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Case report

Osteochondroma of the mandibular ramus: Report of a rare case

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ABSTRACT

Osteochondroma or osteocartilaginous exostosis is characterized by a cartilage-capped osseous projection protruding from the surface of the affected bone. Incidence in the general population is reported as 1%. It occurs in adolescence or young childhood, with 80% of cases being in first 2 decades of life. Here we report a case of osteochondroma in a 64-year-old female who presented with large tender bony hard growth on the inferioposterior aspect of right ear. The imaging studies using computed tomography and magnetic resonance imaging showed a large calcified mass of size with irregularly lobulated contour arising from the posteriosuperior aspect of ramus involving the condyle with an apparent continuation with cortex and medullary space giving the diagnosis of osteochondroma. The histopathologically lesion was composed of immature bony tissue with a cartilagenous cap, confirming the diagnosis of osteochondroma. Tumor was resected under general anesthesia. No recurrence was found till date i.e. 18 months.

1. Introduction

Osteochondroma (OC), also known as osteocartilaginous exostosis, is one of the most common benign tumors of long bones but is rarely found in the facial skeleton [1]. It usually occurs in the axial skeleton, especially long bones, such as the distal metaphysis of the femur or the proximal metaphysis of the tibia [2]. OC may occur on any bone that forms by endochondral ossification and has also been reported in nearly every part of the craniofacial skeleton that is embryologically derived from a pre-existing cartilage model, such as the mandibular condyle, coronoid process, body, angle, symphysis, zygomatic arch, cranial base, maxilla, maxillary sinus, and nasal septum [3]. The etiology and pathogenesis of this lesion not fully understood yet and neither is its development and neoplastic or reparative nature [3,4]. We report an unusual case of solitary OC in the right posterior ramus region displacing the condyle, without producing any facial asymmetry or defect in occlusion.

2. Case report

A 64-year-old female patient reported to the Govt. Dental College Trivandrum with a complaint of pain and swelling below the right side of the ear for past 2 years. She reported progressive reduction in vertical opening, but did not notice facial asymmetry for the past 2 years. The patient did not reveal any history of trauma. The patient's past medical history included episodic attacks of migraine. Clinical examination revealed no facial asymmetry. There was a bony hard swelling of diameter 3 cm on the inferioposterior aspect of right ear. Borders were well defined. There was tenderness on palpation. On mouth opening there was slight deviation of mandible to the right side. Occlusion appeared to be apparently normal. Multiple teeth were missing which include 18, 16, 13, 26, 36, 37, 38, 46 and 48. Preoperative serum calcium and alkaline phosphatase levels were within normal limits.

Radiographic examination by Panoramic (Fig. 1) and Townes (Fig. 2) view revealed a bony mass on the right mandibular ramus extending to the condylar region. Axial CT image showed a well defined irregular exophytic lesion arsing from the right mandibular ramus region with few hypodense areas within it possibly the chondroid matrix. The cortex and the medulla of the lesion are seen in continuous with the ramus of the mandible which is suggestive of osteochondroma. Posteriorly surrounding the lesion there is an ill defined rim of soft tissue density seen with no calcifications within, possibly the cartilage cap (average thickness 3 mm) (Figs. 3 and 4). The lesion was extending superiorly into glenoid fossa, inferiomedially projecting into fat in the pre-styloid

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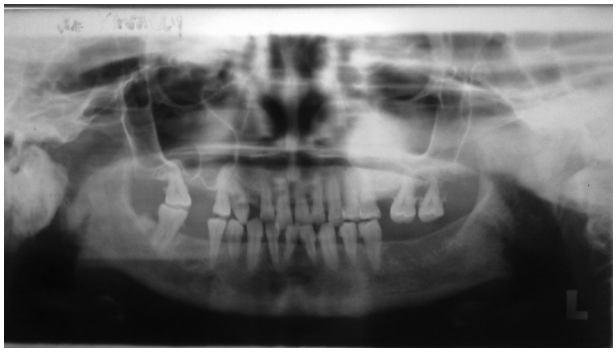

Fig. 1. Panoramic view. Radiograph shows a bony mass on the mandibular ramus extending to the condylar region.

compartment of parapharyngeal space, laterally into parotid space. No areas of frank destruction were seen. Axial T1 weighted MRI image showed an irregular well defined lesion at the level of right mandibular condyle which is showing signal intensity similar to that of bone marrow in the center, surrounded by an iso to hyperintense rim with few hypointense areas, predominantly in the posterior aspect of average thickness ~3 mm possibly the cartilage cap. Anteriorly there is a hypointense rim suggestive of bone. The lesion is seen displacing the adjacent parotid gland laterally, medially it is seen displacing the carotid vessels and the parapharyngeal fat (Figs. 5 and 6). The imaging studies gave the diagnosis of osteochondroma. Tumor was resected along with condylectomy under general anesthesia. The histopathological examination revealed a nodular lesion with endochondral ossification progressing beneath

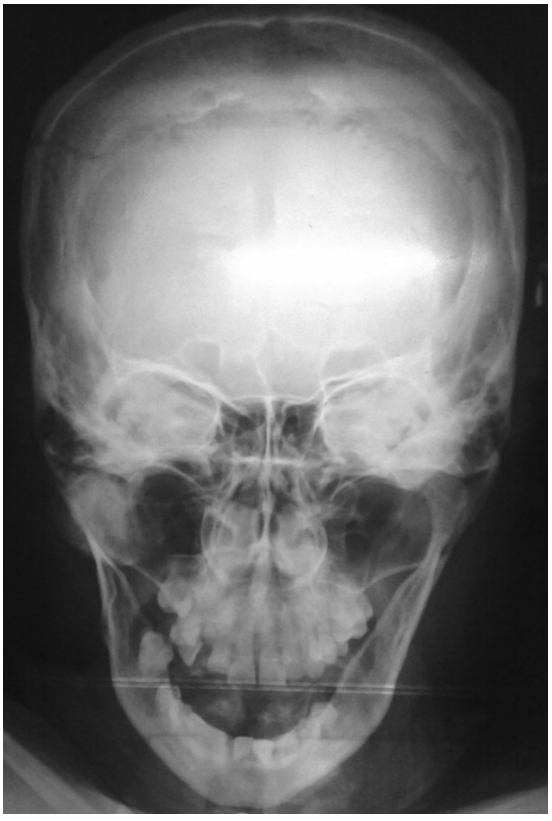

Fig. 2. Townes view. Radiograph reveals a bony mass on the ramus involving the condyle.

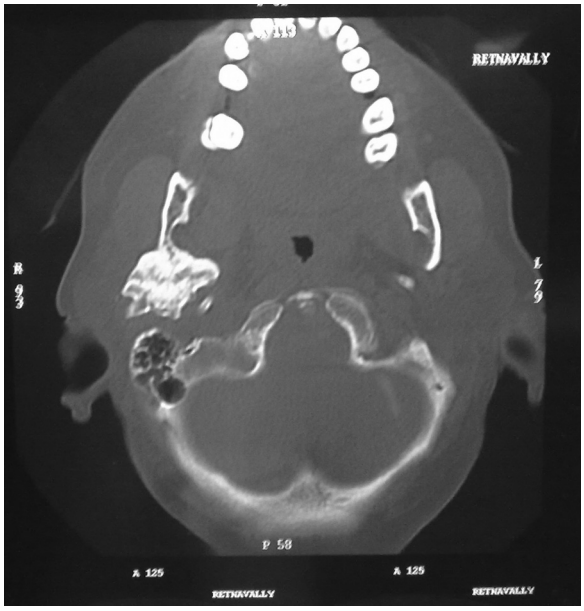

Fig. 3. Axial CT image. CT shows a well defined irregular exophytic lesion arising from the right mandibular condyle with cortex and the medulla of the lesion seen in continuous with the ramus of the mandible.

the cartilaginous cap confirming the diagnosis of osteochondroma (Fig. 7). No recurrence was found till date i.e. 18 months.

3. Discussion

Osteochondroma is often defined as a cartilage capped bony protrusion on the external surface of a bone. Despite a neoplastic designation, there had been a common tendency to consider these lesions as developmental aberrations rather than as neoplasms [1,5,6]. Virchow in 1891 was the first to relate bony osteochondromas with the epiphysial cartilage [7]. Keith in 1920 had suggested that a hypothetical defect in the thin cortical sleeve results in spillage of epiphyseal cells onto the metaphysic [8]. A predilection of osteochondromas to arise at the site of tendon insertions was explained due to the fact that focal accumulation of embryonic connective tissue with cartilaginous potential often occur at these points [3]. Continued stress and strains may also cause hyperplastic changes in these cells [3]. Langenskiold postulated that 'osteochondromata' occur when limited portions of the undifferentiated cell layer of the growth cartilage are displaced toward the metaphysic peripherally [9]. Lichtenstein's theory favored a neoplastic origin for osteochondroma, but did not attribute it to the growth cartilage [10]. He suggested that periosteum had an inherent potential to form chondroblasts and osteoblasts, and a perverted activity of the periosteum to form metaplastic cartilage lead to formation of osteochondromas. In fact, Muller in 1914 observed clusters of cartilage cells in the metaphyseal enchondral bones in adults with hereditary multiple exostosis and thus suggested that these were derived from the periosteum [11].

With regard to craniofacial osteochondromas, some investigators believe the hypothesis of residues from the cartilaginous primordial cranium to that of pluripotential periosteal cells being the precursor of these lesions. A relatively high frequency of osteochondromas around the temperomandibular joint (TMJ) can be easily explained embryologically, as it is considered that the region from the mandibular lingula to the anterior process of the malleus is derived from the part of Meckel's cartilage not replaced by mandibular bone and that remnants of this embryonic tissue may still persist in that region [12,13].