al.*, malignant gastrointestinal stromal tumor comprised the majority of malignant tumors followed by undifferentiated pleomorphic sarcoma.<sup>[11]</sup> In the present study out of a total 91 STT in females, 82 (44.09%) were benign and 09 (4.84%) were malignant. In the present study out of 95 cases of STT in males, 78 (41.93%) were benign and 17 (9.14 %) were malignant. According to the present study, most patients with benign lesions were in the fourth decade of life, while malignant lesions are more common in fifth decade. However, according to study done by *Sen et al.*, benign masses were commonly seen in patients younger than 20 years, whereas malignant masses were commonly seen in patients older than 20 years.<sup>[10]</sup> In the study done by *Arora et al.*, maximum number of benign STT was seen in 21-30 years age group and maximum number of malignant STT was seen in 31-40 years age group.<sup>[13]</sup> In the present study, out of 26 (13.98%) malignant STT, 17 (9.14%) occurred in males, while 09 (4.84%) cases occurred in females (1male: female = 1.9:1) Similar findings were also observed by *Arora et al.*, where male: female ratio in case of malignant STT was 1.9:1.<sup>[13]</sup> Similar findings were also observed in the study done by *Goyal et al.* the male: female ratio for malignant STT was 1.4:1.<sup>[11]</sup> In the present study, most common site for benign STT was back followed by upper extremities and head & neck. While, most common site for malignant STT was lower extremities and abdomen. Similar findings were observed by *Goyal et al.* Upper extremities and

head and neck were the most commonly encountered sites for benign STT, while the most common sites for malignant STT were lower extremities and abdomen.<sup>[11]</sup>

### Conclusion

The STT are rare and usually presents as painless mass. The clinician must be able to diagnose it early for better management. Careful gross examination of the specimen and adequate sampling of the tumor is essential. Routine haematoxylin and eosin stain followed by histochemical stain and immunohistochemistry are helpful for proper diagnosis. The clinicopathological correlation with latest (WHO) classification and standard nomenclature is essential for proper diagnosis of STT.

### Acknowledgement

Authors acknowledge the immense help received from the scholars whose articles are cited and included in references of this manuscript. The authors are also grateful to authors/editors/publishers of all those articles, journals and books from where the literature for this article has been reviewed and discussed.

**Source of Funding:** Nil

**Conflict of Interest:** None

### References

1. Arch Patho Lab Med .2006; 130:2006; Histopathology. 2006; 48:42.
2. Brooks JJ, Perosio PM. Adipose tissue. Histology for pathologists, 2<sup>nd</sup> edn. Philadelphia: Lippincott-Raven.1997; 167.
3. Chakrabarti R. P., Chakrabarti S, Pandit A, Agrawal P, Dosi S, et al. Histopathological study of soft tissue tumors: A three year experience in tertiary care center. Indian J. Pathol Oncol. 2015;2(3):141-149
4. Duraiyan J., Govindarajan R., Kaliyappan K. and Palanisamy M. Applications of immunohistochemistry. J Pharm Bioallied Sci. 2012; 4(2): S307–S309.

5. Kasraeian S, Allison D.C., Ahlmann E.R., Fedenko A. N. and Menendez L.R. A Comparison of Fine-needle Aspiration, Core Biopsy, and Surgical Biopsy in the Diagnosis of Extremity Soft Tissue Masses. Clin Orthop Relat Res. 2010; 468(11): 2992-3002.
6. Beg S, Vasenwala SM, Haider N, Ahmad SS, Maheshwari V, Khan MA. A comparison of cytological and histopathological findings and role of immunostains in the diagnosis of soft tissue tumours. J Cytol. 2012; 29(2):125-130
7. Antoine M. Contribution of immunohistochemistry to the management of lung cancer: from morphology to diagnosis and treatment. Rev Pneumol Clin. 2007; 63(3):183-92.
8. Baig M. A. Histopathological Study of Soft Tissue Tumours. IJSR. 2013;6(14): 1039-1049.
9. Jain P, Shrivastava A, Malik R. Clinicomorphological Assessment of Soft Tissue Tumors. Sch. J. App. Med. Sci. 2014; 2(2):886-890
10. Sen J, Agarwal S, Singh S, Sen R, Goel S. Benign vs malignant soft tissue neoplasms: limitations of magnetic resonance imaging. Indian J Cancer. 2010; 47(3):280-6.
11. Goyal S, Bala J, Goyal R, Chowdhary K, Narula A. Histopathological spectrum of soft tissue tumor in tertiary care center. IJCEP. 2015; 2 (2):142-143.
12. Bhutoria B, Konar A, Chakrabarti S, Das S. Retiform hemangioendo-thelioma with lymph node metastasis: A rare entity. 2009; 75(1):60-62.
13. Arora H L, Arora N, Solanki R L. Argyrophilic nucleolar organizer regions in soft tissue tumors. Indian J. Pathol. Microbiol. 1996; 39(4): 257-263.