



## STUDY OF MYXOID LESIONS OF SOFT TISSUE BY FINE NEEDLE ASPIRATION CYTOLOGY

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**ABSTRACT** In our study of soft tissue swellings suspected for myxoid soft tissue lesions, we studied 75 cases of soft tissue lesions obtaining myxoid material on fine needle aspiration were came in Department of Pathology, GRMC Gwalior (M.P.). Cases were studied on the basis of clinical history, age, sex, site of lesions, type of material obtained, adequacy of material and microscopic appearance. The frequency of different myxoid soft tissue lesions, their categorization on the basis of age, sex and site wise distribution, their cytopathological correlation done in present study.

### KEYWORDS :

#### AIMS AND OBJECTIVES

##### AIM:

Study of cytological features in aspirates obtained from myxoid soft tissue lesions in patients referred from J.A. Group of Hospitals.

##### OBJECTIVES:

To know the frequency of myxoid material in aspirates obtained from soft tissue lesion.

To differentiate further benign and malignant lesion

To know the problems in cytodiagnosis of myxoid soft tissue lesions.

#### INTRODUCTION

- **Soft tissue** – (WHO) All non-epithelial extra-skeletal tissues of the body except the reticulo endothelial system, the glia and the supporting tissues of specific organs and viscera<sup>1</sup>.
- Soft tissues categorization

1. Fibrous tissue
2. Adipose tissue
3. Muscle tissue
4. Synovial tissue
5. Blood vessels and Lymph vessels
6. Neuroectodermal tissues of the Peripheral and Autonomic nervous system

- The lesions of these tissues are embryologically derived from mesoderm, except those of peripheral nerve which are derived from ectoderm.<sup>(1)</sup>

**Myxoid soft tissue lesions**<sup>(3,4,5)</sup> - Myxoid soft-tissue lesions/ tumors are a heterogeneous group of benign and malignant mesenchymal tumors with an abundance of extracellular myxoid material.

Benign myxoid lesions include –

Ganglion cyst  
Bursa  
Synovial cyst  
Intramuscular myxoma  
Nodular fasciitis  
Benign peripheral nerve tumors including Neurofibroma and Schwannoma

Malignant myxoid tumors include –

Myxoid liposarcoma  
Myxoid leiomyosarcoma  
Myxoid chondrosarcoma  
Low grade fibromyxoid sarcoma  
Myxofibrosarcoma/ myxoid MFH  
Chordoma

Metastatic carcinoma (Mucinous)

Synovial sarcoma

Malignant peripheral nerve sheath tumor

Dermatofibrosarcoma protuberance

Syndromes associated with myxoid soft tissue tumors is Mazabraud syndrome in which soft tissue myxoma and fibrous dysplasia is there.

#### Features-

- They commonly affects extremities
- Benign tumors which are entirely harmless.
- Tumors with tendency to recur locally but not metastasize
- Malignant tumors are locally aggressive and metastasize to distant site.
- Showing marked biological variability in their biological behavior.
- In this group of tumors, clinical features and morphological appearance shows a considerable degree of overlap, which lead to diagnostic problems for clinician and pathologist.

#### MYXOID MATERIAL –

- Myxoid soft tissue lesions/tumors characterized by abundant production of myxoid material.
- On gross appearance, myxoid material is mucoid and gelatinous in consistency.
- On microscopic examination it is blue gray extracellular mucin.
- It is made up of mainly polysaccharide glycosaminoglycans (sulphated and non sulphated) or glycoproteins which imparts the myxoid appearance.
- GAG is highly hydrophilic and readily form a “Gel” state.

#### MATERIAL AND METHODS

The present study comprises 75 cases of soft tissue swellings suspected for myxoid soft tissue lesions presenting in patients who visited the Cytopathology section in Pathology department of Gajra Raja Medical College, Gwalior for a period of 18 months from 1st January 2020 to 30<sup>th</sup> June 2021. It includes all the patients coming in OPD in department of Surgery of Jaya Arogya Group of Hospitals, Gwalior (Madhya Pradesh) presenting with Soft tissue swellings/ lesions over the body.

- All relevant data was recorded from requisition slip and detailed history was taken from patients and attendants including name, age, sex, duration of lesions. The site of lesion examined thoroughly including site, size, gross appearance, consistency, mobility, tenderness and other associated features.
- FNA of the lesions was done and the smears were prepared, stained and were subsequently examined under the microscope.

#### Inclusion criteria

- All patients with soft tissue swellings suspected for myxoid soft

tissue lesions came for check up in Gajra raja medical college and JAH group of hospitals, Gwalior (M.P.) with properly mentioned on OPD paper and requisition slip.

- All soft tissue with myxoid material.
- Patients of both the gender.
- Patients of all age groups.
- Adequate and inadequate material both were obtained in FNA.
- Lesions of any site in body.

**Exclusion criteria**

- Patients not having proper requisition slip and OPD paper of JAH group of hospitals.
- Soft tissue lesions not obtained myxoid material.
- Patients not cooperative /not willing for FNAC.

**Material used for study** – All accessories used for FNA.

**Fixation and staining-**

- Air drying followed by a Romanosky type stain such as MGG Jenner Giemsa Wright's stain or Diff Quick (Harleco, Philadelphia)
- Alcohol fixation followed by Papanicolaou (Pap) or Hematoxylin and eosin (H and E) staining.

**OBSERVATION AND RESULTS**

- In present study of soft tissue swellings suspected for myxoid soft tissue lesions, we included 75 cases of soft tissue lesions obtaining myxoid material on fine needle aspiration came in Department of Pathology, GRMC Gwalior (M.P.).
- Cases were studied on the basis of clinical history, age, sex, site of lesions, type of material obtained ,adequacy of material and microscopic appearance.The frequency of different myxoid soft tissue lesions, their categorization on the basis of on the basis of age, sex and site wise distribution, their cytopathological correlation done in present study.

**Table 1: Distribution of lesions according to adequacy of sample (myxoid aspirate) for study (Total 75 cases of myxoid soft tissue lesions)**

S no.	Adequate		Inadequate		Total	
	No.	%	No.	%	No.	%
Total	73	97.33%	2	2.67%	75	100%

In present study we studied 75 cases of soft tissue swellings suspected for myxoid soft tissue lesions for a confirm diagnosis. Out of 75 cases we obtained adequate material in 73(97.33%) cases for cytodiagnosis. In 2 cases (2.67%) we obtained scanty material which was inadequate for cytodiagnosis.

**Table 2: Distribution of benign lesions according to age and sex**

S.No.	Age group	Male		Female		Total	
		No.	%	No.	%	No.	%
1	0-15 years	3	4%	4	5.3%	7	9.33%
2	16-30 years	12	16%	17	21.3%	29	38.6%
3	31- 45years	8	10.7%	10	13.3%	18	24%
4	46-60years	4	5.3%	5	6.67%	9	12%
5	More than 60 years	1	1.3%	1	1.3%	2	2.6%
		28	37.3%	37	49.3%	65	86.7%

In present study most common age group affected by benign myxoid soft tissue lesions is between 16 -30 years of age, in which total 29 cases (38.6%) were observed which including 12 (16%) male patients and 17 (21.3%) female patients. This is followed by age group 31-45 years in which total 18 (24%), affected males are in this age group are 8(10.7%) and affected females are 10(13.3%).

**Table 3: Distribution of malignant lesions according to age and sex**

S.No.	Age group	Male		Female		Total	
		No.	%	No.	%	No.	%
1	0-15 years	-	-	-	-	-	-
2	16-30 years	-	-	-	-	-	-
3	31- 45years	1	1.3%	1	1.3%	2	2.6%
4	46-60years	3	4%	1	1.3%	4	5.3%
5	More than 60 years	2	2.6%	-	-	2	2.6%

		6	8%	2	2.6%	8	10.6%
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In present study most common age group affected by Malignant myxoid soft tissue lesions is between 46 -60 years of age, in which total 4 (5.3%) cases were observed which including 3 (4%) male patients and 1 (1.3%) female patient. This is followed by 31-45 years group having 2(2.6%) affected patients includes 1(1.3%) male and 1(1.3%)female patients. While in age group more than 60 years only males were affected which were 2 (1.63%) in number. No female patient seen in this age group.

In age group 0-15 and 16-30 years of age no malignant case seen.

**Table 4 : Distribution of cases according to benign and malignant tumor Table 4a - Benign tumor**

S.No.	Tumor name	No.	%
1	Ganglion	30	40%
2	Neurofibroma	3	4%
3	Schwannoma	2	2.6%
4	Nodular fasciitis	2	2.6%
5	Synovial cyst / Bakers cyst	2	2.6%
6	Bursa	1	1.3%
7	Fibrolipoma	1	1.3%
8	Solitary fibrous tumor	1	1.3%
9	Benign spindle cell lesion	20	26%
10	Benign fibrous lesion	3	4%
	Total	65	86.6%

Total 75 cases were observed in this study. Out of which 65 (86.6%) were benign tumors. Benign lesions include Ganglion cyst 30(40%), Neurofibroma 3(4%), Schwannoma 2 (2.6%), Nodular fasciitis 2(2.6%), Synovial cyst/backers cyst 2(2.6%), Bursa 1(1.3%), Fibrolipoma 1(1.3%) and Solitary fibrous tumor 1(1.3%). Benign spindle cell lesions 20( 26%) and Benign fibrous lesion 3(4%) were observed.

**Table 4b- Malignant tumor**

S.No.	Malignant tumor	No.	%
1	Pleomorphic sarcoma	1	1.3%
2	Low grade fibromyxoid sarcoma	1	1.3%
3	MPNST	1	1.3%
4	DFSP	1	1.3%
5	Chordoma	1	1.3%
6	Metastases(mucinous Adenocarcinoma )	1	1.3%
7	Malignant spindle cell lesion	1	1.3%
8	Spindle cell sarcoma	1	1.3%
10	Total	8	10.6%

In malignant tumors in present study we observed 8 (10.6%) myxoid soft tissue lesions which include Pleomorphic sarcoma 1(1.3%), Low grade fibromyxoid sarcoma 1(1.3%),MPNST 1(1.3%),DFSP 1(1.3%), Chordoma 1 (1.3%), Metastases of mucinous carcinoma 1(1.3%), Spindle cell sarcoma 1 (1.3%) and Malignant spindle cell lesion 1(1.3%)

In present study 2(2.67%) cases were of inadequate sample, that's why could not be categorized as benign or malignant lesion.

**Table 5 : Distribution of cases according to benign lesions in male and female in all age groups**

S.no.	Sex	Benign tumors	
		No.	%
1	Male	28	37.3%
2	Female	37	49.3%
	Total	65	86.7%

In present study females (37, 49.3%) are more commonly affected by benign myxoid soft tissue lesions as compare to male patients (28,37.3%).

**Table 6 : Distribution of cases according to malignant lesions in male and female in all age groups**

S.no.	Sex	Malignant tumors	
		No.	%
1	Male	6	8%

2	Female	2	2.6%
	Total	8	10.6%

In present study males 6 (8%) are more commonly affected by malignant myxoid soft tissue lesions as compare to female patients 2 (2.6%).

**Table 7 : Distribution of all cases including benign and malignant lesions according to site of lesion**

S no.	Site	Benign		Malignant		Total	
		No.	%	No.	%	No.	%
1	Head and neck	7	9.3%	1	1.3%	8	10.6%
2	Upper extremities	34	45.3%	1	1.3%	35	46.6%
3	Trunk	8	10.6%	3	4%	11	14.6%
4	Lower extremities	15	20%	3	4%	18	24%
5	All over the body	1	1.3%	-		1	1.3%
	Total	65	86.7%	8	10.6%	73	97.3%

In present study most common site for myxoid soft tissue lesions is upper extremities where total 35(46.6%) lesions were found, out of which 34(45.3%) lesions were benign and 1 (1.3%) lesion was malignant. This is followed by lower extremities where total 18(24%) lesions were found, out of which 15(20%) lesions were benign and 3(4%) lesions were malignant. This is followed by trunk (8,10.6%) lesions, Head and neck 7(9.3%) and tumors involving whole of the body found only in 1 case (1.3%).

## DISCUSSION

In present study adequacy of Fine needle aspiration cytology is 73(97.33%).

In 2 cases (2.67%) we obtained scanty material which was inadequate for cytodiagnosis, that's why could not be categorized as benign or malignant lesion.

Most common age group affected by Benign myxoid soft tissue lesions is 16 -30 years of age and by Malignant myxoid soft tissue lesions is 46 -60 years of age.

In present study 65 (86.6%) were benign myxoid soft tissue lesions and malignant myxoid soft tissue lesions were 8 (10.6%).

In present study females (37, 49.3%) are more commonly affected by benign myxoid soft tissue lesions as compare to male patients (28,37.3%) while males (6, 8%) are more commonly affected by malignant myxoid soft tissue lesions as compare to female patients (2, 2.6%).

In present study most common site for myxoid soft tissue lesions is upper extremities where total 35(46.6%) lesions were found

## CONCLUSION

FNAC proved to be helpful in distinguishing between neoplastic and non-neoplastic myxoid soft tissue lesions, differentiating metastatic carcinoma in myxoid soft tissue from primary soft tissue tumors and differentiating benign and malignant myxoid soft tissue tumors.

We got 100% accuracy in diagnosing myxoid soft tissue lesions and 98.36% in differentiating benign and malignant lesions.

FNAC is safe, easy, cost efficient primary tool in the diagnosis of neoplastic and non-neoplastic myxoid soft tissue lesions.

Detailed clinical history of patient with radiodiagnosis report will definitely help to reach confirmatory diagnosis.

Microscopy remains the basis of diagnosis, with continuous development and refinements in the fields of immunocytochemistry and molecular cytogenetics facilitating to reach an accurate diagnosis by allowing development of new diagnostic criteria.

Some tumors diagnosed as Benign spindle cell lesion by FNAC, for confirmation of diagnosis Histopathological examination is mandatory.

In a minority of cases, an inconclusive diagnosis (uncertain whether benign or malignant) may be encountered, in which the patients should be referred for tissue biopsy.

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