Central Giant Cell Granuloma

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Abstract

Central giant cell granuloma is an uncommon, benign, and proliferative lesion whose etiology is not defined. It is considered widely to be a non-neoplastic lesion. Although formerly designated as giant cell reparative granuloma these lesions were found to be destructive rather than reparative, the word “reparative” was omitted from the term and the terminology is central giant cell granuloma.

Presenting a case report of a female patient of aged 40 years having chief complaint of swelling since 1 year and pain since 4 to 5 months present at the lower right back region of the jaw. Correlating all clinical features and all investigation we finally diagnosed this case as central giant cell granuloma.

Keywords: Central giant cell granuloma, aggressive lesion, nonaggressive lesion, hyperparathyroidism.

INTRODUCTION

It was in 1953 that JAFFE who first introduced the term central giant cell reparative granuloma to distinguish this lesion from the giant cell tumor of long bones.1 However, since a reparative response was quite rare and most of these lesions were found to be destructive rather than reparative, the word “reparative” was omitted from the term and the terminology is central giant cell granuloma (CGCG).2 This condition was described about 149 years ago and was then considered malignant.

It is defined as “An intraosseous destructive lesion of the anterior mandible and maxilla in which large lesions expand the cortical plates, cause movement of teeth, and produce root resorption; it is composed of multinucleated giant cell in a back ground of mononuclear fibrohistiocytic cells and red blood cells.”

This is relatively uncommon pathologic condition accounting for less than 7% of all benign lesions of the jaws.3

CASE REPORT

A female patient of aged 40 years reported to the department of Oral Medicine and Maxillofacial Radiology of DJ College of Dental Sciences and Research, Modinagar (UP) with the chief complaint of swelling since 1 year and pain since 4 to 5 months present at the lower right back region of the jaw. History of present illness revealed as swelling present since 1 year and it started as peanut in size, gradually increases, and attained to the present size and pain present 4 to 5 months. It was sudden in onset and nonradiating in nature. Pain aggravates while eating and relieved by taking analgesics, not associated with any other symptoms. Patient had undergone extraction of 46 under local anesthesia without any complication 1 year back. Past medical, surgical and family histories were noncontributory.

Personal history revealed as patient is vegetarian and brushes once in a day with paste and brush, there is no history of deleterious habits. On general physical examination, patient was moderately built and nourished for her age and all vital signs revealed as normal.

On extraoral examination, head, hair, nose, eyes, ears and salivary glands are normal except, there is diffused swelling seen on right side of the mandible which start anteriorly from 1 cm from the angle of the mouth and goes posteriorly to angle of the mandible, superiorly it start from line joining the angle of the mouth to the lower border of ear lobule and inferiorly limits lower border of the mandible. It was measuring about 2 × 3 cm in size approximately. The skin over the swelling appears to be normal with no secondary changes. Fluctuation, compressibility, and reducibility were noncontributory. Partial numbness of right side of the mandibular facial nerve was present. Submandibular lymph nodes on right side are palpable, tender, mobile, and solitary in number and measures about 0.5 × 0.5 cm in size. Muscles of mastication, facial expressions and TMJ revealed as normal.
On intraoral examination (Fig. 1), all soft tissues like as buccal mucosa, labial mucosa, vestibule, tongue and palate appears to be normal. All the teeth are normal except missing 47. Obliteration of vestibule extends from distal surface of 46 to distal surface of 48 regions. Attrition of teeth with 46. Expansion of cortical plate on buccal side which was firm in consistency. It was tender on palpation in relation to 46, 47 region. History of extraction done with 47 region, 2 years back.

On above symptoms and signs, a provisional diagnosis of residual cyst with respect to (w.r.t) 46, 47 and 48 was made. Differential diagnosis of aneurysmal bone cyst, odontogenic keratocyst, ameloblastoma and giant cell granuloma was considered.

Complete hemogram revealed as normal except, rise in ESR 72 mm/hour. Radiographic investigation, i.e. IOPA w.r.t 46, 47, 48, occlusal topographic view of the mandible, OPG, lateral oblique view. Incision biopsy for histopathological examination.

Intraoral radiograph (Fig. 2) showed the lesion extending from 46 to 48 regions. There is definite radiolucency extending from distal aspect of 46 progressive to apical 1/3rd of 46 than progressing towards mesiodistally till to that of distal aspect of 48 region. The loss of alveolar bone extended from 2 mm away from the distal aspect of 46. Missing tooth with 47 and definite loss of lamina dura with definite radiolucency adjacent to the roots of 46. Altered trabecular pattern of the bone in relation to 47 region. Definite radiolucency with definite sclerotic border extending from distal aspect of 46 to distal to 48 regions. There is a haziness present from distal aspect of extended 47 till to distal aspect of 48 regions. Two septae seen at 47 regions extended into the R/L lesion, faint trabecula present at the lower border of the periphery of 47 region. Dilaceration of root with 48 region. Periapical R/L associated with both the root of 46 and 48 region. Haziness involving the mandibular canal.

Occlusal radiograph revealed as definite expansion of cortical plate extending from mesial aspect of 46 to distal aspect of 48 regions on buccal side.

OPG (Fig. 3) revealed that there is definite radiolucency extending from distal aspect of 46 progressive to apical 1/3rd of 46 than progressing towards mesiodistally till to that of distal aspect of 48 region. Two septae seen at 47 regions extended into the R/L lesion, faint trabecula present at the lower border of the periphery of 47 region. Dilaceration of root with 48 region. Periapical R/L associated with both the root of 46 and 48 region. Haziness involving the mandibular canal.

Histopathological investigation (Fig. 4) revealed as cellular connective tissue stroma, multinucleated giant cell, immature woven bone at the periphery of the lesion and areas of
hemorrhage. Biochemical test revealed as serum calcium 9.8 mg/dl, serum phosphorous 3.0 mg/dl, alkaline phosphatase 245 U/L.

Correlating all clinical feature and all investigation we finally diagnosed this case as central giant cell granuloma involving 46, 47 and 48 region.

DISCUSSION

In 1953 Jaffe, who first introduced the term central giant cell reparative granuloma to distinguish this lesion from the giant cell tumor of long bones. However, since a reparative response was quite rare and most of these lesions were found to be destructive rather than reparative, the word “reparative” was omitted from the term.2

Ardekian L et al in 1999, reported that CGCG is a reactive intraosseous lesion of unknown etiology. It is a reaction to some form of hemodynamic disturbance in bone marrow perhaps associated with trauma and hemorrhage.4

Zhu QL et al in 1994, reported that occurrence of CGCGs in patients with anomalies with a known genetic origin such as neurofibromatosis type 1, cherubism and Noonan’s syndrome indicates that a genetic related etiology may be possible.5

CLINICAL APPEARANCE

Clinically it is asymptomatic.1 Relatively innocuous detected on routine radiographic examination or as a result of painless expansion of the affected bone. Most common complaint is pain, paresthesia, or perforation of the cortical plates, occasionally resulting in ulceration of the mucosal surface. Swelling of jaws which frequently results in facial asymmetry and difficulty in mastication. The covering mucosa appears normal unless traumatized. Female predominance is 62 to 68 %.6 Andersen L et al in 1973 reported that up to 75% cases before < 30 years.

Commonly affects mandible, especially anterior region. Predominantly involves Mandible than Maxilla:: 3:1 (Ratio).6 May can cross midline.6 The growth is firm and cystic at places. Surface is smooth but at times has irregular margins. Displacement is very common and mobility of teeth is seen in cases with greater destruction of bone.

RADIOGRAPHIC APPEARANCE

Majority of cases appear multilocular (63%). It appears as well defined radiolucency. Tooth displacement present and expansion of buccal cortical plates most commonly affected, but lingual cortical expansion is also seen.1 In maxilla, the normal shadow is not seen, either due to lower border of sinus displacement or the lesion mass presents as diffuse haziness and opacity. Root resorption is evident in 30 to 43% and characterizes the potential for being locally aggressive.

TYPES

Based on clinical and radiographic features, several groups of investigators have suggested that central giant cell lesions of the jaw may be divided into two categories.7

1. Aggressive lesions

2. Nonaggressive lesions.

In 1986, Chuong et al were the first to differentiate between aggressive and nonaggressive lesions on the basis of sign and symptoms and histological features.5 Aggressive lesions are characterized by one or more of the following features: Pain, paresthesia, root resorption, rapid growth, cortical perforation, and a high recurrence rate after surgical curettage.7

Aggressive lesions were also larger in size and histologically demonstrated a larger fractional surface area occupied by giant cells. This was confirmed by Ficarra et al in 1987. In the report of Whitaker et al in 1993, 40% of the patients exhibited aggressive signs and symptoms.3

DIFFERENTIAL DIAGNOSIS

• Clinical D/D for solitary and multilocular CGCG includes:
  – Ameloblastoma
  – Odontogenic keratocyst

• For patients in the characteristic young age range for CGCG:
  – Ameloblastic fibroma
  – AOT

• Microscopic appearance:
  – Hyperparathyroidism

• Other giant cell-containing look alike:
  – Aneurysmal bone cyst
  – Cherubism

Various investigations are performed such as cranial nerve examination, complete hemogram, radiographic examinations, biochemical test (serum calcium, phosphorus, and alkaline phosphatase level) and incision biopsy.7

MANAGEMENT

Surgical treatment such as simple curettage, simple curettage with peripheral ostectomy, enucleation, en bloc resection.7,8 Radiotherapy may be done occasionally. Alternative therapy is local injections of corticosteroids (Triamcinolone acetonide), human calcitonin 0.5 mg deep SC daily for 1 year, interferon alfa-2a.7,8

Kaban LB et al in 1987, reported that rate of recurrence is 11 to 49% and very few recurrences after 2 years of initial treatment, lesser age > recurrence and > 3 cm more recurrence.1

Prognosis is fair in case of central giant cell granuloma.

In conclusion, the present case represents an unusual case of a central giant cell granuloma involving posterior region of the mandible.

REFERENCES


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