

Follicular Ameloblastoma with emphasis on correlation between pathological findings and clinical behaviour

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ABSTRACT

Ameloblastoma constitutes a homogenous group of neoplasm with mandible as a common site of occurrence in head and neck region. Histologically it appears in different patterns with follicular and plexiform as common one. We hereby report a case of 47 year old male with emphasis on correlation between histological findings and clinical behaviour of lesion. Regular follow up of patients should be carried out to predict the behaviour of this tumour and to ascertain histopathologic correlation to biological behaviour of the tumour.

Key Words: Ameloblastoma, follicular, odontogenic, tumour

Introduction

Ameloblastoma is a neoplasm of odontogenic epithelium, especially of enamel organ-type tissue that has not undergone differentiation to the point of hard tissue formation. It has been very aptly described by Robinson as being a tumor that is usually unicentric, non-functional, intermittent in growth, anatomically benign and clinically persistent. It is the second most common odontogenic neoplasm. [1, 2]

The term Ameloblastoma was suggested by Ivy and Churchill in 1934 based on odontogenic epithelial etiology. [3] Small and Waldron found that average age of patients at the time of diagnosis was 38.9 years. Most patients are between the ages of 20 and 50 years. Males are affected more than females. About 80% of the tumors occur in the mandible, generally in the molar region. [4] The signs and symptoms of ameloblastoma are minimal for a period of several years. The average time frame from onset of swelling until medical treatment is sought is 6 years, by which time the

swelling and growth of tumor may disfigure the jaw. [5]

According to classification of odontogenic tumors approved by WHO in 2003, ameloblastoma falls under the category of 'Benign Neoplasm and Tumor-like lesions arising from the Odontogenic apparatus showing odontogenic epithelium with mature fibrous stroma, without ectomesenchyme'. According to Reichart four variants of ameloblastoma are solid multicystic ameloblastoma (SMA), unicystic ameloblastoma (UA), peripheral ameloblastoma (PA), desmoplastic ameloblastoma (DA). Based on histopathology SMA is further classified into: follicular, acanthomatous, granular cell, basal cell, and plexiform. [6] Follicular ameloblastoma is most commonly encountered variant. [7] We, hereby report a case of 47 year old male with emphasis on correlation between histological findings and clinical behaviour of lesion.

Case Report

An A 47 year old male reported, with the chief complaint of swelling on the right side of face. Patient was apparently asymptomatic 1 year back, when he noticed a painless swelling on the right side of the face. (Fig.1)



Fig. 1 extra oral swelling on right side of the body of mandible

He consulted a dentist and underwent extraction of 44, 45, 46. The swelling gradually increased in size and radiographic

examination along with FNAC was performed in private clinic. The details of FNAC were not available. No paraesthesia of lower lip was present. General physical examination revealed that the patient was moderately built and nourished. All the vital signs were within normal limits. Extraoral examination revealed a diffuse swelling in the right mandibular body region approximately 6x5 cm in dimension. On palpation, margins were well defined, bony hard and non tender. None of the lymph nodes were palpable.

Intraoral examination revealed a swelling on the right side of mandible extending from 43 to 48 region. The swelling was soft on palpation with obliteration of buccal vestibule and indentations over the lesional site from the teeth of opposing arch. (Fig.2 and 3)



Fig. 2, 3 Intraoral photograph depicting swelling on right side of mandible

On roentgenographic examination, well defined, round, unilocular radiolucency

approximately 6×3 cm in dimension extending from 42 to 48 region was observed. Knife edge resorption of mesial and distal root of 47 can be seen. (Fig.4)



Fig. 4 Orthopantomograph revealing well defined round unilocular radiolucency extending from 42 to 48 region

Upper occlusal view radiograph revealed expansion of buccal cortical plate and slight expansion of lingual cortical plate (Fig.5).



Fig. 5 Standard upper occlusal radiograph

An incisional biopsy was performed and the tissue was submitted to the department of Oral pathology. A touch imprint was prepared from the tissue received which showed cluster of columnar cells, which were basophilic. (Fig.6)

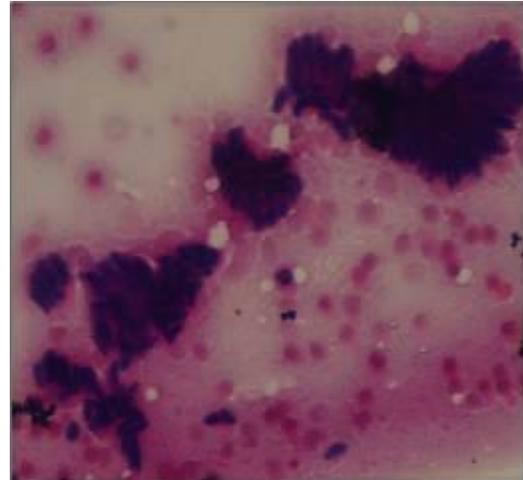


Fig. 6 Touch imprint showing cluster of odontogenic epithelial cells. (PAS stain, X40)

The cells were spindle shaped in some areas. A uniform background of eosinophilic polygonal cells with faint nuclei was noted. Three soft tissue bits, creamish white in colour, oval to conical in shape with irregular margins, soft in consistency of size 1.5×0.8 cm, 1.2× 0.5cm, 2× 0.5cm, were submitted. (Fig.7)



Fig. 7 Gross photograph of three soft tissue bits

On microscopic examination, the H & E section studied showed ameloblastic follicles with tall columnar cells at the periphery which were pre-ameloblastic in nature with reverse polarity & stellate reticulum like cells in the centre undergoing cystic degeneration. The connective tissue stroma is mature in nature. (Fig. 8, 9, 10)

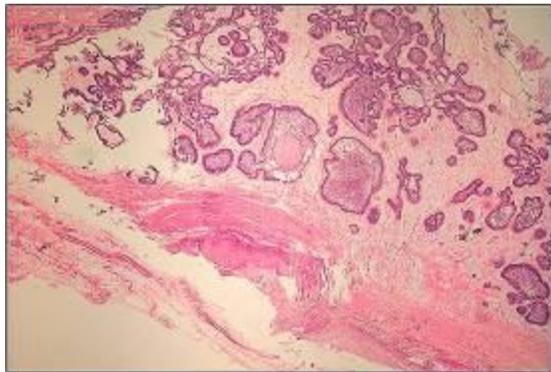


Fig. 8 Photomicrograph showing ameloblastic follicles and follicles with cystic degeneration in the centre. (H & E, Scanner view)

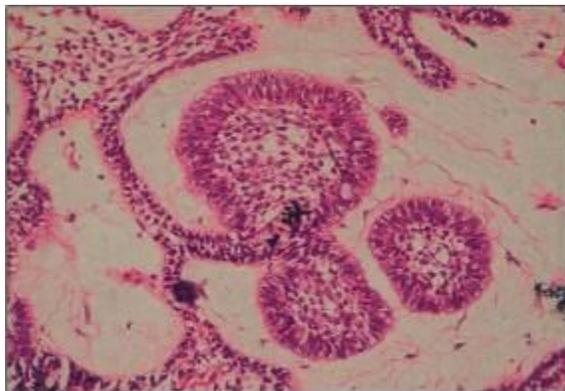


Fig. 9 Photomicrograph showing ameloblastic follicles with tall columnar cells at the periphery with reverse polarity. (H & E, Magnification X10)

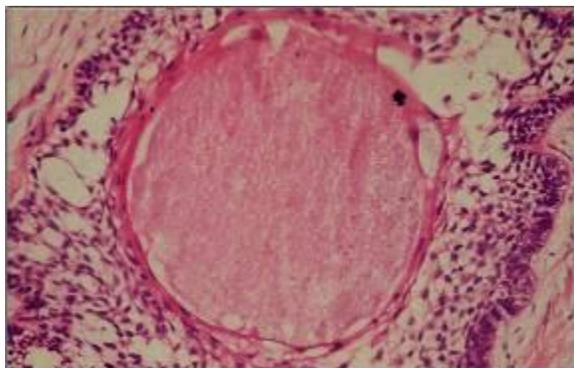


Fig. 10 Photomicrograph showing cystic degeneration inside follicle. (H & E Magnification X40)

Final diagnosis of follicular variant of ameloblastoma was given based on

available clinical and histopathological evidences.

Discussion

Ameloblastoma(OA) of the jaws is a rare neoplasia of oral cavity (0.78%).^[8] It represents 1% of all tumors and cysts that involve maxillomandibular area and about 10% of odontogenic tumors. It is a rare neoplasm notorious for having slow growth and frequent relapses and the main therapeutic modality is surgery.^[3] Small and Waldron found that average age of patients at the time of reporting to the hospital was 38.9 years. Most patients are between the ages of 20 and 50 years. Males are affected more than females. About 80% of the tumors occur in the mandible, generally in the molar region.^[4] In our case, male patient of 47 years having swelling in molar ramus area of the mandible was seen which was consistent with the data given in the literature. Tumor size can vary from 3-24 cm.^[7] According to Claudin et al the majority of the patients of ameloblastoma are asymptomatic and symptoms appear with tumoral expansion. Tumor involves both the buccal and lingual cortical plate. Bone tends to expand with growth of tumor and the roots of the teeth in the affected area shows resorption.^[5] In the case reported here, the patient was asymptomatic having painless swelling on right side of molar ramus area showing buccal cortical plate expansion and slight lingual cortical plate expansion and on radiographic examination root resorption of mesial and distal roots of 47 was also noticed.

It has been postulated that the epithelium of origin is derived from one of the following sources: (1) cell rests of the enamel organ, (2) epithelium of odontogenic cysts, (3) disturbances of the

developing enamel organ, (4) basal cells of the surface epithelium or (5) heterotropic epithelium in other parts of the body.^[1] Of all the subtypes of ameloblastoma, follicular ameloblastoma is most common one^[7] and in our case patient is also diagnosed for the same subtype. Follicular pattern simulates the developing dental follicle and the enamel organ by arranging the epithelial cells to resemble stellate reticulum. Clinically, the tumor may exhibit tiny cysts where the stellate reticulum like cells have undergone cystic degeneration, a common occurrence in follicular pattern.^[9] According to Chappel and Manogue, follicular ameloblastoma consists of discrete follicles with similarity to the stellate reticulum of enamel organ and with the varying quantity of conjunctive tissue stroma. The covering epithelium is columnar or cuboidal with nuclei positioned opposite the basement membrane.^[9] Our findings also agreed with the data given in the literature. Follicular ameloblastoma is characterised by higher recurrence rate (29.5%) compared to plexiform ameloblastoma (16.7%) and ancanthomatous ameloblastoma (4.5%).^[7]

Lucas and Thackray (1952) attribute the formation of intrafollicular cystic cavities to a deficiency in absorption and diffusion of nutritive elements (coming from the perifollicular blood capillaries) to the centre of the cellular islands, causing their degeneration by nutritive insufficiency, since the neoplastic growth causes extremely large follicles. However, this same central degeneration could have been caused by the polarization of the nuclei at the cellular end facing the stellate reticulum. This probably causes the cells of the peripheral layer of the follicles to remove nutritive elements from the interior of these cellular islands and not from the connective tissue facing the other cellular

extremity. This nutritive competition can cause metabolic deficiencies for the cells of the stellate reticulum, which can explain the degeneration of the central cells of the islands and the consequent formation of cystic cavities in its interior.^[10]

Follicular ameloblastoma is the most common histopathological variant of ameloblastoma. It occurs more frequently in males, usually in the 3rd - 4th decade of life. The current case presented in middle aged male and the diagnosis was based on the clinical and histopathological examination. A proper follow up of more cases is essential to ascertain whether this histopathological diagnosis is implicated in the increased regional recurrence of the tumor.

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