

# CASE REPORT

---

## FINE NEEDLE ASPIRATION CYTOLOGY OF OSTEOLASTOMA: A CASE REPORT

Rekha Patil N<sup>1</sup>, Vijay Tote D<sup>2</sup>, Kamal Meherbano M<sup>3</sup>, Dinkar Kumbhalkar T<sup>4</sup>

### HOW TO CITE THIS ARTICLE:

Rekha Patil N, Vijay Tote D, Kamal Meherbano M, Dinkar Kumbhalkar T. "Fine Needle Aspiration Cytology of Osteoblastoma: A Case Report". Journal of Evidence based Medicine and Healthcare; Volume 2, Issue 8, February 23, 2015; Page: 1061-1065.

**INTRODUCTION:** Osteoblastoma (OB) is a rare benign osteogenic bone neoplasm. It accounts for approximately 1% of all the primary bone tumors.

OB shows a notable male predominance with male to female ratio of 2:1. It usually occurs in young adults with a mean age of 20 years. The most common sites are the posterior processes of vertebrae. It can also be seen in the long bones, small bones of hands and feet, facial bones, sacrum, however any bone can be affected. The clinical symptoms are non-specific, but pain local tenderness and swelling are usually reported. There is dull progressive pain which is more generalized than that of osteoid osteoma and is less likely to be relieved by aspirin or other analgesic. Sometimes systemic symptoms like weight loss and fever can be present.<sup>(1,2,3,4,5,6,7,8,9)</sup>

Fine needle aspiration cytology (FNAC) is a minimally invasive procedure and is used world-wide for the diagnosis of various pathological lesions. Application of FNAC in osseous neoplasm is limited due to possibility of inadequate samples.<sup>(10)</sup>

Diagnosis of OB by FNAC is rare.<sup>(3)</sup> In the present case OB was diagnosed on FNA based on combined evaluation of clinical data, radiological and microscopic findings. It was later confirmed by histopathology.

**CASE REPORT:** A 10 years boy came with complaints of gradually increasing back pain since 1 year. He gave a history of fall while playing one year back. There was no history of fever, tuberculosis or contact with tuberculosis.

On examination he had a swelling of 2 by 2 cm over the thoracolumbar region which was hard, tender with normal overlying skin. His routine investigations were within normal limits.

His computerized tomography (CT) of thoracolumbar spine showed severe lytic expansile, moderate to strongly enhancing lesions involving the spinous processes of T7 vertebrae with extensive surrounding sclerosis and mineralization of the matrix. (Figure 1)

Under all aseptic precautions, Ultrasonography (USG) guided fine needle aspiration (FNA) from the T7 vertebrae was done, using 23 gauge needle fitted to a 10 ml disposable syringe. Aspirate was hemorrhagic. Smears were wet fixed in 95% ethyl alcohol and some were air dried. Wet fixed smears were stained with haematoxylin and eosin (H&E) and Papanicolaou (PAP) stain and air dried were stained with May- Grunwald- Giemsa stain.

FNA smears showed moderate cellularity comprising of mono and binucleated osteoblasts. These osteoblasts showed plasmacytoid features. Cells had eccentrically placed round nuclei with smooth nuclear membrane and fine nuclear chromatin and moderate amount of pale cytoplasm with a perinuclear hof. The smears also showed multinucleated osteoclastic giant cells along with few areas showing spindle cell fragments. (Figure 2). Focal areas showing fibrillary eosinophilic

# CASE REPORT

---

material (?osteoid) was also seen. There was no nuclear pleomorphism, no mitosis and no necrosis. Considering all these cytological features along with clinical and radiological findings the diagnosis of osteblastoma was given.

Total local excision of the mass was done and we received a 3 by 3 cm reddish grey tissue. Cut section was haemorrhagic.

H & E stained sections showed classic features of osteblastoma. It showed interanastomosing trabeculae of woven bone rimmed by single layer of osteoblasts with loose fibrovascular stroma. There were variable number of multinucleated osteoclastic giant cells scattered in the stroma. (figure 2)

The patient was followed for three years and was asymptomatic.

**DISCUSSION:** Jaffe and Mayer first described osteblastoma in 1932.<sup>(3,7)</sup>

Osteblastoma (OB) is a tumor of osteoblastic origin and characterized by proliferation of osteoblasts, osteoid production and highly vascular fibrocellular stroma. It also shows osteoclastic giant cells and calcification.<sup>(1,6,8)</sup>

Osteoid osteoma and OB have similar clinical and histological manifestations and some consider these two tumors to be variants of the same disease.<sup>(4)</sup> Osteoid osteoma is smaller (upto 1.5 cm) and has a limited growth potential. In contrast OB are more than 1.5 cm and rarely exceeds 4 cm. OB is also known as giant osteoid osteoma.<sup>(1,4)</sup> OB has a capacity for progressive growth with a high rate of recurrence than osteoid osteoma.<sup>(1,4,8)</sup>

Osteblastoma is treated surgically with intralesional curettage or en bloc resection.<sup>(1,5,8)</sup> The role of post-operative radiotherapy is debatable due to risk of inducing more aggressive behavior.<sup>(1)</sup>

The differential diagnosis of OB are aggressive OB, low grade osteosarcoma and osteblastoma-like osteosarcoma. It is extremely difficult to differentiate between these conditions and at times even impossible.<sup>(1,3,4)</sup>

Aggressive osteblastoma (AOB) is a rare tumor and is borderline between osteblastoma and osteosarcoma.<sup>(4,7)</sup> AOB affects mostly the people in the 3<sup>rd</sup> and 4<sup>th</sup> decade and is usually larger than 4 cm. It has a higher growth potential and high recurrence rate. Aspirates from AOB are highly cellular and show epithelioid osteoblasts. These epithelioid osteoblasts are two to three times larger than the conventional osteoblasts. The presence of these osteoblasts aid in differentiating between the conventional and aggressive osteblastoma. On tissue sections aggressive osteblastoma show wider and more irregular bony trabeculae lined by epithelioid osteoblasts.<sup>(1,4,7)</sup>

Smears of aspirates from osteogenic sarcoma are highly cellular showing osteoid with spindle, oval, round or pleomorphic cells. There is a high degree of cellular atypia and mitotic activity.<sup>(1,3,4)</sup>

Osteblastoma –like osteosarcoma (OBLOS) is a rare variant of osteosarcoma, accounting for about 1.1% to 1.4% of osteosarcoma. It is a low grade variety of osteosarcoma and histologically resembles OB. In OBLOS there is permeation of surrounding tissues and lack of "maturation" toward the edges, whereas osteblastoma is circumscribed and tends to show maturation peripherally.<sup>(1,4,11,12)</sup>

# CASE REPORT

---

In the present case smears showed mono and binucleated osteoblasts, fragments of benign spindle cells osteoclastic giant cells and scanty osteoid. Epithelioid osteoblast, cellular atypia, pleomorphic cells and necrosis was not seen.

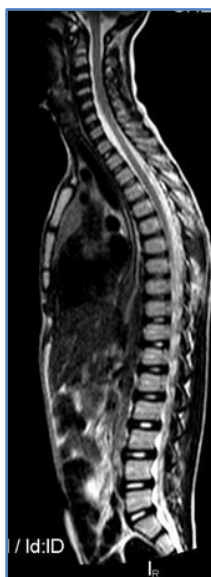
FNAC can be used as a useful preoperative tool for the diagnosis of bony lesions. The present case is a good example of cytological diagnosis of osteblastoma with histopathological correlation. FNAC plays an important role in the preoperative investigation of bone tumor provided that it is done with full knowledge of the clinical and radiological findings. This simple cost effective diagnostic procedure for preoperative definitive diagnosis of osteblastoma will help clinicians to formulate proper management protocol with reduction of postsurgical recurrences.

## REFERENCES:

1. Francesca Angiero, Pasouale mellone, Alfonso Baldi, Michele Stefani. Osteoblastoma of the jaw: Report of two cases and review of the literature. *In Vivo* 2006; 20: 665-70.
2. Young E, Dabrowski M, Brelsford K. Osteoblastoma of the nasal septum. *J Laryngol Otol* 2011; 125(10): 1062-66.
3. Michael G Rhode, David R. Lucas, Cynthia H. Krueger and Robert T Pu. Fine –needle aspiration of spinal osteoblastoma in a patient with lymphangiomatosis. *Diagn Cytopathol* 2006; 34: 295-97.
4. Khan L, Gupta MK, Singh PK, Agrawal A. Aggressive osteoblastoma of ilium: Diagnosed on FNAC. *International Journal of Case Reports and Images* 2012; 3(8): 34-38.
5. Zouheir Hafidi, Rajae Daoudi. Osteoblastoma arising from the orbital roof. *The Pan African Medical Journal* 2013; 16: 101.
6. Shu-Lin C, Hui-Wen Z, Yun-Ping F, Hong-Yan J. Osteoblastoma of the temporal bone: A recurrent case report and a review of the literature. *Indian J Otol* 2014; 20(2): 79-82.
7. Harrington C, Accurso BT, Kalmar JR, Iwenofu OH, Agrawal A et al. Aggressive osteoblastoma of the maxilla: a case report and review of the literature. *Head Neck Pathol* 2011; 5(2): 165-70.
8. Atesok KI, Alman BA, Schemitsch EH, Peyser A, Mankin H. Osteoid osteoma and osteoblastoma. *J Am Acad Orthop Surg* 2011; 19(11): 678-89.
9. Avadhanam PK, Vuyyur S, Panigrahi MK. A rare occurrence of osteoblastoma in a child. *Pediatr Neurosci* 2010; 5(2): 153-6.
10. M Rajani, Meher Prasanna R, G. Sailabala, C. Padmavathi Devi. Fine needle aspiration cytology of bone tumors and tumor like lesions with clinic pathological correlation. *Journal of Pharmacy and biological sciences* 2014; 9(4): 130-42.
11. Lucas DR. Osteoblastoma. *Arch Pathol Lab Med*. 2010; 134(10): 1460-66.
12. Bertoni F, Unni KK, McLeod RA, Dahlin DC. Osteosarcoma resembling osteoblastoma. *Cancer* 1985; 55(2): 416-26.

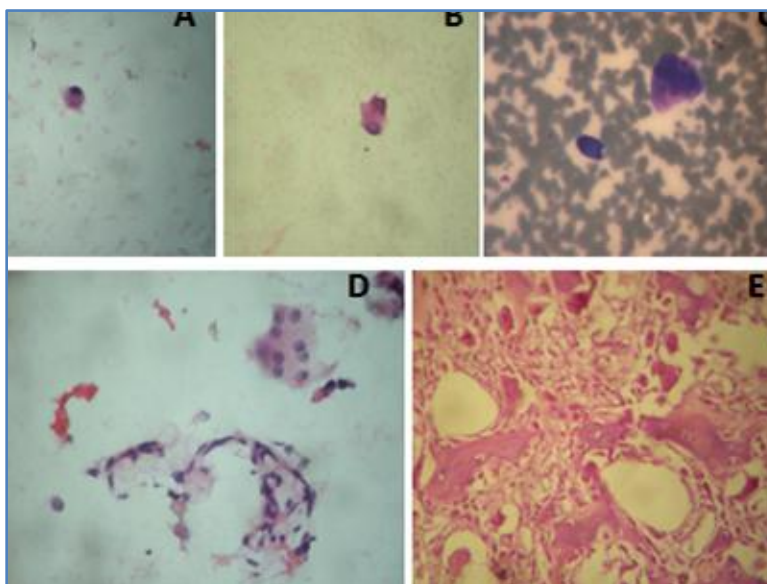
## CASE REPORT

**Fig. 1:** CT showing lytic expansile lesion of spinous processes of T7 with surrounding sclerosis.



**Fig. 1**

**Fig. 2:** FNAC smears showing mono and binucleated osteoblasts with typical plasmacytoid appearance, osteoclastic giant cells and benign spindle cell fragments. Histopathology section of osteoblastoma showing the typical features of OB: interanastomosing trabeculae of woven bone rimmed by single layer of osteoblasts and loose fibrovascular stroma and osteoclastic giant cells.



**Fig. 2**

# CASE REPORT

---

## **AUTHORS:**

1. Rekha Patil N.
2. Vijay Tote D.
3. Kamal Meherbano M.
4. Dinkar Kumbhalkar T.

## **PARTICULARS OF CONTRIBUTORS:**

1. Assistant Professor, Department of Pathology, Government Medical College, Nagpur.
2. Associate Professor, Department of Pathology, Government Medical College, Nagpur.
3. Associate Professor, Department of Pathology, Government Medical College, Nagpur.

4. Professor & HOD, Department of Pathology, Government Medical College, Nagpur.

## **NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:**

Dr. Rekha Patil N,  
Poonam Apartment,  
# 402, Dandige Layout,  
Near RCF Guest House,  
Shankar Nagar, Nagpur-440010.  
E-mail: rekhatpatil3454@yahoo.in

Date of Submission: 10/02/2015.  
Date of Peer Review: 11/02/2015.  
Date of Acceptance: 12/02/2015.  
Date of Publishing: 20/02/2015.