

Original Research Article

Clinicopathological study of soft tissue tumours in a tertiary care hospital in south India

Amirtharajan V.¹, Prabha M.^{2*}

¹Department of Pathology, Government Medical College, Omandurar Government Estate, Chennai, Tamil Nadu, India

²Department of Physiology, Government Medical College, The Nilgiris, Tamil Nadu, India

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*Correspondence:

Dr. Prabha M.,

E-mail: drprabhamurukesan@gmail.com

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ABSTRACT

Background: Soft tissue tumours are more diverse and heterogenous group of rare tumours. Soft tissue Sarcomas comprise <1% of adult cancers which pose a great challenge in diagnosis and treatment. The aim of the study is to study and compare the incidence and to evaluate the type, sex predilection, anatomical location and size of all soft tissue tumours.

Methods: A prospective study of all soft tissue tumours reported in department of Pathology, Thanjavur Medical College Hospital from July 2012 to June 2014 was done. Soft tissue tumours, irrespective of the age, sex, size of the tumor, anatomical location was included in the study. Data collected include age, gender, presenting symptoms, site and size of neoplasms. Histopathological evaluation with haematoxylin and eosin staining under Light microscopy was done to make pathological diagnosis.

Results: A total of 331 soft tissue tumour specimens were analysed, out of which 289 were benign (87.3%), 29 malignant (8.8%) and 13 intermediate (3.9%). Soft tissue sarcomas accounted for 1.4% of total malignancies. Upper limb is the most common site for soft tissue neoplasm. Benign soft tissue tumours had their peak incidence between 30-50 years, while malignant soft tissue tumours were more common after 50 years of life. Lipoma is the commonest benign soft tissue tumour and malignant peripheral nerve sheath tumour is the commonest malignant sarcoma.

Conclusions: Soft tissue neoplasms are tumours that have a spectrum of histological types. The histopathological features of these neoplasms help in deciding the treatment modality.

Keywords: Soft tissue, Sarcoma, Malignant, Histopathology

INTRODUCTION

Soft tissue tumours are more diverse and heterogenous group of rare tumours, which are classified according to the type of mesenchymal tissue, which they resemble. Soft tissue tumours are classified over 50 different subtypes and pose a great diagnostic challenge to the pathologist. Benign soft tissue tumors are much more common when compared to malignant soft tissue sarcomas (usually 100: 1).¹⁻³

Benign tumors are mostly located in superficial soft tissue, have an indolent clinical course, little tendency to invade adjacent tissues, rarely metastasize and have high rates after excision. The malignant soft tissue neoplasms (sarcomas) are very rare and constitute less than 1% of all malignant tumors, but they are life threatening, locally aggressive, more prone for metastasis, high chances of recurrence after surgery and pose a great challenge both in diagnosis and treatment. This necessitates a precise classification of these tumours.²

Histopathological study with haematoxylin and eosin (H & E) stain under light microscopy is the mainstay in the diagnosis of soft tissue neoplasms.

The aim of the study is to observe and analyse the incidence of soft tissue tumours and also to evaluate the type, sex predilection, anatomical location and size of all soft tissue tumours reported.

METHODS

A prospective study of all soft tissue tumours reported in department of Pathology, Thanjavur Medical College Hospital during the 2 years period (July 2012 to June 2014) was carried out.

Soft tissue tumours, irrespective of the age, sex, size of the tumor, and anatomical location were included in the study. Data collected included age, gender, presenting symptoms, site and size of neoplasms.

All the soft tissue tumours which were sent from departments of General Surgery, Neurosurgery, Paediatric Surgery, Obstetrics and Gynaecology, Otorhinolaryngology and Orthopaedics were fixed in 10% neutral buffered formalin.

After processing the specimen, sections of size 4 microns were cut. Initial histopathological evaluation with H & E staining under light microscopy was carried out in all cases. Special stains were performed to confirm the diagnosis in certain difficult cases. Institutional ethics committee approval was obtained. Data was analysed and represented in the form of pie charts, bar diagrams and table.

RESULTS

During the study period of July 2012 - June 2014, 8254 specimens were received and reported in the department of Pathology, Thanjavur Medical College. Out of the 8254 cases, soft tissue tumours constituted 331 cases, which accounted for 4% of total specimens received. The 331 soft tissue tumours out of 3156 total neoplasms account for 10.5% of total tumours reported (Figure 1).

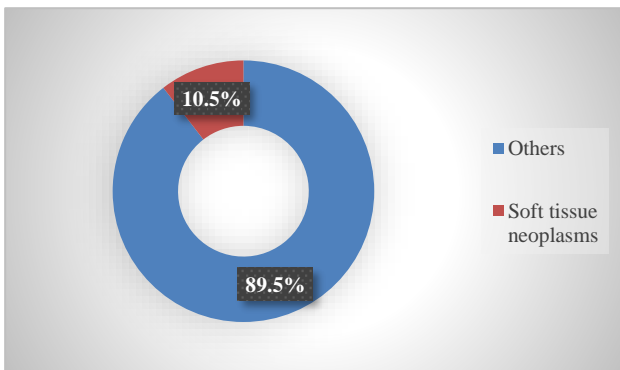


Figure 1: Total neoplasms.

The proportion of benign soft tissue tumors (289 cases) to that of malignant soft tissue sarcomas (29 cases) is 10: 1. The distribution of soft tissue tumours is depicted in Figure 2.

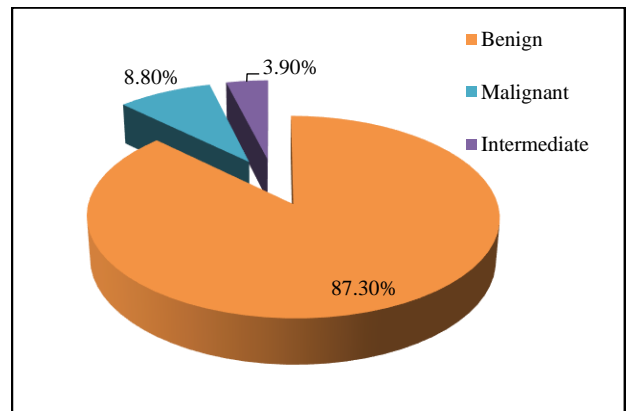


Figure 2: Distribution of soft tissue tumours.

The incidence of malignant and intermediate neoplasms did not vary much during the 2-year study period. But benign tumors of soft tissue showed a gradual increase during the same period (Figure 3).

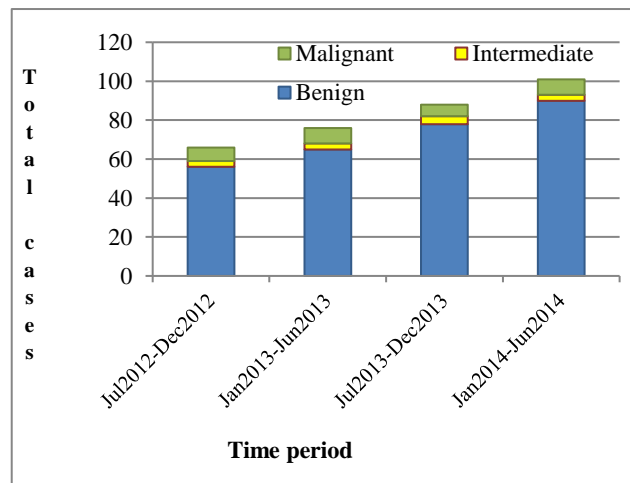


Figure 3: Incidence of soft tissue neoplasms.

Among the 331 soft tissue tumours, 18 cases were paediatric cases (5.4%) and 313 cases were adults (94.6%). Soft tissue sarcomas accounted for 1.4% of total malignant tumors reported. Out the 331 soft tissue tumours, malignant tumours (sarcomas) were 29, out of which 28 occurred in adults (16 males and 12 females) and 1 was a pediatric case (male).

Among the benign tumours, lipomatous tumours are most common accounting for 162 cases (59%), followed by vascular tumours 55 (19%) and neural tumours 50 (17.3%) as depicted in Figure-4. Lipoma is the most frequently occurring benign soft tissue neoplasm, followed by haemangioma.

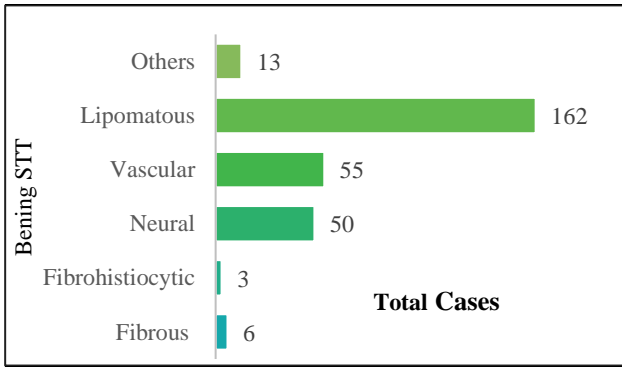


Figure 4: Distribution of histological types of benign STTs.

Malignant peripheral nerve sheath tumour (MPNST) is the most frequent soft tissue sarcoma followed by extra skeletal Ewings sarcoma. MPNST outnumbered all other malignant soft tissue tumors (Table 1).

Table 1: Histological types of soft tissue sarcomas.

S. no.	Histologic type of soft tissue sarcoma	Total cases	Percentage
1	Liposarcoma	3	10.3
2	Pleomorphic sarcoma	3	10.3
3	Rhabdomyosarcoma	1	3.5
4	Synovial sarcoma	2	6.9
5	Alveolar soft part sarcoma	1	3.5
6	MPNST	12	41.4
7	Ewing’s sarcoma/PNET	4	13.7
8	Olfactory neuroblastoma	2	6.9
9	Desmoplastic SRCT	1	3.5
	Total	29	100

Out of 331 soft tissue neoplasms, 160 (48%) were males and 171 (52%) were females, showing no major gender predilection. Genderwise distribution of soft tissue tumours is depicted in Figure 5.

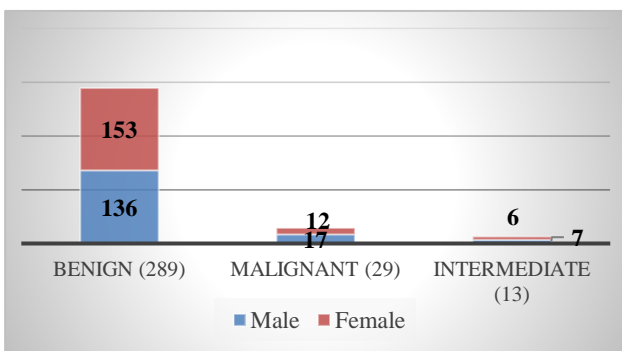


Figure 5: Genderwise distribution of soft tissue tumours.

The anatomical distribution of all benign soft tissue neoplasms is upper limb (32.5%), head and neck (31.1%),

trunk (25.9%), lower limb (8.6%) and others (1.9%). The other sites in two cases include labia and mediastinum. Out of the malignant cases, lower extremity appears to be the most common site accounting to 10 cases (34.5%) followed by retro peritoneum (27.7%).

The common age group of incidences for benign STTs is 31-50 years (47.3%). Malignant neoplasms (55.5%) as well as intermediate group neoplasms (53.8%) had their peak incidence above 50 years of age. There were totally 18 paediatric cases, among which 1 was malignant.

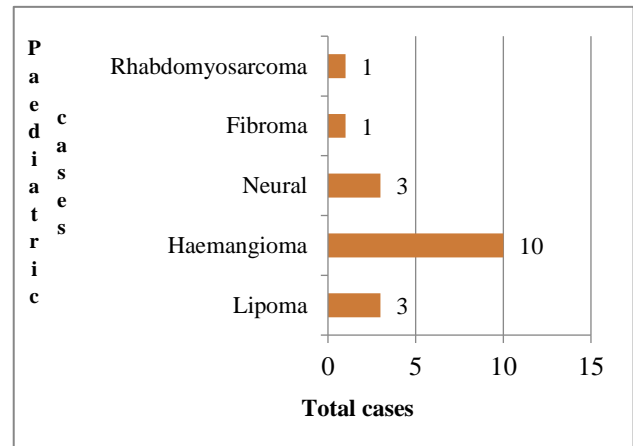


Figure 6: Incidence of histological subtypes in paediatric STT.

In paediatric population, haemangioma seems to be the common soft tissue neoplasm. The common anatomical site of tumor in paediatric population is head and neck (Figure 6).

Benign tumours were mostly less than 5 cm and malignant tumours were mostly greater than 10 cm. In our study, 76.1% of benign tumours were of less than 5 cm size and 44.8% of malignant tumours were more than 10 cm size.

DISCUSSION

The soft tissue neoplasms (331 in number) accounted for 10.5% of the total 3156 neoplasms reported. This correlated with Venkatraman et al study of soft tissue tumours, where soft tissue accounted for 10.7% of total neoplasms reported (109 were soft tissue tumors out of total 1010 neoplasms).⁴

In our study, out of the total malignant tumours reported, 1.4% were soft tissue sarcomas compared to Siegel et al study showing less than 1.0% incidence of sarcomas. Gupta et al study shows 0.65% incidence of soft tissue sarcomas (51 cases among 7674 malignant tumours).^{1,5}

In our study, the incidence of benign tumours when compared to sarcomas was 10:1 (289 benign: 29 malignant). the studies done by Gupta et al and Batra et al.^{1,6}

In our study, the age distribution is that the benign tumours have their peak incidence during the 3rd to 5th decade, which correlated with studies done by Venkataraman et al, Agravat et al and Batra et al. Malignant tumours had their peak incidence after 5th decade upto 7th decade of life.^{4,6,7}

Out of the benign soft tissue tumours, the most common subtype was adipocytic tumours (59%) followed by vascular tumours (19%), neural tumours (17.3%), fibrous (2.1%) and fibrohistiocytic tumours. But Kransdorf et al study revealed that fibrous tumours (18.2%) predominate followed by adipocytic (16.1%), fibrohistiocytic (12.8%), neural (12.4%), and vascular (7.6%). Other studies show adipocytic predominance as in our study.⁸

The most common malignant soft tissue tumour to occur is malignant peripheral nerve sheath tumour (MPNST) which outnumbered other sarcomas (12 out of 29 cases) constituting 41.3% followed by extra skeletal Ewing's/PNET family tumours (4 cases) and Liposarcoma/undifferentiated pleomorphic sarcoma (3 cases). In contrast, Pleomorphic sarcoma and liposarcoma were the common sarcomas to occur in other studies.⁹

Thus, from our study the following inferences were made. The incidence of soft tissue tumours, increase gradually with time. The majority of cases were benign soft tissue neoplasms when compared to malignant soft tissue neoplasms in both adult and paediatric population. There is no major sex predilection among soft tissue tumours, similar to what is mentioned in literature. Most of the benign tumours were less than 5 cm in size and majority of malignant tumours/sarcomas were more than 5 cm. Upper limb is the most common site for benign soft tissue neoplasm. Lower limb followed by retroperitoneum is the common site of occurrence of malignant soft tissue tumours. Benign soft tissue tumours had their peak incidence between 30-50 years, while malignant soft tissue tumours were more common after 50 years of life. As in literature, adipocytic tumour (lipoma) appears to be the commonest benign soft tissue tumour and haemangioma is the commonest soft tissue tumour in paediatric population. Malignant peripheral nerve sheath tumour is the commonest malignant soft tissue tumor which outnumbered any other sarcoma.

Limitations

Ancillary techniques like Immunohistochemistry may be employed to study the soft tissue tumours for better understanding and insight in the subject. Future studies are planned to study soft tissue tumours in detail using special stains.

CONCLUSION

Soft tissue neoplasms are tumours that have a spectrum of histological types. This study attempts to describe soft tissue neoplasms diagnosed in a tertiary care hospital in south India based on clinical and histopathological studies.

The pathological features and patterns of these neoplasms helps in revealing their nature and clinical behaviour; which plays a main role in deciding the treatment modality.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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