

RESEARCH ARTICLE

OCCURRENCE OF VARIOUS SOFT TISSUE BENIGN TUMORS IN NORTH KARNATAKA

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ABSTRACT

Soft tissues are nonepithelial extra skeletal tissue, present nearly everywhere in the body. Benign soft tissue tumors were exceeds malignant tumors by a margin of about 100:1 in a hospital population. At least one third of benign tumors are lipomas. Biological activity of these tumors varies from benign localized tumors, to benign locally aggressive. Clinically diagnosing soft tissue tumors is very difficult, but essential for prognostic guide and for further course of management. The material included incisional and excisional biopsies of various soft tissue tumors.

Total soft tissue tumors 232 constituted 2.08 % out of 11157 biopsies. Benign soft tissue tumors constituted 9.91% of all benign tumors. It formed 85.78% of all soft tissue tumors. Peak age of incidence was third decade. Female preponderance, with a male to female ratio 1:1.04. The benign soft tissue tumor showed predilection for trunk and Head Neck region. Most common histological group was the adipose tumor, which accounted for 51.4% of all soft tissue tumors. The commonest was lipoma of all benign tumors of soft tissue followed by vascular tumors.

INTRODUCTION:

Soft tissues are nonepithelial extra skeletal tissue of the body exclusive of the reticuloendothelial system, glia, and supporting tissue of various parenchymal organs. It is represented by the voluntary muscles, fat, and fibrous tissue, along with the vessels serving these tissues¹. They arise nearly everywhere in the body, the most important locations being the extremities, trunk and abdominal cavity.²

For many of these tumors the concept of histogenesis is largely meaningless and they frequently are believed to have true biologic potential; as sited by pseudobignity and pseudomalignancy.³

Benign soft tissue tumors outnumber malignant tumors by a margin of about 100:1 in a hospital population⁴. At least one third of benign tumors are lipomas. They arise anywhere in body, most important locations being extremities, trunk and abdominal cavity.

Clinically diagnosing soft tissue tumors is difficult. Activity of these tumors varies from benign localized tumors, to benign locally aggressive, to malignant metastatic types⁵. There are several techniques such as conventional special stains, electron microscopy and immunohistochemistry

that have been successfully applied to increase the diagnostic accuracy.⁶

METHODOLOGY

The present study comprises of all benign soft tissue tumors. A detailed clinical data including history and examination was carried out. The material included incisional and excisional biopsies of various soft tissue tumors. In selected cases, photographs of the specimen were taken.

The specimens were received from hospitals and note gross findings like size, shape, color and consistency. The specimen was fixed in 10% neutral formalin for 24 hrs and then 4-5 mm thick sections were cut from representative areas and submitted for routine processing. Sections were studied by light microscopy after H and E staining. Special stains such as Reticulin, PTAH and Von gieson were done, wherever necessary. The classification adopted for the present study is based on the WHO classification of soft tissue tumors (2002)⁷.

Clinicopathological study was done on cases of soft tissue tumors. The parameters included were the age, sex, anatomical location, clinical diagnosis, relevant investigations, and the histopathological features.

RESULTS

Table 1: Percentage of Benign Soft Tissue Tumors

Type	Total tumors		Benign tumors	
	No.	%	No.	%
All tumors	2781	100.00	2008	72.20
Soft tissue tumors	232	08.34	199	07.16

Benign tumors constituted 7.16% of all tumors.

Table 2: Relative Incidence of Benign Soft Tissue Tumors

Type	Number	Percentage
All benign tumors	2008	100
Benign STTs	199	9.91

Benign soft tissue tumors accounted for 9.91% of all benign tumors

Adipose tissue tumors were the most common histologic type of tumor accounting for 49.14% of all soft tissue tumor followed by vascular tumors (25%), fibrohistiocytic tumors (12.07%), fibroblastic/myofibroblastic tumors (5.60%), tumors of uncertain differentiation (3.01%), skeletal muscle tumors (2.59%) and smooth muscle tumors (2.16%). The adipose tumors accounted for the majority of benign soft tissue tumors (44.83%).

Table 3: Sex distribution of benign tumors

Histologic type	Male				Female			
	B	I	M	Total	B	I	M	Total
Adipocytic	52	02	04	58 (50.88%)	52	02	02	56 (49.12%)
Fibroblastic /myofibroblastic	01	03	00	04 (30.79%)	02	06	01	09 (69.21%)
So-called fibrohistiocytic	11	01	05	17 (60.71%)	05	00	06	11 (39.29%)
Smooth muscle	00	00	03	03 (60.00%)	02	00	00	02 (40.00%)
Skeletal muscle	00	00	02	02 (33.33%)	00	00	04	04 (66.67%)
Blood vessels	26	00	01	27 (45.76%)	32	00	00	32 (54.24%)
Uncertain differentiation	00	00	03	03 (42.86%)	02	00	02	04 (57.14%)
Total	114				118			

There were 114 males and 118 females with a slight female preponderance in general in the case of all soft tissue tumors as highlighted above. Statistical analysis for sex distribution was done and found to be significant for benign smooth muscle tumors (P value <0.05), while for other tumors, sex distribution was not statistically significant (P value >0.05).

Table-4: M: F Ratio

	M:F
Benign tumors	1 : 1.06

Overall M: F ratio was 1: 1.04 with female preponderance. Majority of the benign tumors occurred in the third and fourth decade with a peak incidence in the third decade.

Table-5: Site Distribution of Benign Soft Tissue Tumor

Histologic type	Upper limb	Lower limb	Trunk	Head & neck	Multiple	Total
Adipocytic	35	10	46	16	01	108
Fibroblastic/ myofibroblastic	02	02	04	01	03	12
Fibrohistiocytic	07	06	02	02	00	17
Smooth muscle	00	00	02	00	00	02
Skeletal muscle	00	00	00	00	00	00
Vascular	05	02	09	42	00	58
Uncertain differentiation	00	00	02	00	00	02
Total	49	20	64	61	05	199

The benign soft tissue tumors showed predilection for trunk and head & neck.

Clinical Presentation

Majority of benign soft tissue tumor presented with a painless mass, which had been present for 4 months to 5yrs.

Pathology:

Total benign soft tissue tumors	199	(100%)
Benign soft tissue tumors measuring <5cm	148	(74.37%)

- On gross, Majority of the benign tumors (74.37%) were well circumscribed measuring less than 5 cm.
- The various histological subtypes of different tumor groups encountered are discussed under individual tumors.

Table 6: Fibroblastic/myofibroblastic tumors

Histologic types	Number	Age	Sex		Site				
			M	F	UL	LL	Tr	HN	Mx
Fibroma of tendon sheath	01	32	00	01	01	00	00	00	00
Cellular angiofibroma	01	75	01	00	00	00	00	01	00
Angiomyofibroblastoma	01	35	00	01	00	00	01	00	00

13 cases of fibroblastic/myofibroblastic tumors were encountered which account for 5.60% of all soft tissue tumors. It includes 6 (46.15%) cases of desmoids type fibromatosis, 2 (15.38%) cases of superficial fibromatosis, and 1 (7.69%) case of fibrosarcoma, hemangiopericytoma, fibroma of tendon sheath, cellular angiofibroma and angiofibroblastoma each.

30.77% (4/13) cases were found in 3rd decade of life.

There was a striking female preponderance which constitutes 69.21% of cases with M: F ratio was 1: 2.3.

Table 7: So Called Fibrohistiocytic Tumors

Histologic types		No	Age	Sex		Site				
				M	F	UL	LL	Tr	HN	Mx
B	GCT of tendon sheath	06	7-50	03	03	06	00	00	00	00
	Benign fibrous histiocytoma	10	15-66	08	02	00	06	02	02	00

28/232 cases were of fibrohistiocytic tumor which account for 12.07% cases of all soft tissue tumors.

It includes 10(35.71%) cases of benign fibrous histiocytoma, 6(21.43%) cases of giant cell tumor of tendon sheath, and a case of giant cell tumor of soft tissue.

7/28(25%) cases were found in 6th decade of life, followed by 4 cases each in 5th and 7th decade.

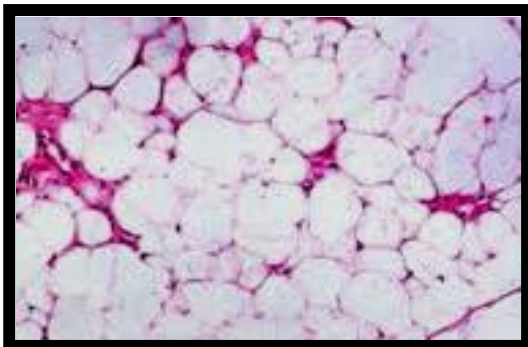


Figure 1: Lipoma. Showing mature adipocytes vary only slightly in size and shape and have eccentric nuclei (H&E X 100).



Figure 2: Fibrolipoma. Grossly, tumor is large and cut surface shows grey white fibrous area with yellow fatty area.

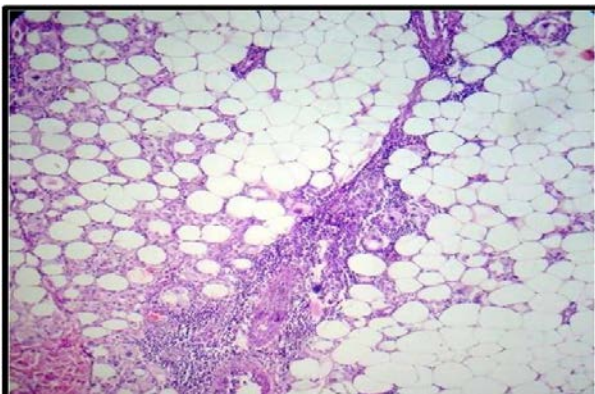


Figure 3: Myelolipoma. Showing mature adipocytes and marrow elements (H&E X 100)

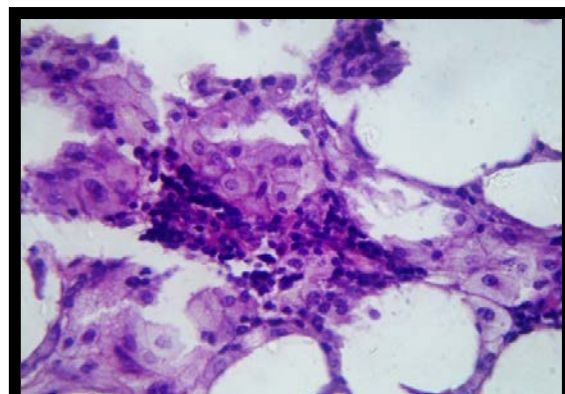


Figure 4: Myelolipoma. Showing myeloid precursors in between mature adipocytes (H&E)

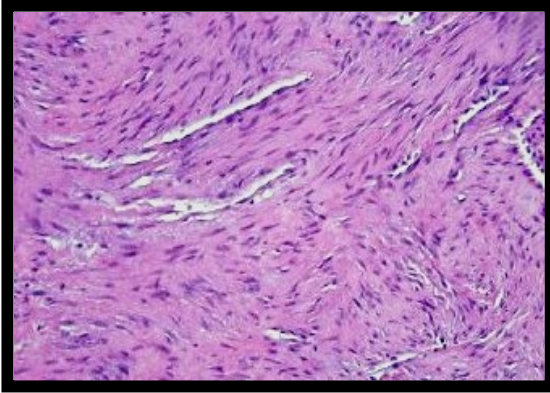


Figure 5: Fibroma of tendon sheath. Showing spindle shaped fibroblasts in collagenous stroma (H&E X 100).

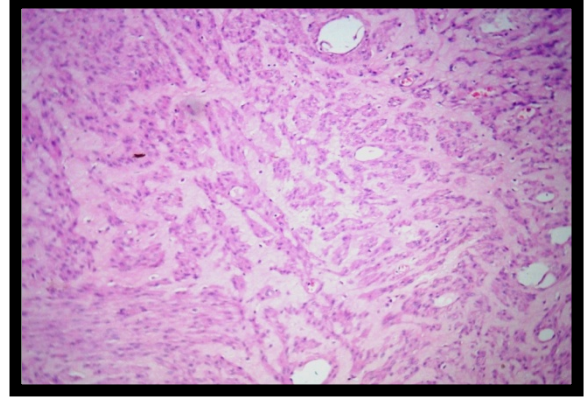


Figure 6: Angiomyo fibroblastoma. Showing tumors cells and blood vessels in loose edematous stroma (H&E X 100).

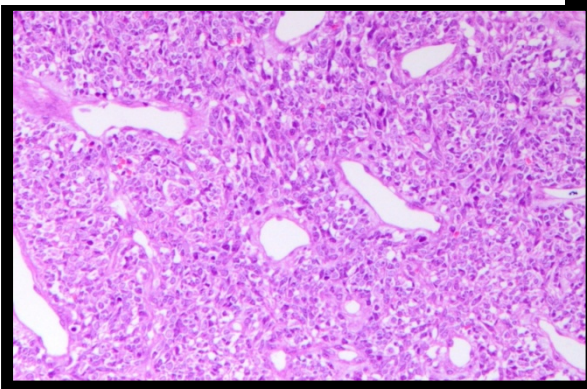


Figure 7: Hemangiopericytoma. Showing closely packed evenly distributed spindle cells with staghorn

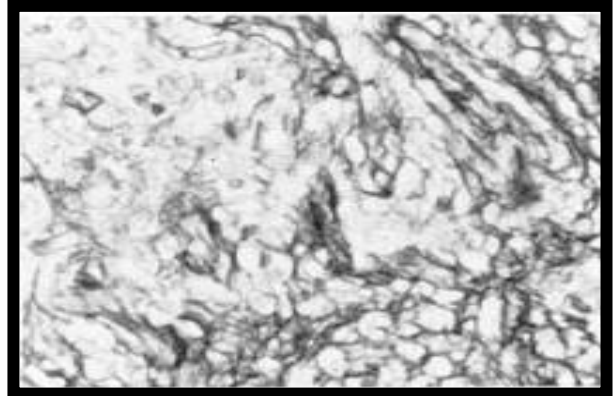


Figure 8: Hemangiopericytoma. Showing reticulin meshwork (Reticulin X 100).

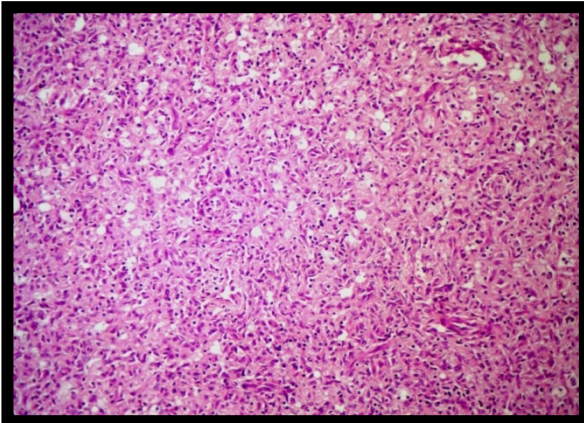


Figure 9: Deep BFH. Showing monomorphic pattern of benign spindle cells (H&E X 100).

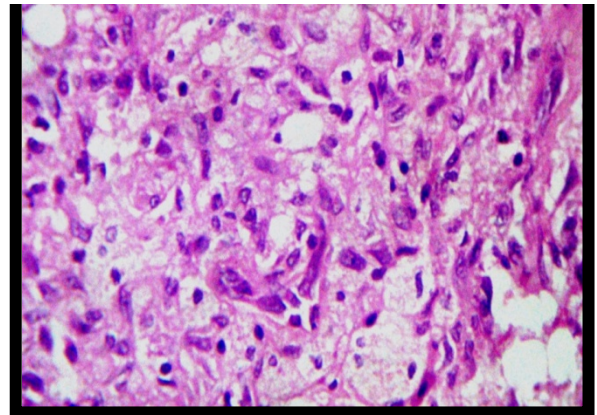


Figure 10: Deep BFH: showing xanthomatous cell change (H&E X 400).

DISCUSSION

Table 8: Comparative Incidence of Benign Tumors of Soft Tissue

Authors	No	Benign Tumors	%
Geetha Dev (1977) ⁸	780	650	83.3%
Myhre Jensen (1981) ⁹	1403	1331	94.6%
M.j. Kransdorf (1995) ¹⁰	31047	18677	60.2%
Present study (2012)	232	199	85.8%

Table 9: Comparative Analysis of Relative Incidence of Various Benign Tumors

Tumor type	Geetha Dev (1974) ⁸	Myhre Jensen (1981) ⁹	Kransdorf (1995) ¹⁰	Present study (2012)
Adipocytic	38.3	48.1	16.1	54.27
Fibroblastic	2.3	10.5	20.6	6.03
Fibrohistiocytic	0.6	15.8	12.8	8.54
Smooth muscle	3.2	3.8	1.7	1.00
Skeletal muscle	0	0	0	0
Vascular	21.3	11.7	7.6	29.55

Table-10: Comparative Analysis of the Sex Incidence of Benign Tumors of Soft Tissue

Authors	Males benign	Females benign	M:F ratio benign
M.Jensen (1981) ⁹	630	731	0.9:1
Present study (2012)	96	103	0.93:1

Table 11: Comparative Analysis of Age Incidence of Benign Soft Tissue Tumors

Authors	Avg. Age (Benign)
M Jensen (1981) ⁹	44.5 years
Present study(2012)	36.3years

Table-12: Comparative Analysis of Site Incidence of Benign Soft Tissue Tumors

Authors	UL	LL	Trunk	Head and neck	Mx
Geetha dev(1977) ⁸	22.5%	13.6%	24.8%	32%	-
Kransdorf (1995) ¹⁰	31.8%	28.8%	20.1%	13.8%	-
Present study (2012)	21.98%	13.36%	34.05%	28.45%	2.15%

Table 13: Tumors Incidence, Age, Sex And Site Distribution of Benign Adipose Tissue Tumors

Authors	Number %	Age	Male %	Female%	Common site
Geetha Dev (1977) ⁸	38.3%	2m-80yrs	57.1	42.9	Trunk
M Jensen (1981) ⁹	48.1%	20-69yrs	47.3	52.7	Trunk
Kransdorf (1995) ¹⁰	16.1%	26-68yrs	71.8	28.2	Trunk
Present study (2012)	54.27%	2-75yrs	50.0	50.0	Trunk

Table-14: Tumors Incidence, Age, Sex And Site Distribution Of Benign Fibroblastic Tumors

Authors	No. of cases (% of benign tumors)	Age (range)	Male %	Female %	Common site
M. Jensen (1981) ⁹	10.5%	20-69years	57.1%	42.9%	Trunk
Kransdorf (1995) ¹⁰	9.5%	13-75years	51.2%	48.8%	Trunk
Present study (2012)	6.03%	8-75years	33.33%	66.67%	Trunk

Table 15: Tumors Incidence, Age, Sex and Site Distribution of Benign Fibrohistiocytic Tumors

Authors	No. Of cases (% of benign tumors)	Age (range)	Male %	Female %	Common site
M. Jensen (1981) ⁹	16%	20-69 years	33.1%	66.9%	Lower limb
Kransdorf (1995) ¹⁰	13.2%	<1-57 years	54%	46%	Lower limb
Present study (2012)	8.54%	7-65 years	70.59%	29.41%	Lower limb

Table 16: Tumors Incidence, Age, Sex and Site Distribution of Benign Vascular Tumors

Authors	Number (%)	Age	Male%	Female%	Common site
Geetha dev (1977) ⁸	21.3%	25d-65yrs	66.2	33.8	Head & neck
M Jensen (1981) ⁹	11.8%	0-59	41.4	58.6	Head & wrist
Kransdorf (1995) ¹⁰	7.6%	<1-65	44.1	55.9	Head and neck
Present study(2012)	29.14%	<1-75 years	44.82	55.18	Head & neck

CONCLUSION

The diagnosis and management of soft tissue tumors require a team perspective. A good clinical acumen, careful gross examination of the specimen and adequate sampling of the tumor is essential. Majority of soft tissue tumors can be diagnosed by haematoxylin and eosin stained section. Special stains are helpful in addition to the routine haematoxylin and eosin for the proper diagnosis of STT's and to indicate the prognosis and guide the further course of management.

1. The soft tissue tumors (232 cases) constituted 2.08 % of the entire biopsy material (11157 cases) recorded in the department of pathology.
2. Benign soft tissue tumors constituted 9.91% of all benign tumors diagnosed during the study period.
3. Benign soft tissue tumors formed 85.78% of all soft tissue tumors. Benign soft tissue tumor showed a peak age incidence in the third decade.
4. Soft tissue tumors in general showed slightly female preponderance with a male to female ratio of 1:1.04.
5. The benign soft tissue tumor showed predilection for trunk and Head Neck region.
6. On detailed histomorphological examination, the single most common histological group was the adipose tumor, which accounted for 51.4% of all soft tissue tumors.
7. The commonest benign tumor was lipoma of all benign tumors of soft tissue followed by vascular tumors.

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