



CASE REPORT

Fine Needle Aspiration Cytology of Ameloblastoma

Gausia Rahim Rather, K.C. Goswami, Ruchi Khajuria, Kuldeep Singh,
Deepti Mahajan, Ghanshyam Dev*

Abstract

Ameloblastoma is the most common tumor of odontogenic origin. It is more common in the mandible than in the maxilla. It often presents as a slow growing, painless swelling. There is often delay in its diagnosis because of its slow growing nature. Fine needle aspiration cytology (FNAC) of jaw lesions is a rapid and non-invasive procedure for the initial evaluation of these lesions. It provides helpful information about them and avoids hasty and unnecessary surgical biopsy. Here we present a case of ameloblastoma diagnosed by fine needle aspiration cytology.

Key Words

Ameloblastoma, FNAC, Odontogenic Tumors

Introduction

Mandibular swellings can be caused by many benign lesions of odontogenic or non-odontogenic origin. The most common tumor of odontogenic origin is ameloblastoma which develops from epithelial cellular elements and dental tissues in various stages of development. It is a benign, yet locally aggressive intraosseous odontogenic tumor occurring most often in the mandible followed by maxilla (1). It often presents as a slow growing, painless swelling causing expansion of the cortical bone, perforation of the lingual and/or buccal plates and infiltration of soft tissue. There is often delay in the diagnosis because of its slow growing nature (2).

Fine needle aspiration (FNA) from odontogenic tumors and cysts of the jaw is undertaken infrequently, as most cystic lesions are managed surgically based on imaging (3). FNAC of jaw lesions is a rapid and non-invasive

procedure for the initial evaluation of these lesions. It provides helpful information about them and avoids hasty and unnecessary surgical biopsy (4). A few reports of FNA of ameloblastoma (5,6) have appeared in the literature. Here, we present a case of ameloblastoma diagnosed by fine needle aspiration cytology.

Case Report

A 40 year old male presented with a slowly growing left sided lower jaw swelling since one year. Dental and medical history was insignificant. There was no associated pain, difficulty in opening the mouth, chewing or articulating. On physical examination, there was a hard, non-compressible, non-tender mass measuring 6x5cm arising from the body of left side of mandible with obliteration of the vestibule. The overlying skin was normal in colour and texture and was not adherent to the

From the Department of Pathology & *Radiology Govt. Medical College Jammu- J&K India

Correspondence to : Dr. Gausia Rahim, A-4, Housing Board Flats, Sector 2, Pocket 3, Channi Himmat, Jammu J&K- India

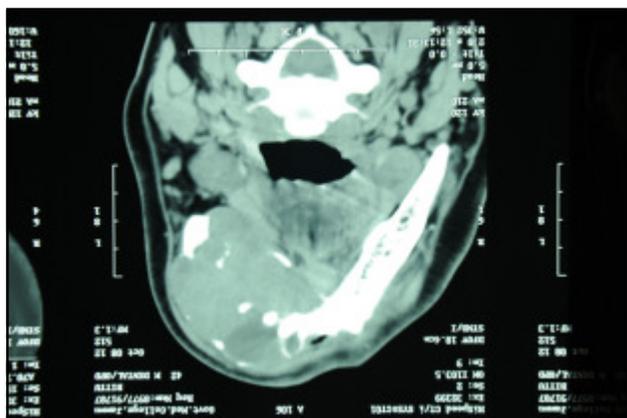


Fig. 1 CT Scan Showing Expansile Lytic Lesion Involving Ramus and Body of Mandible

underlying swelling. The oral mucosa was normal. No neck nodes were palpable. Systemic examination was normal. An orthopantomogram (OPG) was done which showed a multilocular radiolucency causing root end changes with loss of lamina dura. Intra oral periapical (IOPA) X-ray revealed a multilocular radiolucency with floating tooth appearance. Non-contrast computed tomography (NCCT) showed a well defined multilocular cystic lesion involving ramus and midline of left mandible (Fig 1). The lesion showed medial as well as lateral expansion with breach of cortex with resorption of roots of incisors and premolars.

FNA was performed using 21-gauge needle and 10ml syringe without any radiological guidance which yielded yellowish fluid. Air dried and alcohol fixed smears were prepared from the aspirated material and stained with May-Grunwald Giemsa (MGG) and Papanicolaou (PAP) stains, respectively. The smears depicted basaloid epithelial cells in sheets and clusters with scanty, poorly defined cytoplasm, elongated nuclei, finely distributed chromatin and inconspicuous nucleoli (Fig 2). One of the smears showed a large fragment depicting nests and cords of cells in a fibroblastic stroma. The cell groups showed peripheral palisading and stellate reticulum in the centre (Fig 3). No nuclear atypia or mitotic figures were evident. Based on these cytomorphological features, a diagnosis of ameloblastoma was suggested on FNAC, in

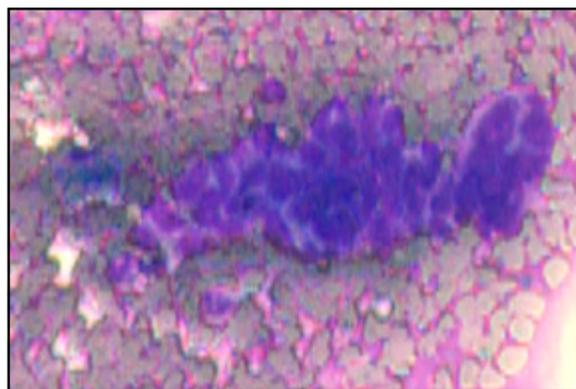


Fig. 2. Showing a Cluster of Basaloid Epithelial Cells Depicting Scanty Cytoplasm, Fine Chromatin and Inconspicuous Nucleoli (MGG x 400)

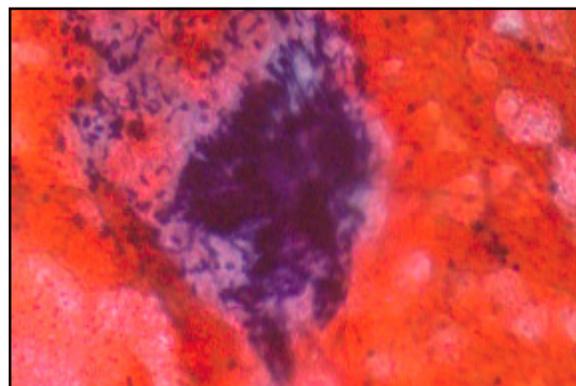


Fig. 3 Showing A Cellular Fragment With Peripheral Palisading And Stellate Reticulum In The Centre Fibroblastic Stroma Is Also Present (Pap X 200)

correlation with clinical and characteristic radiologic findings.

Discussion

Ameloblastoma is an uncommon borderline, locally aggressive, odontogenic neoplasm commonly seen in the 3rd to 5th decades (1). The tumor shows a high predilection for the mandible. Clinically, it frequently manifests as a painless swelling. Radiology and location are key factors to diagnose ameloblastoma correctly. Plain radiograph, panoramic radiographs, computed tomography (CT) and magnetic resonance imaging (MRI) are used as diagnostic tools. Findings may include expansion of cortical plate with scalloped margins, multiloculations or soap bubble appearance with root resorptions (7).



FNAC is not usually the first diagnostic method in these lesions, probably due to the fact that an incisional biopsy is easily and rapidly carried out. Nevertheless, the cytological study can be very useful in cases of metastatic disease or in the follow up of possible recurrences (8,9). Also a prior cytological diagnosis ensures adequate excision with uninvolved margins which definitely prevents recurrence (3). Despite its intraosseous location, ameloblastoma is amenable to FNA, because the tumor often causes marked thinning of overlying cortex. Cytology reveals components of the lesion with a characteristic combination of epithelial cells of basaloid appearance with focal peripheral palisading of tumor cells, squamous metaplastic cells and cells resembling stellate reticulum (10,11,12).

In the present case, the lesion involved the ramus of the mandible which is the most common location of ameloblastoma. The radiological features depicting a multilocular radiolucency were also characteristic of ameloblastoma. The cytological examination revealed clusters of basaloid epithelial cells. In addition, a microfragment was seen depicting nests of cells in a fibroblastic stroma. These cell groups showed peripheral palisading (with nuclei oriented away from the basement membrane) and stellate reticulum in the centre. These classical FNAC findings in correlation with clinical and radiological picture were highly suggestive of ameloblastoma.

Ameloblastic fibroma is a primary intraosseous tumor that should be distinguished from ameloblastoma. Both tumors show predominance of basaloid cells with peripheral tumor cell palisading. Ameloblastic fibroma, however, has more stromal fragments than ameloblastoma (13). Ameloblastoma also needs to be differentiated from other basaloid cell tumors involving jaw and other odontogenic tumors, which occur in early teenage years as a well circumscribed radiolucency usually associated with malpositioned and unerupted teeth

arising mostly in posterior mandible (1). Clinical, radiologic and FNAC features of a case of ameloblastoma of left lower jaw have been presented. A reliable preoperative FNA diagnosis of the tumor, in most cases, helps the surgeon plan the surgery in a better manner.

References

1. Zarbo RJ. The Jaws and Oral Cavity. In: Mills SE, ed. Sternberg's Diagnostic Pathology, 5th Edn 2010. pp. 807-10
2. Ghandhi D, Ayoub AF, Anthony M, MacDonald G, Brocklebank LM, Moos KF. Ameloblastoma: a surgeon's dilemma. *J Oral Maxillofac Surg* 2006; 64: 1010-14
3. Bisht S, Kotwal SA, Gupta P, Dawar R. Role of fine needle aspiration in preoperative diagnosis of ameloblastoma. *Ind J Cancer* 2009; 46(4): 348-50
4. Anchinmane VT, Rupani AB, Shedge RT, Kavishkar VS. Diagnosis of ameloblastoma of mandible by fine needle aspiration cytology. *Bombay Hospital J* 2011; 53: 484-86
5. Ramzy I, Aufdemorte TB, Duncan OL. Diagnosis of radiolucent lesions of the jaw by fine needle aspiration biopsy. *Acta Cytol* 1985; 29: 419-24
6. Mathew S, Rappaport K, Ali SZ, Busseniers AE, Rosenthal DL. Ameloblastoma. Cytologic findings and literature review. *Acta Cytol* 1997; 41(4): 955-60
7. Minami M, Kaneda T. Ameloblastoma in the maxillomandibular region: MR imaging. *Radiology* 1992; 184: 389-93
8. Levine SE, Mossler JA, Jhonston WW. The cytologic appearance of metastatic ameloblastoma. *Acta Cytol* 1981; 5: 295-96
9. Parate SN, Anshu, Helwatkar SB, Munshi MM. Cytology of recurrent ameloblastoma with malignant change. A case report. *Acta Cytol* 1999; 43: 1105-07
10. Choudhury M, Dhar S, Bajaj P. Primary diagnosis of ameloblastoma by fine needle aspiration: a report of 2 cases. *Diagn Cytopathol* 2000; 23(6): 414-16
11. Ucok O, Dogan N, Ucok C, Gunhan O. Role of fine needle aspiration cytology in the preoperative presumptive diagnosis of ameloblastoma. *Acta Cytol* 2005; 49(1): 38-42
12. Radhika S, Nijhawan R, Das A, Dey P. Ameloblastoma of the mandible: diagnosis by fine needle aspiration cytology. *Diagn Cytopathol* 1993; 9(3) 310-13
13. Kumar N, Jain S. Aspiration cytology of ameloblastic fibroma: a diagnostic challenge. *Diagn Cytopathol* 2003; 29(2): 101-04