Central Ossifying Fibroma

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ABSTRACT

Central ossifying fibromas are benign fibro osseous neoplasms affecting the jaws and the craniofacial skeleton. It is a rare entity among fibro osseous lesion and thought to originate from the periodontal ligament. In the past, this type of lesion was subclassified histologically into ossifying fibroma and cementifying fibroma according to the hard tissues formed, but both types are now known by the unified term, ossifying fibroma. Herein, we report a case of a central ossifying fibroma in a 21 years female patient. The patient presented with swelling in her left anterior mandibular region. The diagnosis was given on the basis of clinical and radiological findings; and was confirmed by histological diagnosis.

Keywords: Cementifying fibroma; central ossifying fibroma; fibro osseous lesion.

INTRODUCTION

Ossifying fibroma is a benign fibro osseous lesion that demonstrates a well demarcated proliferation of cellular fibrous tissue with varying amounts of osseous products including bone, cementum or a mixture of both.[1] Although it has been categorised under fibro osseous lesions including the orofacial region, it behaves like a benign bone neoplasm. World health organization (WHO) in 1972 classified it in two types as ossifying fibroma and cementifying fibromas; but in 1992 WHO considered it under one heading as cementoossifying fibroma. Further, the term "cementossifying fibroma" was replaced by "ossifying fibroma" in 2005 and in 2017 WHO classification of head and neck tumor.[2,3] The origin of central ossifying fibroma (COF) is thought to be the periodontal ligament. Some ossifying fibromas do, in fact, contain prevalent cementum like calcifications and others show only bony material, but a mixture of the two types of calcification is commonly seen in a single lesion.[4]

CASE REPORT

A 21 years old female patient presented with chief complaint of swelling in left lower front region of jaw for 2 weeks. Swelling was gradual on onset associated with mild pain and no history of discharge. Pain was dull aching in nature, non-radiating, relieved by taking analgesics. On extraoral examination no gross facial asymmetry was detected. The lymph nodes were not palpable. On intraoral examination swelling of about 3.5cm x 2cm in left region of mandible from 31 to 34 obliterating labial vestibule was present (Figure 1).

Figure 1: Intraoral presentation with swelling in left anterior mandibular region.

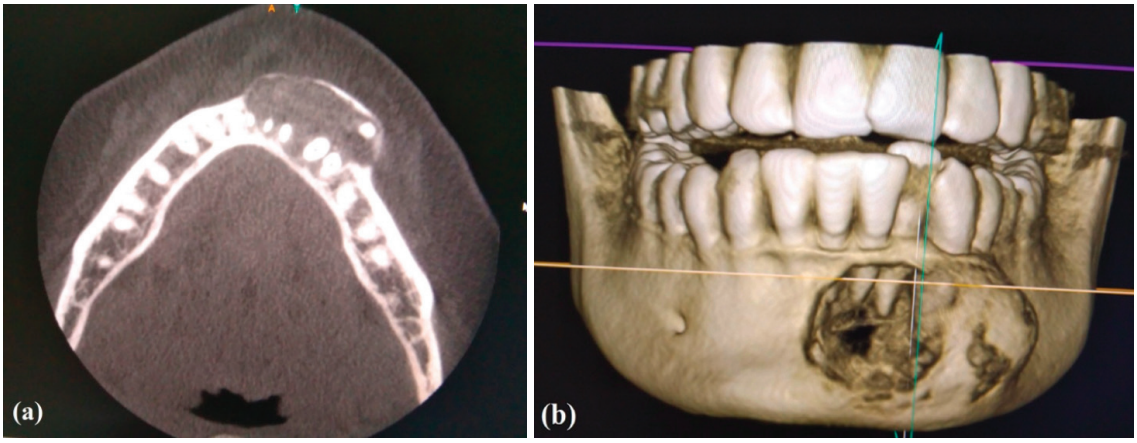

Figure 2: Cone beam computed tomography (a) axial view showing unilocular radiolucent region with foci of radiopacity (b) 3D reconstruction showing expansion of buccal cortical plate with perforation.

No visible mucosal changes, discharge or ulceration was noted. The aspiration was negative. On palpation the swelling was bony hard, non-tender, non-fluctuating. All the teeth in the area of lesion were vital. There was no mobility and displacement of any tooth associated with the lesion.

On radiographic examination cone beam computed tomography revealed unilocular radiolucent lesion having well-defined borders with foci of radiopacities involving 41, 31, 32, 33, and 34 was noted (Figure 2a). Expansion of buccal cortical plate with perforations at different levels was present. Small area of perforation of lingual cortical plate could also be appreciated. Root resorption and displacement was not noted (Figure 2). Based on clinical and radiographic findings provisional diagnosis of fibro osseous lesion was given.

Incisional biopsy of the lesion was performed which revealed tumor mass composed of irregular bony trabeculae chiefly comprising of woven to lamellate bone having osteoblastic rimming and osteocytes present within lacunae. The intervening connective tissue was highly cellular with delicate interlacing collagen fibers interspersed by plump fibroblast arranged in whorled pattern (Figure 3). Few mutinucleated giant cells having 2-4 nuclei could also be noted in the connective tissue stroma. Small area of the tumor also revealed cementum like calcification. No mitotic figures and cellular pleomorphism was appreciated.

Based on clinical features, radiographic findings and histopathological features final diagnosis of COF was given. The segmental ressection of mandible with reconstruction was done.

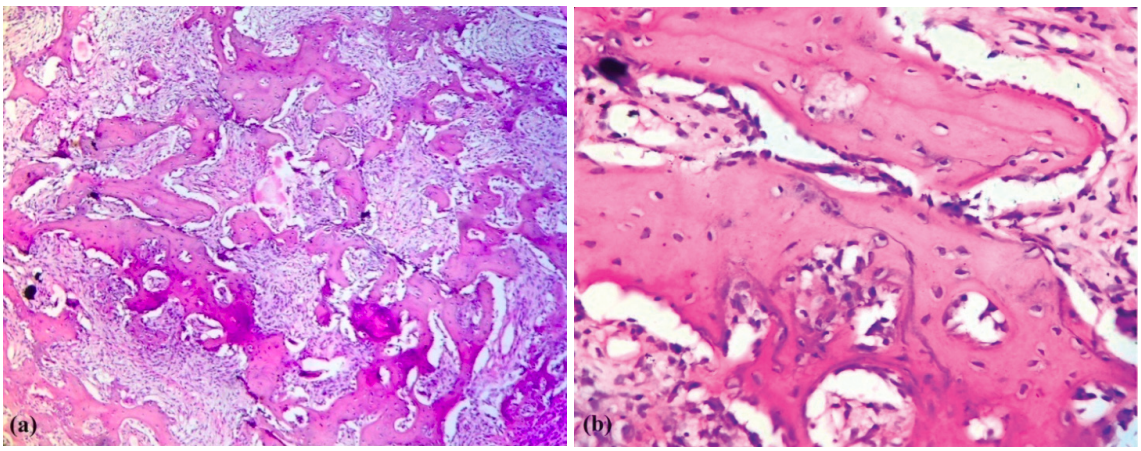

Figure 3: Photomicrograph showing (a) irregular trabeculae of woven bone surrounded by highly cellular stroma [H and E X100] (b) trabeculae of woven bone having osteoblastic rimming with osteocytes present within the laculae [H and E X400].

DISCUSSION

The central ossifying fibroma is considered a rare, benign fibro osseous lesion and true neoplasm with a significant growth potential.[5] COF is a rare entity among fibro osseous lesions. The peak incidence is in the third and fourth decades of life. There is a definite female predilection, with a female to male ratio as high as 5:1. In the present case also the patient was young female.[3] COF occurs exclusively in the tooth bearing areas of the mandible and maxilla. The mandible is far more commonly involved than the maxilla. The mandibular premolar and molar area is the most common site and in the present case also the lesion was manifested on the mandibular incisor to premolar region.[3]

Most cases of COFs are asymptomatic, with the first clinical manifestation being a slow growing expansion of buccal and lingual cortical plates, which produces a marked extraoral facial asymmetry. The case presented herein showed clinical features which were similar to those previously reported although facial asymmetry was not very significant.[6]

Radiographically, COF presents as well-defined unilocular, round or oval lesion similar to the present case. Larger tumor may have multilocular radiographic appearance. In some cases the lesions are seen to be associated to root resorption and displacement of the roots of the neighboring teeth however these features were not noted in the present case.[7] One important radiographic feature of COF which helps in distinguishing it from other benign fibro osseous lesions is that it is more well circumscribed which was also present in our case. Mac Donald Jankowski had described three stages in the radiographic appearance of COF. The initial appearance is radiolucent which becomes mixed and finally progresses to radiopaque as the stroma mineralises. Individual radiopacities coalesce to the extent that the mature lesion may appear sclerotic.[8]

The aetiology of ossifying fibroma is unknown but its origin has been suggested of odontogenic, developmental and traumatic. It is thought to be of periodontal ligament origin because of its capacity to produce cementum and osteoid material. Ossifying fibroma is said to develop from the multipotential mesenchymal cells of periodontal ligament origin which are able to form both bone and cementum.[2]

Histopathologically, COF shows a well vascularised fibrocellular connective tissue with immature bony trabeculae and cementoid. The morphology is benign, with very little proliferative activity and the absence of atypia or necrosis.[9] Present case also had similar findings of areas of immature bone and cementum like tissue in the highly cellular connectivetissue stroma.

Because of the overlapping histologic features, the diagnosis of the individual lesions in the fibro osseous lesion group poses a difficulty. The COF can be differentiated from fibrous dysplasia as it occurs in early age which is the first and second decades.[9] In fibrous dysplasia, the lesion merges with the surrounded area having expansion of cortex in linear fashion rather than centrifugal growth pattern of COF.[8,9] In the present case the lesion was well circumscribed and the growth was centrifugal. The major differentiating point in distinguishing ossifying fibroma from periapical cemental dysplasia is the teeth vitality. Also periapical cemental dysplasia shows multifocal origin in contrast to ossifying fibroma.[2] In the present case, although the teeth were vital the lesion was unifocal rather than multifocal.

Ossifying fibromas comprises entities with different morphological features that can be mistaken for other benign fibro osseous lesions. The similarity and overlapping microscopic characteristics requires the multidisciplinary approach comprising the reliable clinical, radiological and pathological aspects for the correct diagnosis.

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