FINE NEEDLE ASPIRATION CYTOLOGY IN BONE LESIONSChandramohan S. Yadav¹, Rohini Suryawanshi²**HOW TO CITE THIS ARTICLE:**

Chandramohan S. Yadav, Rohini Suryawanshi. "Fine Needle Aspiration Cytology in Bone Lesions". Journal of Evolution of Medical and Dental Sciences 2014; Vol. 3, Issue 70, December 15; Page: 14914-14917, DOI: 10.14260/jemds/2014/4005

ABSTRACT: AIMS: To assess the efficiency of fine needle aspiration cytology (FNAC) in the diagnosis of bone lesions. **PATIENTS AND METHODS:** This Prospective study was conducted in the surgical wards at tertiary care hospital of the Miraj city over two year period from October 2012- September 2014. Thirty seven patients presented with bone lesions were included in this study. The lesions were provisionally diagnosed by clinical and radiological methods. **RESULTS:** The results of the aspirated lesions include 20 malignant lesions, 8 tumour like lesions, 5 benign and potentially malignant lesions and 3 inflammatory lesions. In one aspirate the materials was inadequate. The results were compared with the histopathological diagnosis. **CONCLUSION:** FNAC of bone lesion is safe, quick, easy, economical and helpful in planning the correct therapy.

KEYWORDS: FNAC, Bone Lesion.

INTRODUCTION: FNAC of bone lesions was introduced in 1930s. Experience in this field has revealed high rate of accuracy. The high rate of accuracy of FNAC of bone lesions.^(1,2,3,4,5) has resulted in recommending the use of this technique as the first line of investigation of bone lesions.⁽⁶⁾ The technique has not been tried in our locality. Therefore this study was planned to assess the efficiency of this technique in our locality.

METHODS: FNAC was performed on 37 patients presented with bone lesions diagnosed on clinical and radiological bases. The age of the patients ranged between 5 and 70 years. They included 9 children and 28 adults. There were 25 males and 12 females. The technique was performed by the pathologists using 10 ml disposable syringe and a fine needle 21-22 gauge. No local anesthesia or other premedication was used. The overlying skin was cleaned by iodine and alcohol. The needle was introduced percutaneously into the lesion blindly without any imaging technique. Using maximum amount of suction the lesion was aspirated. While suction was still applied, the tip of the needle was moved back and forth within the lesion. The aspirated materials were smeared on 2-4 slides, fixed in 95% alcohol for 10 minutes and stained by haematoxylin and eosin. The cytological diagnosis was made on the aspirated materials on the same day and the results were compared with the histological diagnosis which was considered as the conclusive diagnosis.

RESULTS: FNAC was adequate in 36 out of 37 lesions. The cytological results included 20 malignant lesions, 8 tumour like lesions, 5 benign and potentially malignant lesions and 3 inflammatory lesions. The malignant lesions included 7 osteogenic sarcoma, 2 chondrosarcoma, 2 lymphoma, 2 Ewing's sarcoma, 2 malignant fibrous histiocytoma and 5 secondaries. The benign and potentially malignant lesions included 3 osteoid osteoma and 2 osteoclastoma. The tumour like lesions included 6 bone cysts and 2 eosinophilic granuloma (Table 1). The cytological diagnosis was specific in the diagnosis of 3/3 inflammatory lesions, in 2/2 osteoclastoma, in 5/6 bone cyst, in 2/2 eosinophilic granuloma, in

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5/7 osteogenic sarcoma, in 1/2 chondrosarcoma, in 2/2 lymphoma in 2/2 Ewing's sarcoma, in 1/2 MFH, and in 5/5 secondaries. The rest of the cases were correctly diagnosed as benign or malignant without specific diagnosis.

Lesions	Number of cases	Percentage
Malignant	20	54
Tumour like lesions	08	22
Benign and potentially malignant	05	13
Inflammatory	03	08
Inadequate	01	03
Total	37	100

Table 1: Lesions, number of cases and percentages of total 37 cases of bone lesions

In osteogenic sarcoma the smears were cellular and contain pleomorphic cells, giant cells and osteoid materials. Mitosis was frequent. In chondrosarcoma, the smears were cellular and contain chondroblast, chondroid matrix forming amorphous background in the smear.

Smears from lymphoma were very cellular and contain monomorphic lymphoid cells scattered singly and in loose clusters. Smears from Ewing's sarcoma were cellular and the cells tend to form clusters of cells with hyperchromatic nuclei and granular chromatin pattern.

In MFH the smears contain pleomorphic cells, spindle cells and few giant cells. The smears from secondaries were characterised by the presence of malignant cells which were odd to the aspirated tissue. Their cytological picture depends on the site of the primary tumour.

In our cases they were all adenocarcinoma. The cells were in clusters, their nuclei were vesicular and their cytoplasm contains mucus vacuoles.

In osteoid osteoma the smears were hypocellular containing few osteoblast and occasional osteoclast.

In osteoclastoma the smears contain large number of osteoclast mixed with stromal cells having ample cytoplasm and fibrillary process.

In bone cyst the smears contain fresh blood, haemosiderin laden macrophages, few osteoclast and fragments of fibrous tissue.

In eosinophilic granuloma the smear contains large number of eosinophils and few osteoclasts.

In the inflammatory lesions the characteristic picture was the presence of large number of polymorphs, together with few lymphocytes and plasma cells.

DISCUSSION: FNAC of bone lesions faces two main difficulties, the first one is the difficulty of obtaining adequate sample and this depends on the type of lesion, the type of needle and the experience of the aspirator. The second difficulty results from loss of the architecture of the aspirated lesion leaving the pathologist with the cellular changes only.^(7,8,9) In this study the aspirated materials were adequate in 36 lesions. A diagnosis of benign and malignant lesions was possible in all the adequate samples giving a sensitivity rate of 100% as far as the adequate sample is concerned, however if the inadequate aspirate is included the sensitivity rate is 97%.

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The clinical picture, the age, the site of the lesion and the radiological picture were of great help in interpretation of the smears. No false negative or false positive diagnosis was made. The results of this study is similar to other studies.^(3,5,9,10,11,12,13,14,15) The technique proved to be simple and easy, It can be performed in the outpatient clinic without the need for anesthesia or hospitalization. The technique is fairly painless like any other injection provided that the needle used is not wider than gauge 18. It is quick as the result can be issued in 30-60 minutes. It is economical when compared with the cost of histopathological examination furthermore it may cut down other expensive investigation. Added to that it may eliminate the need for surgery when the appropriate treatment is chemo or radiotherapy.

CONCLUSION: It is concluded from this study that FNAC of bone lesions is simple, safe, economical, quick and fairly painless. It is helpful in planning the correct therapy as it may provide a preoperative diagnosis.

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Date of Submission: 27/11/2014.
Date of Peer Review: 28/11/2014.
Date of Acceptance: 08/12/2014.
Date of Publishing: 12/12/2014.