Central Giant Cell Granuloma - A Rare Presentation

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Abstract

Central giant cell granuloma is an uncommon benign proliferative lesion occurring more commonly in the anterior mandible. It may become aggressive leading to expansion and perforation of the cortex. Mobility and displacement of teeth and root resorption are often observed. The reported case is a rare, extremely aggressive central giant cell granuloma arising from maxillary antrum with intracranial extension through the base of the cranium. The affected patient was a 34 year old female who reported to us with a diffuse swelling of the right middle third of face associated with paresthesia of the entire face on the affected side.

Introduction

Central giant cell granuloma (CGCG) is a benign proliferation of fibroblasts and multinucleated giant cells that almost exclusively occurs within the jaw. It commonly occurs in the young adults showing a female predilection. CGCG can rarely occur in areas elsewhere other than the jaws like maxillary sinus, temporal bone, cranial vault and other bones of the craniofacial complex. It was thought that CGCG is a reparative lesion as it developed in response to intrabony hemorrhage and inflammation secondary to trauma. However, it can be considered as an aggressive lesion because of its aggressive behavior as seen in the present case.

Case report

A female patient of 34 years reported to our out-patient department with the chief complaint of pain in the upper right back region of the jaw since two months. There was a history of continuous dull pain associated with thick yellowish nasal discharge and paresthesia of right half of the face. Two months ago patient had developed chronic maxillary sinusitis on right side which was surgically treated. Eight days later the patient developed pain and mobility of a tooth in the first quadrant which was extracted. There was also a history of significant weight loss within a short period and reduction in the appetite.

On clinical examination, a diffuse swelling was present over the right mid one third of face obliterating the nasolabial fold. The swelling had extended to the right nasal fossa causing partial blockade of the right nostril. Skin over the swelling was stretched and erythematous [Illustration 1]. There was local rise in temperature and tenderness was elicited on palpation. Paresthesia over the right malar region was present. Introrally, a soft swelling with smooth surface was present in the upper right second molar tooth extending on both buccal and palatal aspects [Illustration 2]. Segmental mobility of the arch distal to the first molar was noticed. Both the premolars and the first molar on the upper right arch were compressible within the socket and tender on percussion.

Intraoral periapical radiograph in the upper right molar region revealed a diffuse radiolucency extending from distal aspect of maxillary right first premolar to the mesial aspect of maxillary right second molar. Inferiorly the radiolucency was extending up to the crest of the alveolar bone with loss of lamina dura [Illustration 3A]. The orthopantomograph revealed diffuse radiolucency extending from maxillary first premolar to second molar region. There was destruction of the floor and inferiolateral wall of the maxillary sinus [Illustration 3B]. A diffuse opacification of right maxillary sinus and destruction of the medial and inferiolateral walls of the right maxillary sinus was observed in the paranasal sinus view [Illustration 4].

A computerized tomographic scan was performed to know the exact extension of the lesion. It revealed a large aggressive heterogeneously enhancing soft tissue mass lesion with necrotic areas (NECT 30 to 40, CECT 70 to 80 HU). The lesion had extended in all possible directions destroying the confirms of the right maxillary antrum [Illustration 5A, B]. Posteriorly the lesion was involving the skull base and extending into the midcranial fossa destroying the lateral walls of the sphenoid sinus [Illustration 5E, F]. The pre and post-styloid parapharyngeal spaces were occupied by the lesion. Erosion of the orbital floor, posterior aspect of hard palate, the tuberosity and the pterygoid plates was evident in the bony windows [Illustration 5D, E].

Histopathological slides showed mono and multinucleated giant cells consisting up to six nuclei. The cells were oval to spindle in shape with varying sizes arranged in the form of sheets lining the sinusoidal spaces [Illustration 6]. The histopathological report was suggestive of central giant cell granuloma. Later the patient was subjected to surgery. After the successful surgical excision of the lesion a post surgical defect was formed in the palate. An obturator...
was fabricated for the same [Illustration 7]. Now the patient is under follow up.

Discussion

Central giant cell granuloma is a benign intraosseous lesion of the jaws. It was first described as ‘Central Giant Cell Reparative Granuloma’ by Jaffe H L in the year 1953.[1] Currently the term ‘reparative’ is not used for description because of the destructive nature of the giant cell granuloma. Giant cell granuloma is considered as benign proliferation of fibroblasts and multinucleated giant cells that occurs almost exclusively within the jaws. [2] It is seen in all age groups ranging from 2 to 80 years, but more than 60% of the cases occur under the age of 30 years. [3] Although sex distribution varies in different reviews, CGCG show female predilection almost twice that of males. Many studies have showed that the lesions are more common in the anterior segments of the jaws and can even cross the midline. Occasionally they may present in the facial bones and small bones of hand and feet. [2] Few cases of rare occurrences of CGCG have been reviewed [Illustration 8].

CGCGs can be aggressive or nonaggressive. [4, 5] The nonaggressive form may present with asymptomatic swelling or may be discovered accidentally during routine radiological investigations. The aggressive form of CGCG presents with pain, rapid growth, cortical perforation and root resorption. The etiopathogenesis of CGCG is unclear; however authors have suggested that it can arise as reactive response to trauma. Waldron and Shafer (1966) analyzed 38 cases of CGCG and found that a history of injury to the jaws was mentioned in so few cases that little credence can be given to the etiologic significance of this factor.[6]

In the present case report, diffuse swelling of the face lifting the eyeball relatively at higher position with paresthesia in the malar region suggested the invasion of the orbital floor with pressure effect over the infraorbital nerve. Perforation of the palate with mobility of the maxillary tuberosity suggested an aggressive lesion of the maxillary sinus destroying the floor and posterior wall of the antrum. Moreover the radiological investigations revealed soft tissue lesion of probable right maxillary antral origin with extension into the infratemporal, deep masticatory, pre and post maxillary spaces and into the floor of the orbit, sphenoid sinus, right cavernous sinus region with involvement of skull base and its foramina favoring for carcinoma of the antrum. In the literature many cases of central giant cell granuloma occupying regions other than maxilla and mandible have been reported. Yutaka Nemoto, Yuichi Inoue et al., reported two cases of CGCG in the temporal bone. Bhalodiya NH and Singh N have described a case of CGCG which presented as a mass in the posterior ethmoid. Therefore central giant cell granuloma was considered as the differential diagnosis. The final diagnosis was based on the histopathological report as central giant cell granuloma. Giant cell granulomas in general are mild and rarely present with bony expansion, cortical perforation or displacement of anatomical structure. Hence in conclusion, although CGCG occurs more commonly below the age of 20 years occupying the anterior portion of the jaw especially the mandible, it can also present as a mass occupying lesion in the maxillary sinus extending into the cranial base and the cavernous sinus.

References

1136–1138.
Illustrations

Illustration 1

Diffuse swelling on the right side of the face

Localized erythematous area distal to right maxillary first molar.
Illustration 3

A. Destruction of alveolar bone apical to maxillary right first and second premolar and distal to maxillary right first molar with apical loss of lamina dura of both premolars. B. Destruction of floor of maxillary sinus.

Illustration 4

Diffuse opacity in the right maxillary antrum, partially obliterating the right nasal antrum.
Illustration 5

A, B and C. Axial CT slices show lesion in the right maxillary antrum destroying all its walls and extending into nasopharynx, parapharyngeal spaces, orbit, sphenoid and ethmoid sinuses. D and E. Coronal CT slices show destruction of floor of orbit, palate and extension into the nasal cavity. F. Sagital CT slice shows the destruction of the base of the skull.

Illustration 6

Multinucleated giant cells surrounded by spindle shaped stromal cells, chronic inflammatory infiltrate and areas of hemorrhage.
Illustration 7

A. Post-treatment photograph of the patient. B. Postoperative defect in palate. C. An obturator covering the defect.

Illustration 8

Various rare sites of CGCG [7, 8, 9, 10, 11 and 12]

<table>
<thead>
<tr>
<th>Author</th>
<th>Site of CGCG</th>
<th>Age in years</th>
<th>Sex</th>
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<td>Alvin Katz et al</td>
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<td>F</td>
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<td>Yutaka Menoto et al</td>
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