CASE REPORT

Giant Cell Reparative Granuloma (Central) of Maxilla: Case Report and Review

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Abstract

Term Giant Cell Reparative Granuloma (GCRG) a non-neoplastic lesion characterized by a proliferation of granulation tissue containing numerous multinucleated giant cells was introduced by Jaffe in 1953 to describe an apparently reactive intraosseous lesion of the mandible and maxilla following trauma induced intraosseous hemorrhage. It is a disease of the young presenting as a painless swelling in the anterior jaw. It appears on radiology as a unilocular or multilocular radiolucency with a characteristic tendency of resorbing the root tips of adjacent unerupted teeth. A central giant cell granuloma of the maxilla is presented, which was diagnosed in a seventeen-year-old male and surgically treated.

Keywords: Granuloma, Giant cell.

INTRODUCTION

Term giant cell reparative granuloma (GCRG) was introduced by Jaffe in 1953 to describe an apparently reactive intraosseous lesion of the mandible and maxilla following trauma induced intraosseous hemorrhage and containing prominent giant cells. Prior to that time most authors considered this lesion to be a variant of the benign giant cell tumor of the long bones, or a giant cell variant of osteitis fibrosa.[1] GCRG is a disease of the young presenting as a painless swelling in the anterior jaw and radiographically appearing as a lytic expansile lesion with a characteristic tendency of resorbing the root tips of adjacent unerupted teeth. The diagnosis must be made by physical examination, history, laboratory, and radiological parameters. Localized maxillary swelling is the most important clinical feature. The swelling is smooth and palpation can reveal a rubbery, elastic sensation where bone has been thinned. Conservative surgical management is indicated. Radiation is not indicated because of long-term risks. Steroids have been proven useful.[13]

CASE

A 17-year-old male patient presented with a swelling on the right side of the face since three months. The swelling was reported to be insidious in onset and had progressed slowly from a small lesion to the present size. It was also reported that two of his anterior teeth had pain three weeks back. The patient gave a history of trauma of anterior teeth three years back. The swelling was not associated with any systemic symptoms. There was no paraesthesia or nasal discharge. Medical history and family history were noncontributory.

Facial examination revealed a diffuse swelling on the right side of the face (Fig. 1) causing obliteration of naso-labial fold resulting in facial asymmetry. The overlying skin was normal. The swelling had no localized elevation of temperature. There was no associated lymphadenopathy.

Intraoral examination revealed a fair oral hygiene and a full complement of teeth. There was a swelling in the sublabial aspect extending from the midline in relation to the upper right central incisor to the first molar posteriorly obliterating the labial sulcus. It had a smooth surface with no evidence of fluctuation on palpation (Fig. 2). Swelling did not extend palatally and was non-tender and hard on palpation. Computed tomography (CT) scan (Fig. 3) of the lesion at the level of maxillary sinus in the coronal section showed a radiolucent lesion arising from inferior aspect of the right maxilla with no areas of calcification. The lesion caused superior displacement of the floor and obliteration

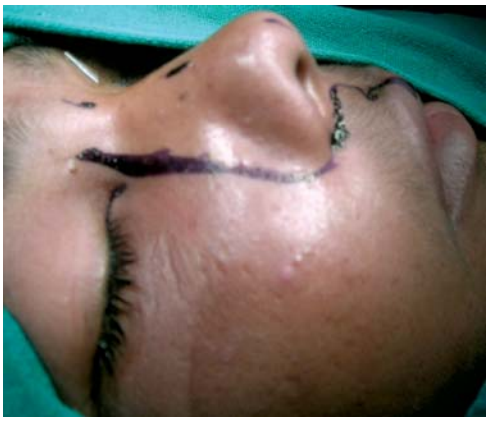

Fig. 1: Right facial swelling

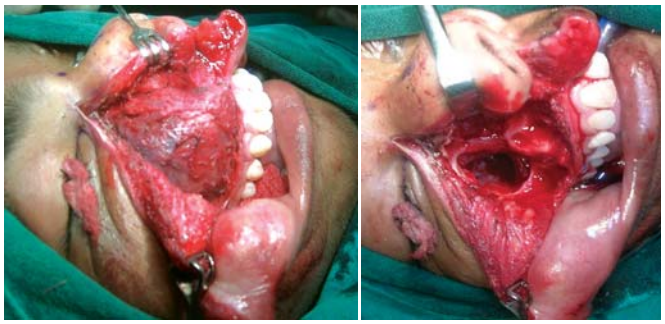

Fig. 2: Peroperative photograph

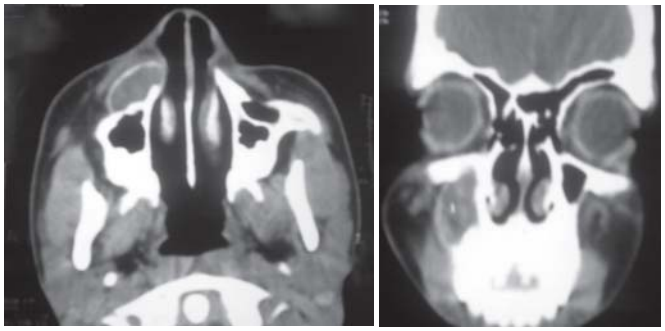

Fig. 3: CT Scan of maxilla (axial/coronal)

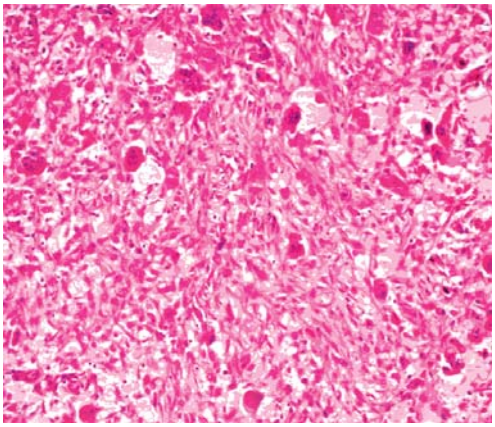

Fig. 4: High-power photomicrograph showing numerous multinucleated giant cells (H/E X 40)

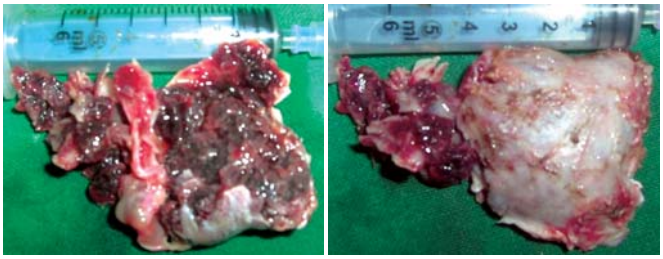

Fig. 5: Photograph of the specimen appearing brown in color

of cavity of the maxillary sinus without causing gross destruction. The floor of the nasal fossa was intact. Axial CT scan showed radiolucency with a corticated margin.

Intraoral aspiration of the lesion was attempted with a 20-gauge needle under local anesthesia, but it did not yield any aspirate.

After the investigations were carried out, we ruled out radicular cyst, and fibrous dysplasia. An unproductive aspirate ruled out cystic lesions. The absence of characteristic ground glass appearance in the radiograph and presence of a radiolucent lesion in both coronal and axial CT scans eliminated fibrous dysplasia from the diagnosis.

Incisional biopsy was done from the intraoral site, from the labial aspect, under local anesthesia. Histopathologic examination (Fig. 4) revealed numerous multinucleated giant cells, which were distributed in a stroma that was highly cellular comprising both spindle-shaped and round cells and were found mostly in the areas of hemorrhages. The giant cells were numerous and distributed randomly, the nuclei mainly confined to the center of the cells leaving a clear zone of cytoplasm at the periphery. Ingested RBCs and scanty collagen were also seen. These findings were consistent with diagnosis of CGRG. It is difficult to distinguish this lesion histologically from brown tumor of hyperparathyroidism. Hence serum levels of calcium, phosphorus and alkaline phosphatase were advised which were found to be in normal limits.

The lesion was surgically excised under general anesthesia using lateral rhinotomy with lip splitting approach (Fig. 2). The specimen (Fig. 5) was brown in color and firm in consistency. During surgical procedure, the lesion was found to be communicating with maxillary sinus (anterolateral wall) which was also excised. Patient was discharged on 2nd day of surgery and on follow-up of 2 years patient is cured.

DISCUSSION

GCRG is a rare, benign, non-neoplastic lesion with a granulomatous appearance peculiarly affecting mandible

and maxilla. It strikingly occurs more commonly on the right than left side. They generally occur in patients in the 2nd and 3rd decades of life. 74% of patients are under 30 years of age at presentation.

Cases have been reported in other parts of body including small bones of hands and feet, sinuses, temporal bone, skull, spine, clavicle, tibia, humerus, ribs, and femur. Commonest site is anterior part of mandible (2/3 rd of cases) between the 2nd premolar and 2nd molar with extension across the midline. Small bones of hands and feet are the 2nd most common site for involvement. In most of the cases, females have more predilection than males in the ratio of 2:1. Marked growth of the lesion associated with pregnancy has been described, presumably related to hormonal stimulation.[4] Two forms of GCRG are described, central arising from bone and peripheral arising from the soft tissue of maxilla and mandible, involving gingiva and alveolar mucosa. Peripheral lesions present as pedunculated or sessile lesions on the gingiva while central lesions are endosteal. Peripheral type is four times common than central type and rarely involves the underlying bone and is seen in middle aged and elderly patients.[2]

Trauma has been considered as an important etiologic factor in the initiation of this lesion. The lesions increase by accumulation of tissue which is produced by slow, minute, continuous hemorrhages of multicentric nature due to trauma and some defect in the capillaries. Multiple lesions are rare but have been reported. GCRG has also been described in association with enchondromatosis, Goltz syndrome, fibrous dysplasia, and Paget disease.

The clinical behavior of GCRG is variable. It ranges from slow-growing, asymptomatic swelling to an aggressive lesion which manifests with pain. The most common presenting sign of GCRG is a painless swelling with noticeable facial asymmetry. Alternatively, the abnormality may be disclosed as a purely incidental finding during radiographic examination of the jaws made for an unrelated purpose. In only about 25% of the cases, the lesion is accompanied by pain. The lesions develop without paresthesia. Teeth in association with the lesion may become mobile but maintain their vitality.

It is said that GCRG occurs in the period when the deciduous teeth are being shed. One theory suggested that it is an exaggeration of the normal resorption process that occurs around deciduous teeth. Pathogenesis includes theories of hyperplasic reparative reaction to intraosseous hemorrhage induced by trauma as well as infections and developmental causes.[5-7]

Radiologically, GCRG appears as nonspecific lytic, expansile multiloculated lesions which due to slow growth cause thinning and scalloping of the cortex which however is rarely breached. Periosteal reaction is not usually seen. Sometimes aggressive lesions may present with bone destruction. It has a tendency of resorbing the root tips of adjacent unerupted teeth. CT is excellent for demonstration of bony thinning or destruction. The lesion attenuation is similar to muscle. MRI is the best modality of evaluating extent of the lesion as well as evaluating adjacent soft tissue. It has low to intermediate intensity signals on both T1W and T2W images similar to GCT. Mild postcontrast enhancement is evident both on CT and MRI.[3] Brown tumor of hyperparathyroidism, chondroblastoma, fibrous dysplasia, odontogenic cyst, aneurysmal bone cyst, ameloblastoma, odontogenic myxoma, and odontogenic fibroma are to be considered in differential diagnosis of GCRG.

Amongst all, giant cell tumor is most often confused with giant cell granuloma. However, a giant cell tumor can be distinguished based on the fact that it occurs commonly between the ages of 25-40 years, usually involving the long bones and is more aggressive in nature, with frequent recurrence after curettage. Microscopically, the giant cells are osteoclastic and almost uniformly distributed, whereas in giant cell granuloma, foreign body type giant cells with irregular distribution and vacuolation are seen. The stroma in giant cell granuloma is collagenised or edematous, whereas in giant cell tumor the stroma is made up of plump tumor cells.[8-10]

Treatment consists of curettage or local excision. Recurrence rate of 13- 22 % is reported. Generally, curettage of well-defined localized lesions is associated with a low rate of recurrence. In extensive lesions with radiographic evidence of perforation of cortex, a more radical excision is mandatory. In such cases even partial maxillectomy has to be done. The medical management of GCRG as an adjunct to surgery includes treatment with steroids or calcitonin which inhibits osteoelastic activity. Interferon-alpha appears useful in the management of aggressive GCRG, presumably due to its antiangiogenic effects. Bisphosphonates have been administered intravenously in GCRG with promising results.[11,12]

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