

Fine Needle Aspiration Cytology Of Soft Tissue Lesion : Our Institutional Experience

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Abstract

Background: Soft tissue tumours are extremely rare neoplasms. Fine needle aspiration cytology (FNAC) is being increasingly used for diagnosing soft tissue tumours inspite of its poor sensitivity, specificity and inadequacy.

Material& Method: FNAC smears of 62 cases of soft tissue lesions with adequate cellularity (at least 5 clusters of 10 unobscured cells) were reported under the following cytomorphological headings- spindle cell, round cell, pleomorphic, myxoid and lipomatous type, along with benignity or malignant nature of the lesion.

Results: Out of the 62 cases, 18 were lipoma, 09 spindle cell lesion, 1 high grade sarcoma, 10 inflammatory lesion, 6 ganglion cyst, 5 round cell tumor, 4 hemangioma, 1 chordoma, 1 schwannoma, 7 cases were inconclusive on fnac. Lipomatous tumours were most easy to diagnose, whereas round cells, spindle cells and myxoid lesions were most difficult.

Males had a higher incidence than females. (M:F=2.9:1)

Conclusion- In spite of its limitations, FNAC can be an useful cost-effective tool for preoperative diagnosis of soft tissue lesions, with low morbidity, high compliance and acceptable accuracy.

Ancillary techniques like Immunocytochemistry can help in improving the accuracy of fnac diagnosis.

Keywords: Cytology, Fine Needle Aspiration Cytology, soft tissue

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I. Introduction:-

Soft tissue tumours (STTs) are highly heterogenous group of tumours and are classified on histogenesis basis according to resemblance to adult tissue^{1,2}. Sarcomas are relatively rare, constituting about 1% of all malignant tumours³. Benign lesions are usually estimated to be approximately 100 times more frequent than sarcomas³. Fine needle aspiration cytology has replaced open biopsy in majority of the palpable lesions. Many of the clinicians feel that fine needle aspiration cytology (FNAC) remains the most important contribution of the technique from a practice point of view. It helps in differentiating benign and malignant lesions and offers specific diagnosis in inoperable cases as a guide to rational treatment. Although, the use of FNAC has widened, there are pressures for specialisation in this discipline with limitations^{4,5}. The fundamental requirements on which the success of FNAC depends are representativeness and adequacy of the sample. Haematoma, infarction, capsule pseudoinvasion and pseudomalignant reparative reactions cause real diagnostic difficulties. FNA of soft tissue and bone is not widely accepted for obtaining a definitive diagnosis^{4,6}. Several factors have been implicated such as the low cellularity, the overlapping cytomorphological features in a variety of entities, and the wide variability in reported sensitivities, specificities, and inadequacy rates over the past 2 to 3 decades⁽⁷⁻¹⁹⁾. This has led to scepticism regarding the accuracy and utility of this technique. Currently, the diagnostic workup of a soft tissue tumour before surgery include site, type (benign/malignant) and location in relation to the surrounding tissues, especially major nerves and vessels. So, the main important point for planning a surgery is the preoperative diagnosis of a benign/malignant nature of the lesion rather than a definitive diagnosis⁸.

The use of fine needle aspiration cytology (FNAC) in the primary evaluation of a mass or tumour in the soft tissues is still debated. Its main role is for detecting suspicious recurrences or metastases. Diagnosis and classification of soft tissue tumours is one of the most difficult areas in surgical pathology. The relative absence of recognizable tissue architectural pattern in cytological preparation makes diagnosis by FNAC even more difficult.

Also, FNAC offers several other advantages²

1. If the diagnosis is of a benign neoplasm, surgery can be avoided in the elderly or other patients who are of poor surgical risk.

2. In case of a high grade malignancy or of recurrent cancers and metastasis, a cytological diagnosis allows the administration of a palliative treatment.
3. FNAC is an outpatient department procedure, necessitating neither patient preparation nor general anesthesia. It is safe, almost painless and cost effective

II. Aims And Objectives:-

The aim of the present study was to evaluate FNAC smears from soft tissue tumours, sub classify them into various cytomorphological categories

III. Material And Methods:-

The study was undertaken at the cytology section in the department of pathology in Chirayu Medical College and Hospital ,Bhopal . A total of 62 FNAC from Soft tissue lesions were retrieved and evaluated retrospectively over a period of 6 months(May 2018 to October 2018). Complete clinical history, examination findings and radiological data of all patients was noted.

Only cases diagnosed as soft tissue lesions on cytology or performed from clinically looking soft tissue lesion were included in study. After informed patient consent and proper antiseptic cleaning with rectified spirit, aspiration was done by a fine 22 to 24 G needle fitted with a 10 cc plastic syringe. Conventional Papanicolaou (Pap), Haematoxylin and Eosin (in wet fixed smears) and May Grunwald Giemsa (MGG) (in air dried smears) were performed in all cases. In large tumours, multiple aspirations were performed from different sites. Repeat aspirations were performed in case the first aspiration failed to give a diagnosis or where adequate cellularity was not obtained. Adequacy was defined as at least 5 clusters of 10 unobscured cells in all slides.

On examination, all cases were labelled under the following cytomorphological categories--- spindle cell, round cell, pleomorphic,vascular, myxoid and lipomatous type . In cases of mixed components, the specific subtype was assigned based on the predominant morphological pattern. Cases which yielded only blood/necrosis/poor yield in repeat aspirations were labelled as “inconclusive diagnosis”.

IV. Observation And Results

62 cases were diagnosed and classified by cytological examination.59 cases(95.16%)were benign and 3(4.84%) were malignant.

Out of 62 diagnosed cases, the median age of involvement was 36 years (range 10- 72years).The age distribution of soft tissue tumours as diagnosed by fnac showed that tumours were relatively common in the 4th to 5th decade of life .

There were 46 cases among males(74%) and 16 cases among females(26%).

On cytological examination of 62 fine needle aspirates,categorization of soft tissue lesion was done which showed maximum cases of lipomatous lesion followed by spindle cell lesions and inflammatory lesions. There were 18 cases of lipoma,9 cases of spindle cell tumour,1 case of schwannoma,5 cases of round cell lesion,6 cases of ganglion cyst,1 case of chordoma,4 cases of hemangioma,10 cases of inflammatory lesion(16%),1 case of high grade sarcoma and 7 cases were inconclusive on FNAC.

TABLE 1:-AGE WISE DISTRIBUTION(n=62)

	10-20yr	21-30yr	31-40yr	41-50yr	51-60yr	61-70yr	71-80yr
Cases (no.)	04	08	12	20	12	04	02
Cases(%)	7%	13%	19%	32%	19%	7%	3%

TABLE 2:-GENDER WISE DISTRIBUTION(n=62)

	Male	Female
Cases(no.)	46(74%)	16(26%)

TABLE 3:-CYTOMORPHOLOGY CATEGORIZATION(n=62)

Types of lesions	Total no.
Lipomatous	18(29%)
Spindle cell	10(16%)
Round cell	05(8%)
Pleomorphic	01(2%)

Myxoid	07(11%)
Vascular	04(7%)
Inflammatory lesions	10(16%)
Inconclusive	07(11%)

CASES ON FNAC	NO.
Lipoma	18
Spindle Cell Lesion	09
High Grade Sarcoma	01
Inflammatory Lesion	10
Round Cell Tumour	5
Hemangioma	4
Ganglion Cyst	6
Schwannoma	1
Osteosarcoma	1
Inconclusive	7
TOTAL	62

V. Discussion

FNAC was performed in 62 cases, diagnosed and classified by cytological examination, of which 59 (95.16%) cases were benign and 3 cases (4.84%) were malignant. 7 cases (11%) were inconclusive on fnac.

The probable reason behind inconclusive result may be excessive fibrosis or necrotic/cystic change in the tumour or maybe due to vascular nature of the tumour and thus yielded blood only. Also fnac on too tiny soft tissue swelling (small neurofibroma, lipoma) usually yielded scanty cellularity and thus should better be diagnosed clinically.

Also, simple radiological tests like usg can diagnose haemangioma more correctly than by fnac and will help in localizing the lesion for performing fnac from the correct site

Like other studies (Ackerman et al 16-series of 517 cases, 6% inconclusive; Roy S. et al 15-105 case series, 6.7% inconclusive), in the present study inconclusive cases were around 11%

The increase in inconclusive cases in our study may be due to performance of fnac in too small swellings which were not done in other studies.

Another point we have realized while reporting soft tissue tumours on fnac that there are no clear cut guidelines for cellularity.

While a single malignant looking cell may be sufficient to stamp a lesion as suspicious for malignancy, it is more difficult in case of reactive/post chemotherapy lesions, as few atypical cells may be inadequate for reporting depending on the confidence of the cytopathologist.

We propose a minimum adequacy criterion of 5 cell clusters of 10 unobscured cells for reporting a soft tissue lesion.

Lipomatous tumours (29%) are most easy to diagnose on cytology, given their typical cytological appearance and clinical presentation. In case of round cells, other spindle cells and myxoid lesions, it is very difficult to come to a definitive diagnosis without the help of proper clinical history, radiological

One of the advantages of fnac, preventing unnecessary surgery in benign soft tissue lesions.

03 cases were diagnosed as malignant soft tissue tumour on FNAC, the malignant nature of the lesion, and sarcoma was reported to help the clinician correlate clinically and plan therapy accordingly.

VI. Conclusion

FNAC is an excellent diagnostic modality in the early diagnosis of soft tissue tumors. It is highly sensitive in detecting benign soft tissue tumors and highly specific for malignant soft tissue tumors. Cytological categorization of sarcomas especially high-grade tumors like round cell and pleomorphic sarcomas will definitely help in early formulation of effective management protocol. Exact subtyping and grading of sarcomas by FNAC is possible in most of the cases. However, scope of soft tissue evaluation on cytology can be increased with more studies dealing with application of various ancillary techniques like IHC and cytogenetics.

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