

Original article:

To Assess Frequency and Relative Incidence of Soft Tissue Tumors Over a Period of Three Years: A Hospital Based Study

Dr. Jitendra Shrikantrao Suru

Assistant Professor, Department of Pathology, Shri Sathya Sai Medical College and Research Institute, Kancheepuram, Nellikuppam, Tamil Nadu, India.

Corresponding Author: Dr. Jitendra Shrikantrao Suru, Assistant Professor, Department of Pathology, Shri Sathya Sai Medical College and Research Institute, Kancheepuram, Nellikuppam, Tamil Nadu, India.

Date of Submission: 27 September 2009, Date of Acceptance: 11 November 2009

ABSTRACT

Introduction: In view of wide range of soft tissue tumors, as well as the morphological variations in the same tumor under light microscopes, it is difficult to make precise diagnosis without specialized investigations. In present set-up stress is made on light microscopy and special staining. Data regarding the incidence of soft tissue tumors in rural setup are lacking in literature. An attempt has been made to collect and evaluate the same in the institution and comparison with available data was exercised.

Materials and Methods: This was a study of soft tissue tumors received in the histopathology section of Department of pathology over a period of three years. Microscopic findings of all sections were recorded. Special stains were also done wherever necessary. Pertinent clinical data comprising age, sex, location of tumor, duration of tumor and any other special clinical features were recorded for each patient. A protocol sheet containing the clinical data, gross and microscopic findings and final diagnosis were prepared for each case, after which the analysis was done.

Results: Benign and malignant soft tissue tumors comprised 86.44% and 13.56% respectively in the present study. In benign soft tissue tumors Lipoma was commonest comprising (62.74%) followed by hemangioma 10.78% and neurofibroma 9.8%. The average age for soft tissue tumors in present study was 41.7 years, average age for benign tumors was 33.2 years and for malignant it was 50.2 years.

Conclusion: Light microscopic examination of hematoxylin and eosin-stained sections proved most valuable for diagnosis of soft tissue tumors with a role for special stains in few cases for confirmation.

Key words: Nonepithelial Extra Skeletal Tissues; Soft Tissue Tumors; Special Staining.

INTRODUCTION

Soft tissue tumours are a highly heterogeneous group of tumours that are classified on a histogenetic basis according to the adult tissue they resemble and are usually divided into benign, intermediate and malignant forms. Benign tumours, which more closely resemble normal tissue, have a limited capacity for autonomous growth. They exhibit little tendency to invade locally and are attended by a low rate of local recurrence following conservative therapy. The term "soft tissue" is traditionally applied to the nonepithelial extra skeletal tissues of the body, exclusive of reticuloendothelial system, glia and supporting tissue of various parenchymal organs.¹ Embryologically soft tissues are derived principally from mesoderm except those of peripheral nerves, which are derived from endoderm.

Soft tissue tumors and tumor like lesions have fascinated pathologist for many years because of their remarkably wide variety and close histopathologic similarities between certain tumors with only subtle differences detectable on careful microscopic examination, thus posing diagnostic challenge to the histopathologist, so precise diagnosis of a soft tissue tumor is essential to plan the treatment as well as to assess the prognosis.² The true frequency of soft tissue tumors is difficult to estimate because most benign lesions are not removed. A conservative estimate is that benign tumors outnumber their malignant counterpart by a ratio of atleast 100:1. Malignant soft tissue tumours account for about 0.8 to 1 % of all malignancies in United States.¹ The etiology of most soft tissue tumours is unknown; however, there are documented associations between radiation therapy and rare instances of chemical burns, heat burn or trauma with subsequent development of sarcoma. Exposure of phenoxyherbicides and chlorophenols has also been implicated in some cases.³

In view of wide range of soft tissue tumors, as well as the morphological variations in the same tumor under light microscopes, it is difficult to make precise diagnosis without specialized investigations. In present set-up stress is made on light microscopy and special staining. Data regarding the incidence of soft tissue tumors in rural setup are lacking in literature. An attempt has been made to collect and evaluate the same in the institution and comparison with available data was exercised.

MATERIALS AND METHODS

Present study of soft tissue tumors was conducted in department of pathology, S.R.T.R. Medical College, Ambajogai over a period of three years. The material comprised mainly resection specimens and sometimes biopsies usually followed by the resected specimens. The specimens were sent in 10% formalin. Multiple blocks of tissue were fixed for 12-24 hours in 10% formalin, processed and then embedded in paraffin wax. Four to five micron thick sections were cut on a rotary microtome. All the sections were stained by haematoxylin and eosin. Microscopic findings of all sections were recorded. The following special stains were also done wherever necessary, employing the techniques given in 'theory and practice of histological techniques (Bancroft and Stevens)⁴:

1. Gomori's silver impregnation method for reticulin fibres.
2. Masson's trichrome for collagen and muscles.

The microscopic classification was done according to the classification of soft tissue tumors and tumor like lesions.¹

Pertinent clinical data comprising age, sex, location of tumor, duration of tumor and any other special clinical features were recorded for each patient. A protocol sheet containing the clinical data, gross and microscopic findings and final diagnosis were prepared for each case, after which the analysis was done.

RESULTS

Table 1 shows various soft tissue tumors studied and percentage of each. Of the 118 soft tissue tumors, there were 102 benign and 16 malignant tumors constituting 86.44% and 13.56% respectively (table 2). The benign tumors outnumbered the malignant tumors in a ratio of 6.37: 1.

In present study, amongst the benign soft tissue tumors, lipoma is the commonest tumor comprising (62.74%) followed by hemangioma (10.78%), neurofibroma (9.8%), fibroma (5.88%) and Schwannoma (3.52%) (table 3). In present study the overall sex ratio of benign soft tissue tumors was 1.5:1 (table 4). The age of patients varied from 4 months to 70 years in benign soft tissue tumors (table 5).

Lipomas occurred uniformly in 2nd to 6th decade. Benign peripheral nerve sheath tumors occurred commonly in 2nd to 6th decade. The hemangiomas were practically uniformly distributed within all age groups. In the present study, fibrosarcoma was the commonest malignant soft tissue tumor accounting for 43.75% of all sarcomas followed by malignant fibrous histiocytoma (table 6). In the present study of the 16 malignant soft tissue tumors, 6 were in males and 10 were in females. The sex ratio of malignant tumors was 0.6:1 in present study (table 7). In the present study, malignant soft tissue tumors occurred commonly in the age group above 40 years (table 8).

Table 1: Showing Soft Tissue Tumors in Present Study

S.No.	Name of tumor	No. of cases	Percentage
1.	Fibroma	6	5.08
2.	Angiofibroma	2	1.69
3.	Fibromatosis	1	0.84
4.	Fibrosarcoma	7	5.93
5.	Benign Fibrous Histiocytoma	1	0.84
6.	Dermatofibrosarcoma Protuberans	1	0.84
7.	Malignant Fibrous Histiocytoma	4	3.38
8.	Lipoma	64	54.23
9.	Liposarcoma	1	0.84
10.	Hemangioma	11	9.32
11.	Epitheloid Hemangioendothelioma	1	0.84
12.	Glomus Tumor	1	0.84
13.	Benign Hemangiopericytoma	1	0.84
14.	Malignant Hemangiopericytoma	1	0.84
15.	Neurofibroma	10	8.47
16.	Schwannoma	4	3.38
17.	Neurofibrosarcoma	1	0.84
18.	Extraskeletal Chondroma	1	0.84
	Total	102	100

Table 2: Showing Benign and Malignant Soft Tissue Tumors in Present Study

S.No.	Name of tumors	No. of cases	Percentage
1.	Benign	102	86.44
2.	Malignant	16	13.56
	Total	118	100

Table 3: Showing Distribution Benign Soft Tissue Tumors in Present Study

S.No.	Name of tumor	No. of cases	Percentage
1.	Fibroma	6	5.88
2.	Angiofibroma	2	1.96
3.	Fibromatosis	1	0.98
4.	Benign Fibrous Histiocytoma	1	0.98
5.	Lipoma	64	62.74
6.	Hemangioma	11	10.78
7.	Glomus Tumor	1	0.98
8.	Benign Hemangiopericytoma	1	0.98
9.	Neurofibroma	10	9.80
10.	Schwannoma	4	3.92
11.	Extraskelatal Chondroma	1	0.98
	Total	102	100

Table 4: Showing gender wise Distribution Benign Soft Tissue Tumors in Present Study

S.No.	Name of tumor	Total	Male	Female	M:F
1.	Fibroma	6	5	1	5:1
2.	Angiofibroma	2	2	-	-
3.	Fibromatosis	1	-	1	-
4.	Benign Fibrous Histiocytoma	1	1	-	-
5.	Lipoma	64	37	27	1.37:1
6.	Hemangioma	11	7	4	1.75:1
7.	Glomus Tumor	1	1	-	-
8.	Benign Hemangiopericytoma	1	-	1	-
9.	Neurofibroma	10	6	4	1.5:1
10.	Schwannoma	4	3	1	3:1
11.	Extraskelatal Chondroma	1	-	1	-
	Total	102	62	40	1.5:1

Table 5: Showing age wise Distribution Benign Soft Tissue Tumors in Present Study

S.No.	Name of Tumor	Age in years					
		0-10	11-20	21-30	31-40	41-50	51 &>
1.	Fibroma	-	1	1	2	1	1
2.	Angiofibroma	-	1	1	-	-	-
3.	Fibromatosis	-	-	1	-	-	-
4.	Benign Fibrous Histiocytoma	-	-	-	-	-	1
5.	Lipoma	3	5	7	15	12	22
6.	Hemangioma	2	2	2	2	1	2
7.	Glomus Tumor	-	-	-	-	-	1

8.	Benign Hemangiopericytoma	-	-	-	-	-	1
9.	Neurofibroma	1	5	2	2	-	-
10.	Schannoma	-	1	-	1	-	2
11.	Extraskelatal Chondroma	1	-	-	1	-	-
	Total	6	16	14	22	14	30

Table 6: Showing distribution and percentage of malignant Soft Tissue Tumors in Present Study

S.No.	Name of tumor	No. of cases	Percentage
1.	Fibrosarcoma	7	43.75
2.	Dermatofibrosarcoma Protuberans	1	6.25
3.	Malignant Fibrous Histiocytoma	4	25.0
4.	Liposarcoma	1	6.25
5.	Epitheloid Hemangioendothelioma	1	6.25
6.	Malignant Hemangiopericytoma	1	6.25
7.	Neurofibrosarcoma	1	6.25
	Total	16	100

Table 7: Showing Sex wise Distribution Malignant Soft Tissue Tumors in Present Study

S.No.	Name of tumor	Total	Male	Female	M:F
1.	Fibrosarcoma	7	2	5	.4:1
2.	Dermatofibrosarcoma Protuberans	1	-	1	-
3.	Malignant Fibrous Histiocytoma	4	3	1	3:1
4.	Liposarcoma	1	-	1	-
5.	Epitheloid Hemangioendothelioma	1	-	1	-
6.	Malignant Hemangiopericytoma	1	-	1	-
7.	Neurofibrosarcoma	1	1	-	-
8.	Total	16	6	10	.6:1

Table 8: Showing Age wise Distribution of Malignant Soft Tissue Tumors in Present Study

S.No.	Name of tumor	Age in years					
		0-10	11-20	21-30	31-40	41-50	51 &>
1.	Fibrosarcoma	-	-	-	1	2	4
2.	Dermatofibrosarcoma Protuberans	-	-	-	1	-	-
3.	Malignant Fibrous Histiocytoma	-	-	-	-	2	2
4.	Liposarcoma	-	-	-	-	-	1
5.	Epitheloid Hemangioendothelioma	-	-	-	1	-	-
6.	Malignant Hemangiopericytoma	-	-	-	1	-	-
7.	Neurofibrosarcoma	-	-	-	-	-	1
	Total	-	-	-	4	4	8

DISCUSSION

Hip In present study, soft tissue tumors comprised 1.04% of all pathology specimens received over a three-year period in Department of pathology. Myhre-Jenson et al⁵ also stated that soft tissue tumors comprised only 2% or less of all surgical pathology specimens. Of the 118 soft tissue tumors, there were 102 benign and 16 malignant tumors constituting 86.44% and 13.56% respectively. The benign tumors outnumbered the malignant tumors in a ratio of 6.37: 1. Data from the laboratory of surgical pathology, Columbia University where, in a 45 year period 8700 soft tissue tumors (7300 benign and 1400 malignant) were studied, gives a ratio of S: 1.6 Dev et al⁷ in their study benign malignant ratio was 5.17: 1. There are several studies covering individual tumor types, but collective studies covering all tumors are relatively less, studies from India include that of Sirsat MV,⁸ Bharucha H et al⁹ and Dev et al.⁷

Benign soft tissue tumors are relatively common. In present study 86.44% are benign soft tissue tumors. Dev et al⁷ carried a retrospective study of soft tissue tumors in Chandigarh, during the period from 1965 to 1972. In present study, amongst the benign soft tissue tumors Lipoma is the commonest tumor comprising (62.74%) followed by Hemangioma (10.78%), neurofibroma (9.8%), fibroma (5.88%) and Schwannoma (3.52%). Dev et al⁷ study, Lipoma was the commonest tumor comprising (38.3%) followed by Hemangioma (21.3%), Schwannoma (10.8%) neurofibroma (9.7%). There is no case of fibroma, fibromatosis, benign fibrous histiocytoma and extraskeletal chondroma in this study. Dev et al⁷ studied soft tissue sarcomas from 1965-72. Amongst the sarcomas, fibrosarcoma was commonest (43.75%) followed by malignant fibrous histiocytoma (25.0%), Liposarcoma, Epitheloid Hemangioendothelioma, Dermatofibrosarcoma protuberans, malignant hemangiopericytoma, Neurofibrosarcoma 6.25% each. The most common age group was 31-40 years followed by 21-30 years. While Dev et al⁷ found 23.9% cases of fibrosarcoma i.e., commonest in this study followed by Dermatofibrosarcoma protuberans (17.4%), Liposarcoma (14.3%) and Epitheloid Hemangioendothelioma 7.1%, but there is no case of malignant fibrous histiocytoma and Neurofibrosarcoma. Previously the entities like malignant fibrous histiocytoma, Neurofibrosarcoma were diagnosed as fibrosarcoma; therefore, these results are not comparable with Dev et al (1974) study.

The average age for all benign tumors in this study was 33.2 years. This compares with Dev et al⁷ finding of 29.6 years for benign tumors. The average age for all malignant tumors in this study is 50.2 years, while in Dev et al⁷ study average age was 36 years. In present study the overall sex ratio of benign soft tissue tumors was 1.5:1 this is comparable with Dev et al⁷ study in which the ratio was 2:1. The sex ratio of malignant tumors was 0.6:1 in present study; however, Dev et al⁷ study there was male preponderance with a ratio of 2:1.

CONCLUSION

Benign and malignant soft tissue tumors comprised 86.44% and 13.56% respectively in the present study. In benign soft tissue tumors Lipoma was commonest comprising (62.74%) followed by hemangioma 10.78% and neurofibroma 9.8%. The average age for soft tissue tumors in present study was 41.7 years, average age for benign tumors was 33.2 years and for malignant it was 50.2 years. Light microscopic examination of hematoxylin and eosin-stained sections proved most valuable for diagnosis of soft tissue tumors with a role for special stains in few cases for confirmation.

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