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CASE REPORT

A granular-cell odontogenic tumour occurring alongside orofacial granulomatosis: a report of the first case

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Abstract

This article describes a case of a granular-cell odontogenic tumour occurring in the mandible of a 19-year-old woman alongside a presentation of orofacial granulomatosis. The granular-cell odontogenic tumour is an extremely rare lesion, with fewer than 40 documented cases, and orofacial granulomatosis is itself an uncommon condition. The simultaneous occurrence of the two lesions has not previously been described.

Introduction

Granular-cell odontogenic tumours (GCOTs) are benign odontogenic neoplasms that often present as an asymptomatic swelling of the mandible[1–7]. They are observed most commonly in middle-aged women[8–10]. Diagnosis is by biopsy and histological examination, and treatment involves either surgical excision or curettage[7,11,12].

Orofacial granulomatosis (OFG) is an uncommon condition typically presenting as an asymptomatic enlargement of the lips, occurring most frequently in children and young adults[13,14]. There exists some debate as to its cause, and it has been proposed that OFG may be genetic, infectious or immune-mediated in origin[15]. Diagnosis is based on clinical presentation and is confirmed by biopsy of the affected mucosa, with histological examination revealing non-caseating granulomas. Crohn's disease must be eliminated by appropriate investigation.

Remission of OFG is rarely seen[13], and management is often based upon attaining short-term reduction in swelling with the use of intralesional corticosteroid injection. Furthermore, potential dietary allergens should be identified and eliminated[16,17].

Case report

A 19-year-old woman of Afro-Caribbean origin presented with a 3-year history of a gradually enlarging hard painless swelling of the right mandible. Recurrent upper lip swelling, occurring at 2-month intervals over the last 5 years, was also reported (Figs 1 and 2). The patient was otherwise fit and well; she was a smoker and consumed a moderate amount of alcohol.

On examination the patient was found to have right-sided facial asymmetry in the region of the mandible. There was no lymphadenopathy. Intra-orally, there was found to be bony expansion of the buccal sulcus extending from the lower right second premolar to the lower right second molar. Overlying mucosa was normal in appearance. There was no altered sensation to the lower lip.

The upper lip was normal in appearance with no evident swelling. A photograph was presented by the patient, showing diffuse upper lip enlargement.

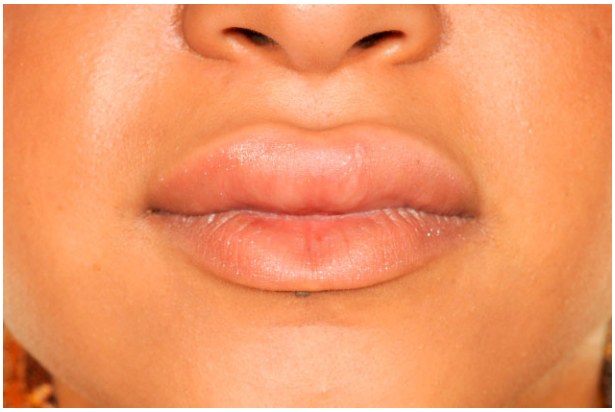

Figure 1 Diffuse swelling to upper lip.

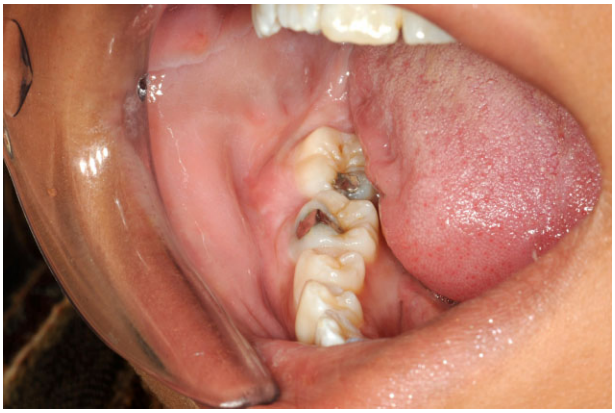

Figure 2 Swelling to right mandible.

Clinically, the differential diagnosis for the lesion of the mandible included ameloblastoma, fibrous dysplasia and peripheral ossifying fibroma. The differential for the pathology of the upper lip included OFG and angioneurotic oedema.

An orthopantomogram (OPT) radiograph revealed a discrete radiolucency extending from the distal aspect of the root of the lower right second premolar to the mesial aspect of the unerupted lower right third molar, with expansion of the mandible in the inferior–superior aspect (Fig. 3). Bone immediately adjacent to the radiolucency appeared abnormal and displayed a fine 'honeycomb' pattern. Minimal resorption of the distal root of the first molar was evident, with no displacement of the dentition.

An incisional biopsy was performed on mucosa overlying the mandibular swelling. A window of bone overlying the lesion was then removed and a sample of the cavity contents taken. The lesion was found to have no identifiable cystic lining and was soft in consistency with a yellow composition. An incisional biopsy was also taken of the upper lip.

Histopathological examination identified the contents of the right mandibular lesion as having the features of a GCOT. The mucosa overlying the lesion was of normal histological appearance. The specimen taken from the patient's upper lip showed features consistent with OFG and Crohn's disease. The patient was referred to the department of gastroenterology, and by way of clinical examination and blood tests, the possibility of Crohn's was eliminated.

Pathological findings

Incisional biopsy of the right mandibular cystic lesion showed myxoid, cellular connective tissue comprising spindle cells with eosinophilic cytoplasm and oval

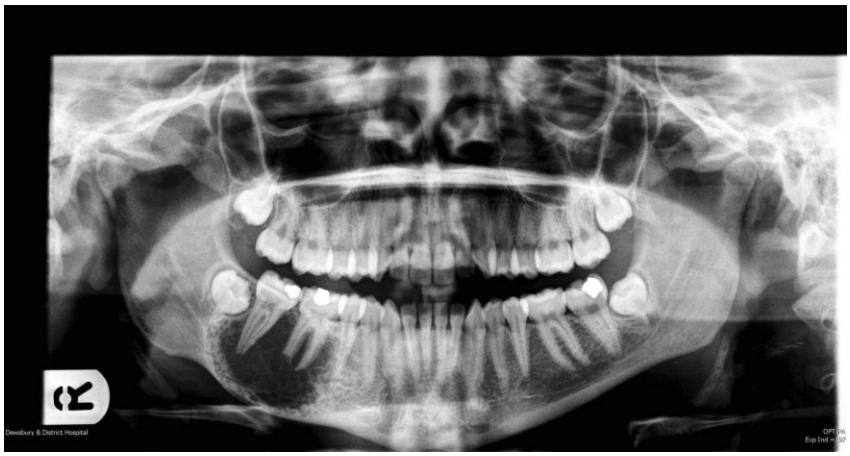

Figure 3 Unilocular radiolucency to right mandible.

nuclei interspersed with large numbers of granular cells displaying pale, eosinophilic granular cytoplasm and eccentric, oval nuclei (Fig. 4). There was no cytological atypia or evidence of malignancy. There was nothing to suggest ameloblastoma. The features were those of a GCOT. These are benign odontogenic tumours and can be successfully treated with curettage in most cases. Recurrence and malignant transformation are rare.

Immunohistochemical analysis was performed on the specimen prior to finalisation of the diagnosis. These granular cells showed cytoplasmic positivity for CD68, as one would expect in a case of GCOT (Fig. 5). S100, AE1/3 and desmin tests were negative in both the granular cells and spindle cells. The lack of S100 protein reactivity in the granular cells confirmed that the origin of these cells was different from the origin of cells in a granular-cell tumour.

Examination of the window of bone that was removed to access the lesion revealed identical histological appearances, with no marked cytological atypia or evidence of malignancy. Reactive, vital bony trabeculae were noted within the lesion in part, confirming central origin. The presence of reactive bone at the lesion's periphery may account for its abnormal radiographic appearance in this region (Figs 6 and 7).

Biopsy of the upper lip showed stratified squamous epithelium-lined mucosa overlying fibrocollagenous stroma. Occasional, non-caseating granulomas and patchy foci of chronic lymphocytic infiltration, predominantly in perilymphatic location, were identified (Fig. 8). These appearances are consistent with those of OFG. However, they can also be seen in Crohn's disease, which needs to be clinically excluded.

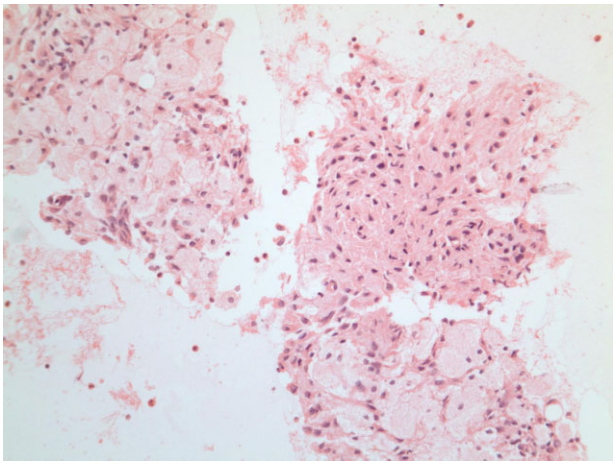

Figure 4 Granular cells among cellular connective tissue.

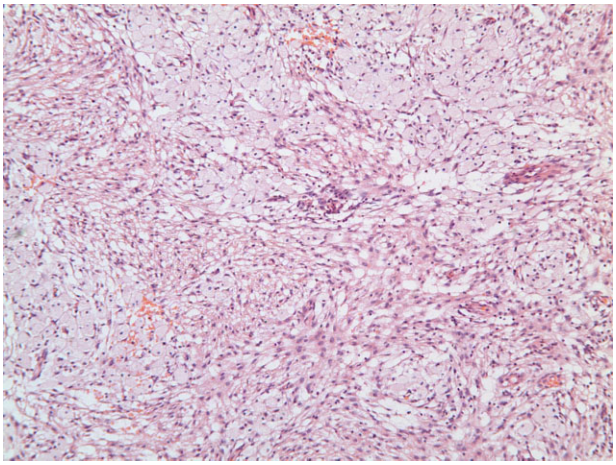

Figure 6 Granular cells in granular-cell odontogenic tumour.

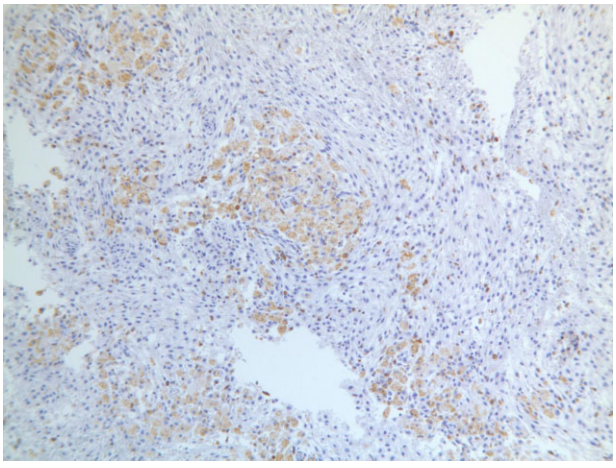

Figure 5 CD68 staining of the granular cells.

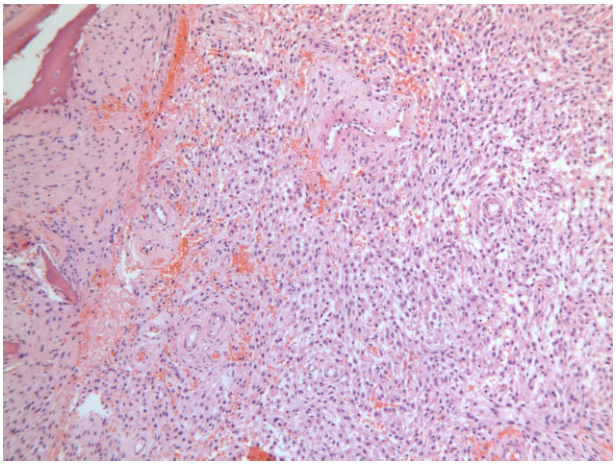

Figure 7 Low-power view of granular-cell odontogenic tumour.

Management

The GCOT was removed by curettage under general anaesthetic. A three-sided buccal mucoperiosteal flap was raised, and a window of bone overlying the tumour was removed. The tumour was carefully curetted from around the intact neurovascular bundle and sent for histological examination (Figs 9 and 10).

The site was irrigated and closed.

Enlargement to the upper lip associated with the OFG was reduced by local infiltration of a corticosteroid and a postoperative OPT was taken (Fig. 11).

The patient was reviewed 4 months postoperatively. The GCOT showed no evidence of recurrence. There was evidence of recurrent inflammation to the upper lip, and an additional intralesional corticosteroid injection was provided.

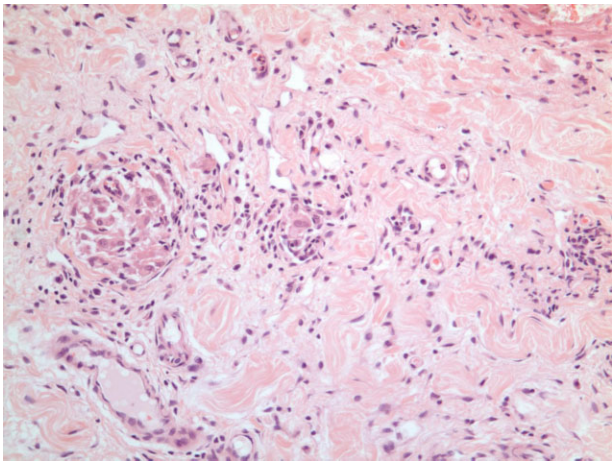

Figure 8 Orofacial granulomatosis. Non-caseating granuloma evident to left of slide. Perilymphatic chronic lymphocytic infiltration also illustrated.

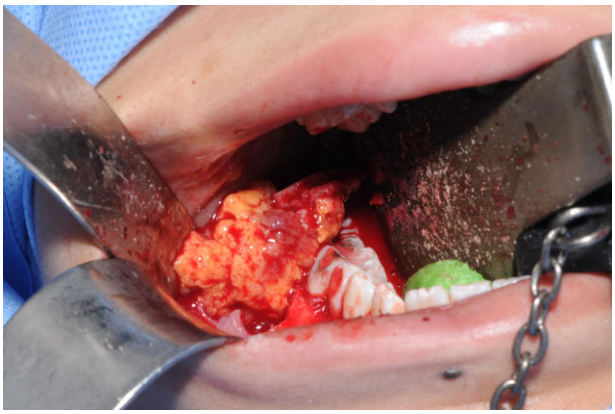

Figure 9 Removal of a window of bone to expose the granular-cell odontogenic tumour.

A further follow-up was arranged 6 months postoperatively. There was found to be no evidence of anaesthesia to the cutaneous distribution of the inferior alveolar nerve. All teeth in the quadrant had a positive response to vitality testing. An OPT radiograph was taken and showed thorough bony infill to the area of curettage (Fig. 12). The abnormal 'honeycomb' appearance of the mandible was observed to extend from the apex of the lower right second premolar to the midline of the lower right third molar. There remained evidence of expansion of the mandible in the superior–inferior aspect with bowing of the lower border.

Follow-up of the patient was planned for a minimum of 24 months. A further OPT will be taken prior to discharge, and an additional CT scan may be of value should there be any suspicion of recurrence.

Discussion

The GCOT is a rare benign odontogenic neoplasm with fewer than 40 reported cases[8]. Curettage and surgical excision are the most commonly pursued treatment options[7,11,18].

The lesion is most common in females. In contrast to the case described in this report, a high proportion of cases are observed in patients of 60 to 80 years in age[8–10]. It is typically observed on clinical examination as an asymptomatic buccal expansion of the posterior mandible[5–7,19].

Radiographically, it invariably presents as a unilocular or multilocular radiolucency[2,4,5,9,20,21], although a radiopaque presentation has been described[7]. The case described in this report was consistent with these features, presenting as a discrete unilocular radiolucency. There was, however, no evidence of displacement of the dentition, a feature that has previously been

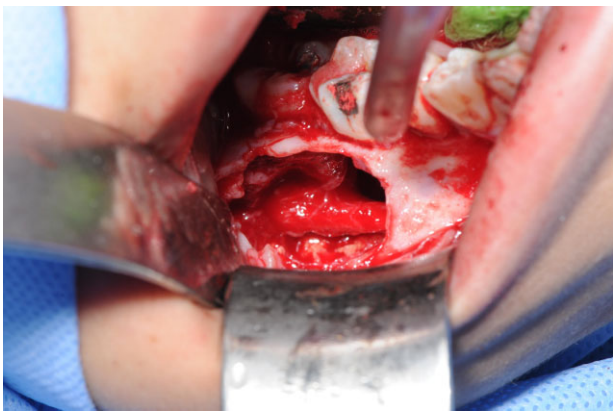

Figure 10 The intact neurovascular bundle.

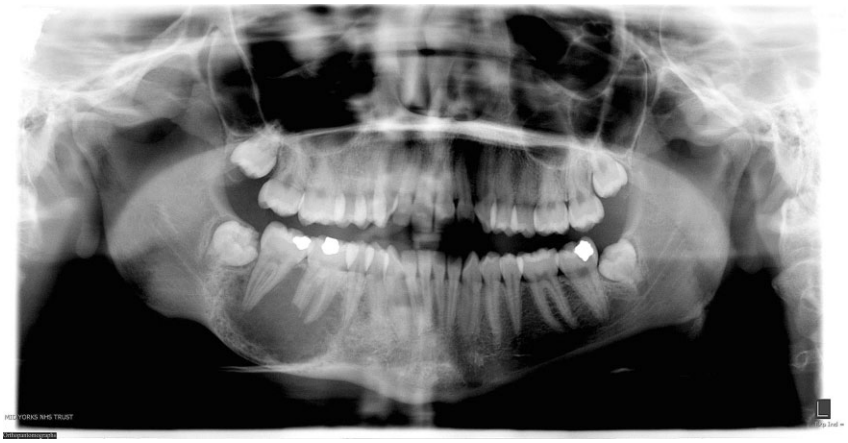

Figure 11 Post-operative orthopantomogram.

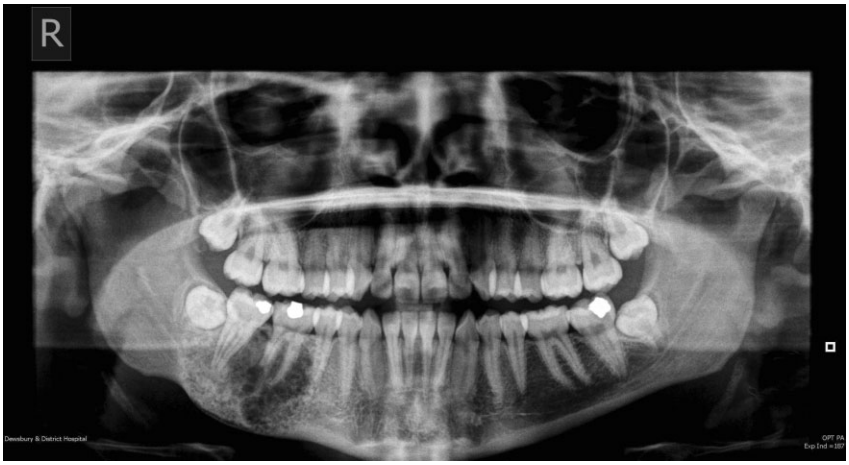

Figure 12 Orthopantomogram taken 6 months post-operatively.

reported[2,21]. The inferior dental (ID) canal was not radiographically distinguishable, although operatively the neurovascular bundle was observed to pass through the lesion and to have been preserved intact. Previous cases have illustrated displacement of the ID canal inferiorly[5].

Recurrence of the GCOT, although unusual, has been documented in the literature[18]. A single case of a malignant variant of the GCOT, occurring in the maxilla of a 40-year-old male, has also been reported[22].

OFG is an uncommon condition characterised by recurrent swelling of the orofacial region with histological evidence of non-caseating granulomatous inflammation[13]. The features of the upper lip swelling observed in this case were consistent with this typical clinical presentation. Histopathology demonstrated the presence of non-caseating granulomas with perilymphatic chronic lymphocytic infiltration (Fig. 8). Corticosteroids are the mainstay of clinical treatment and are intended to reduce inflammation and lower the incidence of recurrence. As is common with OFG, the patient required further administration of corticosteroids in order to reduce a recurrent episode of swelling.

The aetiology of OFG is not known and is a matter of dispute. It has been proposed that OFG may be of a genetic origin, with higher levels of specific human leucocyte antigen alleles observed among OFG patients than in control groups[23]. Infection is a further possible cause, with tuberculosis and sarcoidosis nominated as potential causative agents, although at present there is a lack of suitable evidence to support this hypothesis[13]. Immunology may be implicated in OFG, with immunohistochemical study of the condition demonstrating an excessive cell-mediated immune response[24], and food additives have been proposed to have a role in either precipitating or causing the condition[25].

The occurrence of a granular cell tumour alongside a presentation of OFG has not previously been

reported. Both conditions are known to have an immune-mediated component, and furthermore, a granulomatous reaction can be observed in cases of GCOT. Despite this, the two conditions do not appear to be related.

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