DOI: 10.5958/2319-5886.2014.00430.5

International Journal of Medical Research & Health Sciences

www.ijmrhs.com Volume 3 Issue 3 Coden: IJMRHS Copyright @2014 ISSN: 2319-5886

Received: 19th Mar 2014 Revised: 28th Apr 2014 Accepted: 26th May 2014

Case report

CASE REPORT OF AGGRESSIVE CENTRAL GIANT CELL GRANULOMA- A DIAGNOSTICIAN'S APPROACH

*Simranpreet Kaur[1], Sunny Singh Ahluwalia[2], Puninderpal Singh[3]

[1]Assistant Professor, Department of Oral Medicine & Radiology, Gulabgrah, Dera Bassi, S.A.S Nagar, Punjab, India
[2]Post graduate student, Department of Oral & Maxillofacial Surgery, M. M. College of Dental Sciences & Research, Mullana, Ambala, India
[3]Intern, National Dental College & Hospital, Dera Bassi, S.A.S Nagar, Punjab, India

*Corresponding author email: simransaini2@yahoo.co.in

ABSTRACT

Central Giant Cell Granuloma (CGCG) is a lesion involving the bones of the body. Any bone can be involved but most commonly, it occurs in the jaws. It mostly affects females in younger age group. It is present more often in the mandible than in the maxilla and in the posterior region. The clinical and radiological features are not pathognomic of this lesion. The diagnosis is based on histopathology only. However, in recent times due to advent of high resolution CT scans, it shows typical features, thereby helping in diagnosing the case and knowing the exact extent and margins of the lesion so as to plan surgical resection accordingly. This article presents case of aggressive CGCG in 28 year old female patient. All investigations including CT scan were done and surgical resection was carried out. Post-treatment follow up did not show any recurrence.

Keywords: Central Giant Cell Granuloma (CGCG), CT scan, Giant cell lesions

INTRODUCTION

Giant cell lesions of the jaws were separated out from other jaw lesions by Jaffe in 1953 when they were termed “giant cell reparative granulomas”.[1] Giant cell granulomas (GCGs) of the jaws are lesions that arise either peripherally in periodontal ligament, mucoperiosteum, or centrally in the bone.[2] The term reparative giant cell granuloma at one time was widely accepted, as Central Giant Cell Granuloma (CGCG) was considered primarily to be a local reparative reaction of bone, possibly to intramedullary hemorrhage or trauma. The use of the term reparative has subsequently been discontinued since the lesion represents essentially a destructive process.[3]

CGCG is a benign intraosseous lesion, the true nature of which is controversial and remains unknown; the three competing theories are that it could be a reactive lesion, a developmental anomaly or a benign neoplasm. Neville et al consider this entity to be a non- neoplastic lesion and the World Health Organization (WHO) classifies it as a bone-related lesion, not a tumour, although its clinical behaviour and radiographic features often are those associated with a benign tumour.[4]

There is a reactive form (nonaggressive CGCG) and a neoplastic form (aggressive CGCG) and scientists have not been able to devise tools to scientifically separate the two. The origin is unknown, but there are indications that genetic abnormalities may be

implicated.[5] The behavior of CGCG is variable, most commonly producing an asymptomatic expansion of the jaws. However, it can be clinically aggressive, associated with pain, osseous destruction, cortical perforation, root resorption, and recurrence.[2] Fast-growing lesions have rarely been reported. In such cases, these are characterized by an aggressive behaviour against an innocent histological appearance. The clinical importance of these benign tumours is that they clinically mimic a malignant lesion.[6]

CGCG often arises in the jaw and affects children and young adults, predominantly females, in the 2nd and 3rd decades of life.[6] Lesions develop twice as often in the mandible, often crossing the midline, with an epicentre anterior to the first molar in young patients and there is a tendency for the epicentre to occur in the posterior aspect of the jaws after the first two decades of life.[2,4] In the maxilla, the epicentre is more commonly anterior to the canine.[4]

World Health Organization defined CGCG as an intraosseous lesion consisting of cellular fibrous tissue containing multiple foci of haemorrhage, aggregations of multinucleated giant cells, and occasionally, trabeculae of woven bone.[5] Histologically, both peripheral and central variants of giant cell granuloma are characterized by the presence of numerous multinucleated giant cells in a prominent fibrous stroma.[2]

Radiographically, the lesion commonly presents as a solitary radiolucency with a multilocular appearance or less commonly, a unilocular appearance.[2]

The treatment of CGCG can either be surgical or non-surgical. Post-treatment follow-up is very important in all the cases especially aggressive lesions which have a high tendency for recurrence.

Surgical management includes simple curettage or curettage with peripheral ostectomy; resection for lesions of the maxilla or paranasal sinuses as the thin bony cortices and sinuses do not provide a good anatomic barrier. Corticosteroids and calcitonin are used for non-surgical management.[2] The current report highlights a case of aggressive form of CGCG in the mandible mimicking non-aggressive CGCG in clinical and radiological examination, thereby, necessitating the need for early diagnosis and treatment to prevent unwanted deformity of face and recurrence.

CASE REPORT

A 28-year-old woman presented to the Department of Oral Medicine and Radiology, with a chief complaint of decayed tooth in left lower back region and wanted to get that treated. History of present illness dated back to 3 months when patient first experienced pain in left lower back tooth which was severe, intermittent and radiating in nature. It occurred spontaneously and was relieved by medication which patient had got from a private practitioner. The nature of medication was not known to the patient. She also had sensitivity to hot and cold. When the patient reported to us, she had no pain and no sensitivity to hot or cold.

Extraorally, patient had a bilaterally symmetrical face with no sign of swelling. Intraorally, there was presence of single, oval shaped, diffuse swelling measuring about 1 cm in diameter, present in relation to 36, 37 and 38 on the buccal side. On the lingual side, a single, diffuse, oval shaped swelling was present in relation to 37. The vestibule was obliterated. The mucosa overlying the swelling was pinkish in colour (Fig 1).

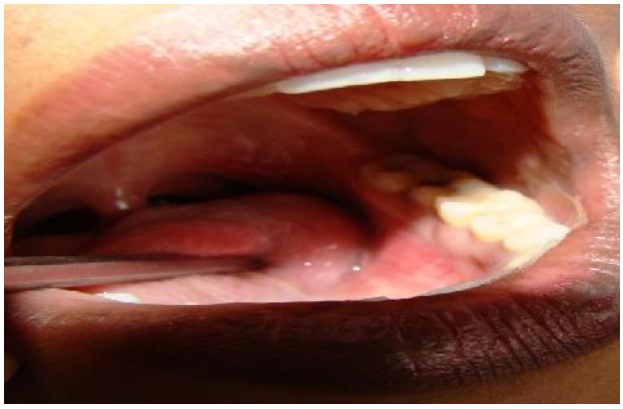


Fig 1: Intraoral photograph showing swelling on the lingual side of the first molar

On palpation, inspectory findings were confirmed. The swelling was oval shaped, non tender, bony hard in consistency, non reducible, non pulsatile and non compressible in nature. The swelling was not associated with any secondary changes.

A complete haemogram was done, which illustrated that all the values except for the hemoglobin were within the normal range. Haemoglobin was decreased below the normal value.

Intraoral periapical radiograph with respect to left mandibular region (Fig 2) showed teeth w.r.t. 35, 36, 37, 38. The periapical area with respect to 36, 37 regions showed a single, localized, diffuse, round,

radiolucency with an ill-defined margin. There was loss of lamina dura and resorption of root of tooth in relation to 36, which was irregular in outline. The complete lesion was not visible on the intraoral periapical radiograph.

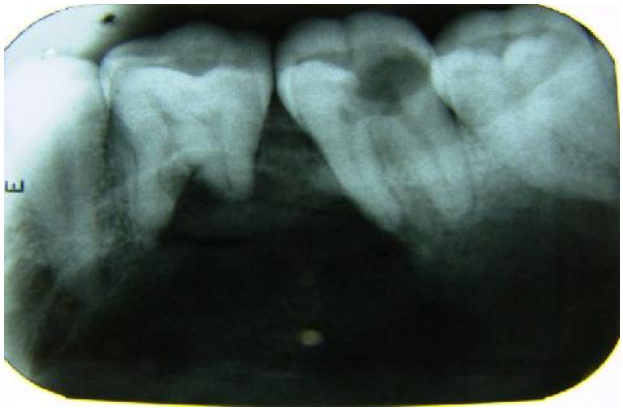


Fig 2: Intraoral periapical radiograph of left mandibular molar area showing root resorption and radiolucency around roots of 36

Madibular occlusal radiograph (Fig 3) showed uneven expansion of the buccal and lingual cortical plates on the left side giving an appearance of double boundary. There was presence of multi-locular radiolucency within the expanded bone. It measured about 2.5 cm buccolingually and 5 cm mesiodistally.

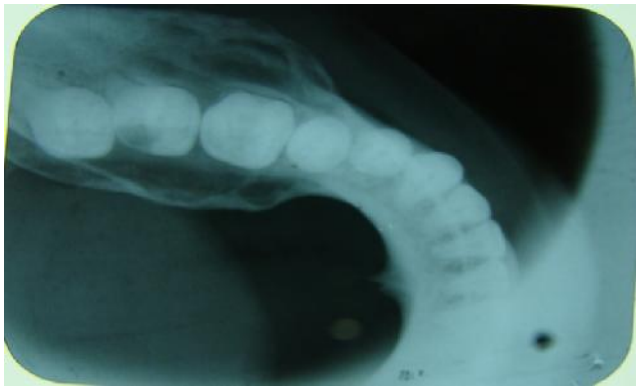


Fig 3: Mandibular occlusal radiograph showing bucco-lingual expansion of bone on the left side in the molar region

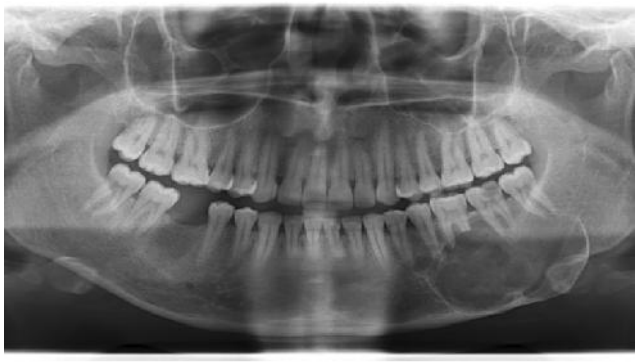
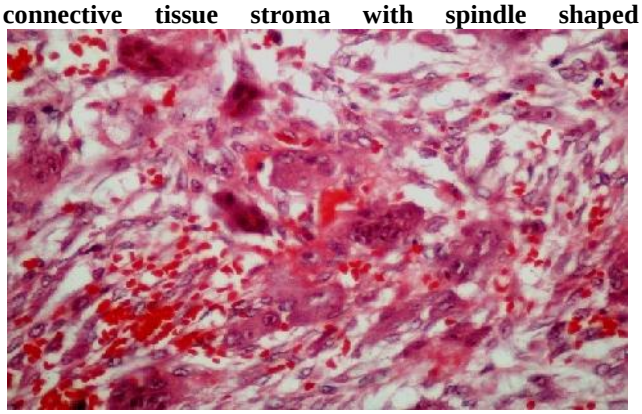


Fig 4: Panoramic radiograph showing single unilocular radiolucency in the left mandibular body region

Panoramic radiograph (Fig 4) revealed unilateral, single, localized, diffuse, oval shaped, radiolucent lesion with a well defined margin extending from tooth with respect to 35 up to 38, measuring 4cms superoinferiorly and 3 cms mesiodistally. There was loss of trabecular pattern in that area. The inferior alveolar canal was displaced in inferior direction and there was expansion of inferior cortical boundary of mandible also. The internal structure of the lesion showed subtle granular pattern of calcification. The surrounding bone was normal.

Based on clinical and radiolographic examination, a provisional diagnosis of Ameloblastoma of mandible was made. Furthermore, a CT scan was done to accurately demonstrate the anatomic extent of the tumour and to detect perforation of the outer cortex and invasion into the surrounding soft tissues. CT scan (Fig 5) showed an evidence of predominantly expansile lobulated unilocular lesion involving left side of mandible involving the body measuring 2.34 cms medio-laterally, 4.38 cm antero-posteriorly and 3.04 cm supero-inferiorly causing thinning of buccal and lingual cortex having homogenous high density material and areas of calcification within the lesion.

Fig 5: Histopathology slide showing highly cellular connective tissue stroma with spindle shaped



fibroblasts, multinucleated giant cells, osteoid formation, blood vessels and few areas of haemorrhage

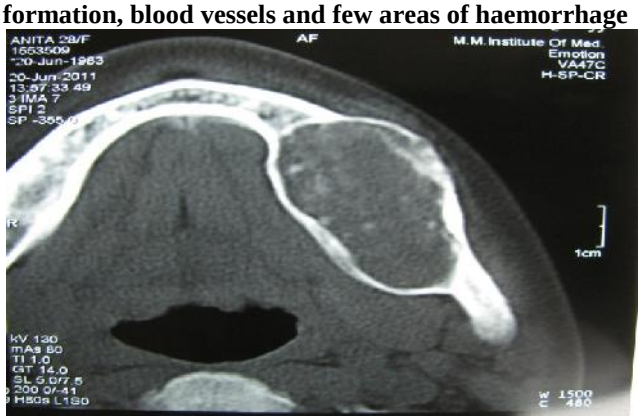


Fig 6: Axial CT section showing unilocular lesion involving the body of mandible

There was no perforation of the cortex and the lesion was not extending into adjacent soft tissue. The CT gave an impression of expansile lobulated unilocular lesion involving left side of mandible with calcification which might be Epithelial Odontogenic Tumor or Odontogenic Fibroma.

Surgical excision was carried out and it was sent for histopathological examination. The H & E stained sections (Fig 6) revealed highly cellular connective tissue stroma with area showing bony trabeculae being laid down. The cells within the connective tissue were predominantly spindle shaped fibroblasts with few areas showing round to ovoid cells resembling histiocytes. Multinucleated giant cells of varying size and shape, containing 8-12 nuclei were seen in clustered distributed throughout the stroma. Few areas of osteoid formation, blood vessels and few areas of haemorrhage were also seen. These features are suggestive of aggressive Central Giant Cell Granuloma.

Due to aggressive nature of the lesion, there were high chances of recurrence. So a follow up of the case was done up to one year. During that time, patient got complete oral prophylaxis and removable partial denture. At 6 month follow up, clinically the area had healed completely in the mouth. Panoramic radiograph (Fig 7) revealed well demarcated unilocular radiolucency in the body region of the mandible on the left side which showed signs of new bone formation in the area where lesion was seen previously. There was no evidence of recurrence. At one year follow up, panoramic radiograph (Fig 8) revealed formation of bone in the area where lesion was seen previously with no evidence of recurrence in the region.

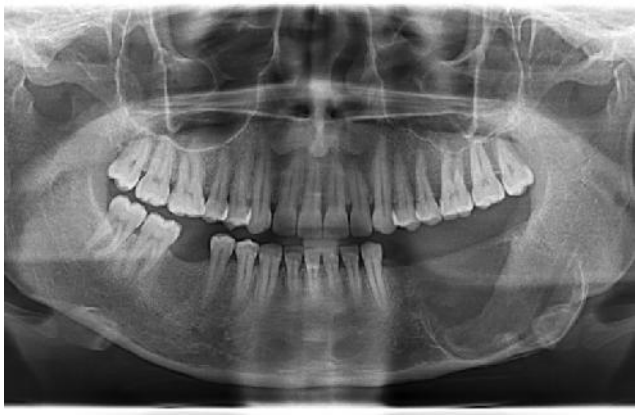


Fig 7: Panoramic radiograph (6-month follow up) showing signs of new bone formation

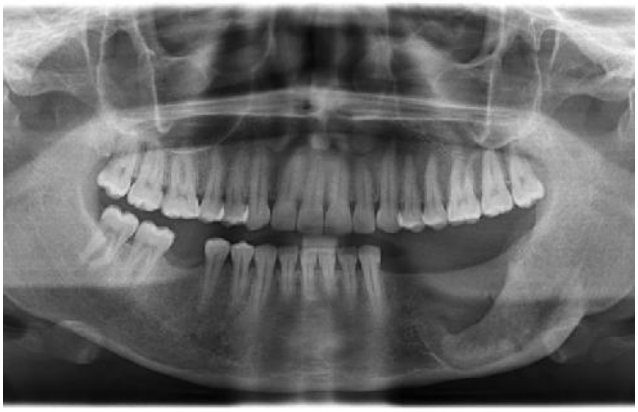


Fig 8: Panoramic radiograph (1-year follow up). No signs of recurrence were seen

DISCUSSION

CGCG is a benign proliferative lesion of unknown etiology which predominantly occurs in young adults. 60-70% of cases are diagnosed in patients younger than 30 years old. It occurs more commonly in the mandible than in the maxilla, sometime crossing the midline. Most mandibular lesions occur anterior to the first molar and it is strikingly more commonly on the right side than the left. Females are affected more frequently than the males (2:1).[7] In the above case report, the patient was young (28 years old) female and had a lesion in the mandible. However, it did not cross the midline and it was present in relation to the first molar.

Some authors separate CGCG into two types, referring to its clinical and radiographic features: (a) Nonaggressive lesion which are slow growing and asymptomatic, without cortical resorption or root perforation in affected teeth, which do not recur; and (b) Aggressive lesions, which are usually found in younger patients, are painful with rapid growth, often cause cortical perforation and root resorption and has a tendency to recur.[2] In this case, the lesion was slow growing which developed over a period of few months. There was no asymmetry of the face and the tooth associated with the lesion was decayed. There was pain and sensitivity to hot and cold associated with tooth. These factors pointed towards a non-aggressive type of lesion. However, the age of the patient was not in the favour of non-aggressive nature of the lesion.

The radiological appearance of CGCG is variable. Usually the lesion appears as a unilocular or multilocular radiolucency. It may be well-defined or ill-defined and shows variable expansion and

destruction of the cortical plate. The radiological appearance of the lesion is not pathognomonic and may be confused with that of many other lesions of jaws.[3] Radiographically, for the present case, there was thinning of the cortex and resorption of the tooth root seen on the intra oral periapical and panoramic radiograph, leading to a diagnosis of Ameloblastoma.

An imaging feature that has been associated with CGCG, but not mentioned in the reviewed case reports, is the presence of a subtle granular bone pattern at the periphery of the expanded bone. This characteristic is subtle and more prominent in the soft tissue algorithm CT images. The granular pattern may also be seen in some of the internal septa.[4] Similar features were present in our case report.

The clinical and radiological features of CGCG are non-specific, henceforth, the final diagnosis is concluded by histopathology only. Histologically, the World Health Organization has defined giant cell granuloma as 'a localized benign but sometimes aggressive osteolytic proliferation consisting of fibrous tissue with haemorrhage and hemosiderin deposits, presence of osteoclast-like giant cells and reactive bone formation'. CGCG exhibits wide range of features and wide spectrum of features and a highly vascular and cellular granulation tissue containing giant cells of foreign body type and mitosis in the stromal cells. Extravasation of red blood cells with hemosiderin and occasional bone formation may be seen.[8] The present case exhibited the same histological picture.

Some lesions are destructive with a marked tendency to recur. A more aggressive type of such lesion will require more radical treatment. The recurrence rate is reported to be 13–22% with most treatment failures manifesting within the first two years of the therapy.[3] In this case, the histopathology report was given as aggressive type of CGCG. However, clinical features pointed towards a non-aggressive lesion. Complete surgical excision was done and the defect was packed with Whitehead varnish. Follow-up for the case was done for 2 years and it showed no sign of recurrence.

CONCLUSION

CGCG is a common giant cell lesion occurring in the bones of the jaw. There is no classification as such to differentiate between aggressive or non-aggressive type of CGCG, either clinically or based upon radiological examination. On a radiograph, if a radiolucent unilocular or multilocular lesion is seen, CGCG should be kept in the list of differential diagnosis. CT scan of the lesion should be done as it exhibits typical picture for CGCG. Early diagnosis can help in better treatment planning. Follow-up of all cases should be done for atleast upto two years.

Conflict of interest: None

REFERENCES

1. Anthony M. Pogrel. The diagnosis and management of giant cell lesions of the jaws. Ann Maxillofac Surg 2012; 2 (2): 102-6
2. Puneet Ahuja, Ajit Singh Rathore, Shivjot Chhina, Adesh Manchanda. Aggressive central giant cell granuloma mimicking giant cell tumor. IJCRI 2011; 2(2): 5-10
3. Hooman Ebrahimi, Javad Yazdani, Sara Pourshahidi, Farzad Esmaeli, Ali Taghavi Zenouz, Masoumeh Mehdipour. Central Giant Cell Granuloma of the Posterior Maxilla: A Case Report. JODDD 2008; 2 (2): 71-75
4. Jadu FM, Pharoah MJ, Lee L, Baker GI, Allidina A. Central giant cell granuloma of the mandibular condyle: a case report and review of the literature. Dentomaxillofacial Radiology 2011; 40: 60- 64
5. Muhammad Rafique Chattha, Kamran Ali, Adnan Aslam, Bilal Afzal, Muhammad Asif Shahzad. Current concepts in central giant cell granuloma. Pakistan Oral & Dent. Jr. 2006; 26 (1): 71-78
6. De Corso E, Politi M, Marchese MR, Pirronti1, RT. Ricci, G. Paludetti. Advanced giant cell reparative granuloma of the mandible: radiological features and surgical treatment. Acta Otorhinolaryngol Ital 2006; 26: 168-172
7. Pradnya Nikhade, Manoj Jaiswal, Sanjay Patil, Ajay Saxena, Manoj Chandak. Central giant cell granuloma: A potential endodontic misdiagnosis. International Journal of Dental Clinics 2011; 3(4): 59-61
8. Mathur Sk, Parveen Rana Kundu, Sugandha Mohan, Virender Singh. Central Giant Granuloma of the jaws: A short series and review of literature. World Journal of Dentistry 2011; 2(3): 217-23