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Pathology

STUDY OF HISTOPATHOLOGICAL FEATURES OF PSEUDOTUMOURS OF SOFT TISSUE IN A TERTIARY CARE HOSPITAL, GAUHATI MEDICAL COLLEGE AND HOSPITAL, GUWAHATI

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ABSTRACT

Background – Pseudotumour is an indefinite term that has been used to indicate the presence of a mass, which is felt to represent a neoplasm at some level of observation. In most circumstances it is a misnomer, because a mass actually exists, and hence, the term pseudoneoplasm would be more appropriate.[1] A considerable number of pseudotumours can simulate neoplasms at all levels of analysis – clinical, radiologic, and pathologic – and they consequently represent particular diagnostic pitfalls which can lead to therapeutic misdirecttion.[1]

Objective - To study the occurrence of soft tissue pseudotumors in relation to age, sex and anatomical site in a tertiary care centre and to study the histopathological findings in various pseudotumours of soft tissue.

Methods – In the Present Study, all operated cases; excised biopsies and resected specimens of clinically diagnosed soft tissue tumours are taken into consideration. After processing and staining, detail microscopic examination was carried out.

Results - Soft tissue pseudotumours constituted 1.59% of total soft tissue tumours. The age of occurrence of soft tissue pseudotumours ranged from 11 to 60 years. The majority of cases (30%) belonged to 31-40 years age group followed by 51-60 years(25%). Most common soft tissue pseudotumour is Pyogenic granuloma

Conclusion – The study can contribute to epidemiologic knowledge of soft tissue tumour.

KEYWORDS : Soft tissue pseudotumours, Pyogenic granuloma

INTRODUCTION

The soft tissues of the body are composed of many diverse cell and tissue types which are involved in various reparative, inflammatory, metabolic, and neoplastic diseases. The most important role for a pathologist in soft tissue pathology is to determine whether or not a lesion is neoplastic and, if so, whether it is benign or malignant.[2] The traditional histologic indicators of malignancy, such as degree of cellularity, cytological atypia, mitotic activity, necrosis, and infiltrative growth pattern do not always accurately reflect a soft tissue tumour's biologic potential and can be easily misinterpreted.[2] Not only benign conditions can mimic malignancy, but focal areas of malignant entities may also mimic benign conditions.[3]

Soft tissue lesions which mimic tumours, represent a significant diagnostic challenge for pathologists as many of the features which are often associated with malignancy like rapid and infiltrative growth, increased cellularity and mitotic activity, and nuclear pleomorphism are also present in some benign and reactive conditions. There are a vast group of non-neoplastic lesion that can be mistaken for benign and malignant mesenchymal tumours.

Despite the many immunohistochemical and molecular genetic advances, numerous diagnostic pitfalls remain in soft tissue pathology. There is frequent overlap in clinicopathologic and morphologic features between benign, intermediate, and malignant tumors, and reactive processes can also mimic neoplasms of any biologic potential. A number of histologic features are suggestive of a reactive process or pseudotumours. For e.g.

- - Many reactive lesions display zonation. For e.g. nodular fasciitis, ischemic fasciitis, myositis ossificans
- Cells comprising reactive lesions have the appearance of tissue culture fibroblasts with large vesicular nuclei, prominent nucleoli, and basophilic cytoplasm, reflecting the presence of abundant, rough endoplasmic reticulum.
- Absence of atypical mitotic figures or nuclear atypia.

Our discussion of pseudotumours addresses nonneoplastic and reactive processes that morphologically mimic defined neoplastic entities. These pseudotumours include lesions that pursue a benign clinical course but have defining cytogenetic alterations.[4]

There is no established classification of pseudotumours of soft tissue in literatures. However, a variety of pseudotumours has been described under different headings. Accordingly pseudotumours can be divided into –

1. Reactive lesions simlulating sarcoma[5]
2. Miscellaneous histiocytic reactions resembling a neoplasm[6]
3. Other pseudotumours

1. Reactive lesions simulating sarcoma[5] -

- Nodular fasciitis
- Proliferative fasciitis and myositis
- Ischemic fasciitis (atypical decubital fibroplasia)
- Myositis ossificans
- Fibro-osseous pseudotumour of the digits
- Intravascular papillary endothelial hyperplasia
- Massive localized lymphedema

2. Miscellaneous histiocytic reactions resembling a neoplasm[6]-

- Atypical mycobacterial pseudotumour
- Malacoplakia
- Extranodal (soft tissue) Rosai-Dorfman disease
- Silica reaction
- Polyvinylpyrrolidone Granuloma

3. Other pseudotumours are -

- Elastofibroma dorsi
- Calcifying fibrous pseudotumour
- Tumoral calcinosis
- Traumatic neuroma
- Bacillary angiomatosis
- Xanthoma
- Morton neuroma (Morton metatarsalgia)
- Pyogenic granuloma

AIMS AND OBJECTIVES

The study is undertaken with the following aims and objectives:

1. To study the occurrence of soft tissue pseudotumors in relation to age, sex and anatomical site.
2. To study the histopathological findings in various pseudotumours of soft tissue.
3. To correlate the histopathological findings with immunohisto chemistry wherever necessary.

MATERIALS AND METHODS

The study was conducted from June 2018 to May 2019. The study was approved by Institutional ethics committee of Gauhati Medical College and Hospital, Gauhati. During the study period, a total of 2512 clinically diagnosed soft tissue tumours arrived for histopathological examination in the Department of Pathology, Gauhati Medical College and Hospital, Guwahati. A total number of 40 cases of pseudotumours

of soft tissue which have been histologically diagnosed. The study group comprises of patients of all ages and both sexes who have been operated for indicated reasons. All specimens were fixed in 10% neutral buffered formalin. Formalin fixed specimens were subjected to detailed gross examination and subjected for histopathological processing and paraffin blocks were prepared. Sections were cut at 3-5 micron thickness and stained by Hematoxylin and Eosin and mounted in DPX. The slides thus prepared were then examined under the microscope and histopathological diagnosis given.

OBSERVATION AND RESULTS

Total 40 cases were included in this study. The results of this are as follows :

Table 1- Percentage of soft tissue pseudotumours

1	Total number of soft tissue tumours	2512
2	Total number of soft tissue pseudotumours	40
3	Percentage of soft tissue pseudotumours out of soft tissue tumours	1.59%

Soft tissue pseudotumours constituted 1.59% of total soft tissue tumours.

Table 2 - Distribution of soft tissue pseudotumours and their percentage

Se. no.	Pseudotumour	No. of cases	Percentage(%)
1	Nodular fasciitis	2	5%
2	Proliferative fasciits	4	10%
3	Myossitis ossificans	3	7.5%
4	Fibroosseus pseudotumour of digits	2	5%
5	Tumoral calcinosis	6	15%
6	Traumatic neuroma	5	12.5%
7	Pyogenic granuloma	18	45%

From table 2 - It was observed that Pyogenic granuloma was accounted for the majority of soft tissue pseudotumours (n=18; 45%) followed by tumoral calcinosis (n=6; 15%)

Table 3 – Age wise distribution of pseudotumours of soft tissue and their percentage

Age in years	No. of cases	Percentage of cases
11 – 20 years	4	10 %
21 – 30 years	5	12.5 %
31 – 40 years	12	30 %
41 – 50 years	9	22.5 %
51 – 60 years	10	25 %
Total	40	100 %

From table 3 - it was observed that the age of the cases of soft tissue pseudotumours ranged from 11 to 60 years. The majority of cases (30%) belonged to 31-40 years age group followed by 51-60 years(25%); 41-50 years (22.5%); 21-30 years (12.5%) and 11-20 years age (10%). The average age being 39.7 years.

Table 4– Sex wise distribution of pseudotumours of soft tissue and their percentage

Sex	No. of cases	Percentage
Male	22	55 %
Female	18	45 %
Total	40	100%

From table 4 - it was observed that out of total 40 cases of pseudotumours of soft tissue, 22 (55%) were male and 18 (45%) were female. Male : female was 1.2.

Table 5 – Anatomical sites wise distribution of soft tissue pseudotumours and their percentage

Anatomical sites	No. of cases	Percentage
Upper extremity	13	32.5 %
Lower extremity	10	25 %
Trunk	2	5 %
Head and neck	15	37.5 %
Total	40	100 %

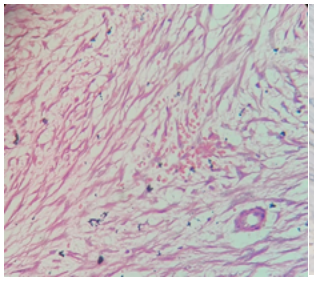
From table 5 - it was observed that out of total 40 cases of soft tissue pseudotumours, majority of cases involved head and neck region (n=15; 37.5%) followed by upper extremity (n=13; 32.5%); lower extremity (n=10; 25%); and trunk (n=2; 5%).

Table 6 – Size distribution of pseudotumours and their percentage

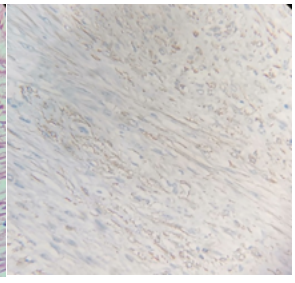
Size (diameter in cm)	No. of cases	Percentage
0-1	13	32.5%
1.1-2	15	37.5%
2.1-3	4	10%
3.1-4	2	5%
4.1-5	4	10%
5.1-6	2	5%
Total	40	100%

From table 6 - it was observed that majority of the pseudotumours (n=15; 37.5%) were 1.1-2 cm in diameter.

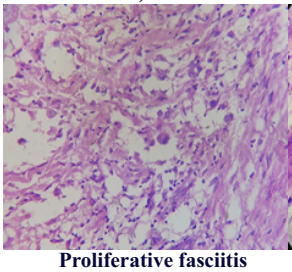
PHOTOGRAPHS



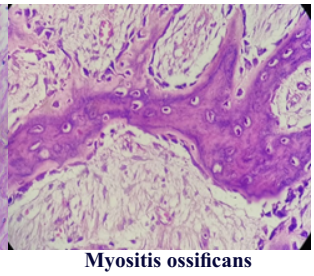
Nodular fasciitis (H &E) 400X



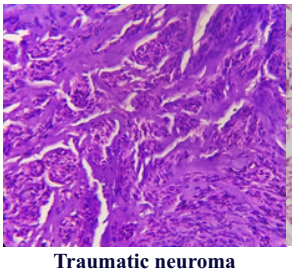
Nodular fasciitis SMA – Immunoreactive



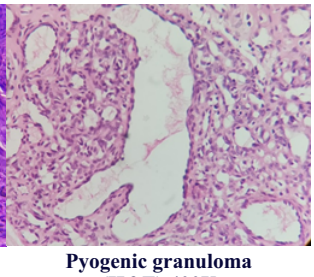
Proliferative fasciitis (H&E) 400X



Myositis ossificans (H&E) 400X



Traumatic neuroma (H&E) 400X



Pyogenic granuloma (H&E) 400X

DISCUSSION

Soft tissue 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.

A wide spectrum of entities both neoplastic and non neoplastic may give rise to soft tissue masses. These include benign and malignant tumours and pseudotumours.

In our study overall incidence of soft tissue pseudotumours related to the patient age, sex, site or location of lesion and size along with the histopathological findings were derived. Immunohistochemical studies were done in those cases in which it was necessary.

Our study found cases of Nodular fasciitis, Proliferative fasciitis, Myossitis ossificans, Fibro-osseous pseudotumour of digit, Traumatic neuroma, Tumoral calcinosis and Pyogenic granuloma.

Nodular fasciitis, first described by Konwaler and Weiss in 1955[4] is also known as pseudosarcomatous fasciitis, pseudosarcomatous fibromatosis and infiltrative fasciitis. It is one of the most under-diagnosed lesion and can be confused with spindle cell sarcoma, fibromatosis, fibrous histiocytoma, proliferative fasciitis, benign nerve sheath tumors, and pleomorphic adenoma because of features such as

short history, rapid growth, marked infiltration, and somewhat similar histopathological picture. The lesional cells of Nodular fasciitis are positive for smooth-muscle and muscle-specific actins, vimentin, and KP1 (a histiocyte marker), indicating dual myofibroblastic and histiocytic differentiation.

Proliferative fascitis is a self-limiting, benign, reactive fibroblastic proliferation considered as a pseudosarcomatous lesion because of its microscopic features overlapping with those of malignant soft tissue tumours[7,8]

Fibro-osseous pseudo-tumor of the digit (FPOD), a heterotopic ossification that is closely related to myositis ossificans, occurs in the subcutaneous tissue of digit. It is an unusual case that has been described under various names, including pseudo-malignant osseous tumor of the soft tissues[9]

Myositis ossificans is a reparative pseudosarcomatous lesion that is distinguished by the presence of metaplastic bone formation. Myositis ossificans occurs in a younger patient population than the other reparative pseudosarcomatous processes and frequently affects healthy, active adolescents and young adults. The lesion commonly develops after an episode of trauma.

Pyogenic granuloma is a non-neoplastic inflammatory hyperplasia that responds to various stimuli such as chronic local irritation, trauma, hormonal changes, bone marrow transplant, and reactions to grafts.[10,11] It is a polypoid form of capillary hemangioma occuring on the skin and mucosal surfaces.[12,13] In the extensive review of 289 cases by Kerr,[12] the gingiva, finger, lips, face, and tongue accounted for over 70% of cases. Differential diagnosis of pyogenic granuloma is angiosarcoma and angiomatous form of Kaposi sarcoma.

Traumatic neuroma is an exuberant, but non-neoplastic, proliferation of a nerve occurring in response to injury or surgery, if close apposition of the ends of a nerve is not maintained or if there is no distal stump.

Tumoral calcinosis is a distinct clinical and histologic entity that is characterized by tumor-like periarticular deposits of calcium that are found foremost in the regions of the hip, shoulder, and elbow.

CONCLUSION

Pseudotumours usually present as swelling or nodule which may mimic benign or malignant lesions clinically and possess a diagnostic problem to the clinicians and pathologists.

So all the lesions should be diagnosed early and subjected for histopathological examination for the correct diagnosis. Even though there is some overlap in the features between pseudotumours and malignant soft tissue lesions, pseudotumours have good prognosis, does not require radical excision and does not recur unlike the malignant lesions.

The pseudotumours have several features in common: rapid growth, infiltrative growth extending along fascial planes or subcutaneous septa or radiating into lobules of adipose tissue. Another common feature is the pleomorphic pattern of proliferating fibroblasts and myofibroblasts, the presence of more or less ganglion cell-like large cells which can be uni-or binucleated with prominent nucleoli and a high mitotic rate.

In order to avoid a false diagnosis of sarcoma several factors should be emphasized:

1. awareness of the existence of these lesions,
2. combined evaluation of clinical and morphological data,
3. rapid growth, often noted by the patients, is rare in sarcomas except in some cases.

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