Peripheral giant cell granuloma: A potentially aggressive lesion in children

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Abstract

A slowly enlarging gingival mass with a reddish-purple surface is observed in a school-age boy. The lesion was first noted 3 months ago during a routine oral examination but recently it has increased in size and interferes with eating. A periapical radiograph demonstrated focal loss of the alveolar crestal bone in the mandibular incisor region. The diagnosis of peripheral giant cell granuloma, a benign reactive gingival lesion, is confirmed by histopathologic examination. Early detection and excision of this hyperplastic nodule is important to minimize potential dentoalveolar complications. (Pediatr Dent 22:232-233, 2000)

Solitary gingival enlargements in children are a relatively common finding and are usually the result of a reactive response to local irritation. Although incipient lesions may bleed and cause minor changes in gingival contour, progressive growth in some cases produces a significant tumescence that compromises normal oral function. The purpose of this case report is to illustrate an example of an aggressive peripheral giant cell granuloma (PGCG) and to discuss a reasonable differential diagnosis, based on the age of the patient, history and clinical features.

Case history

A 7 year old Hispanic boy is referred for evaluation of a gingival mass that was first observed 3 months ago during a routine dental visit. Recently the lesion has doubled in size and is interfering with normal occlusion. Clinical examination reveals a reddish-purple, sessile nodule, involving the mandibular, anterior gingiva and alveolar mucosa (Fig 1). The surface is smooth, except for focal areas of ulceration where the maxillary incisors are impinging on the mass. Although the nontender lesion bleeds with minimal manipulation, it does not blanch when palpated. The adjacent mandibular incisors exhibit class I mobility with interproximal separation and lingual displacement (Fig 2). A periapical radiograph at this site demonstrates superficial erosion of the alveolar bone (Fig 3). No other oral or cutaneous lesions are noted in this healthy child.

Clinical impression

Based on the clinical presentation and history, this soft tissue enlargement is most consistent with the benign reactive lesion, PGCG or the giant cell epulis. This relatively common tumor-like growth occurs exclusively on the gingiva and the alveolar mucosa and is caused by local irritation or trauma. Although the peak prevalence is in the fifth and sixth decades, between 20 to 33% occur within the first two decades of life.[1,2] The most common location for the PGCG is the incisor and canine regions with a slight predilection for the mandible.

Clinically, this gingival lesion presents as a rubbery, smooth-surfaced nodule or mass that is red, purple or blue in color. Surface ulceration, bleeding and displacement of the teeth are

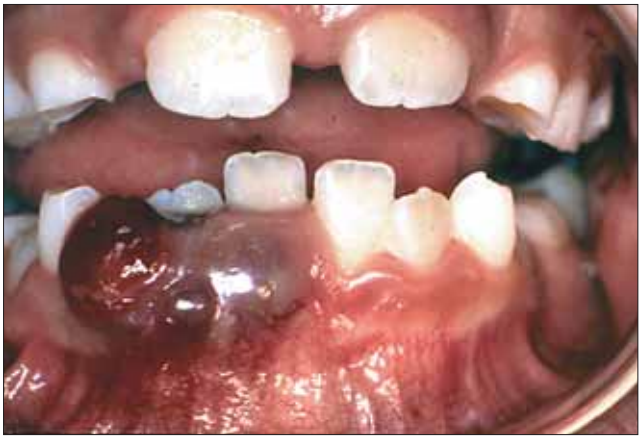

Fig 1. Reddish-purple nodule of the mandibular, anterior attached gingiva extends to the alveolar mucosa.

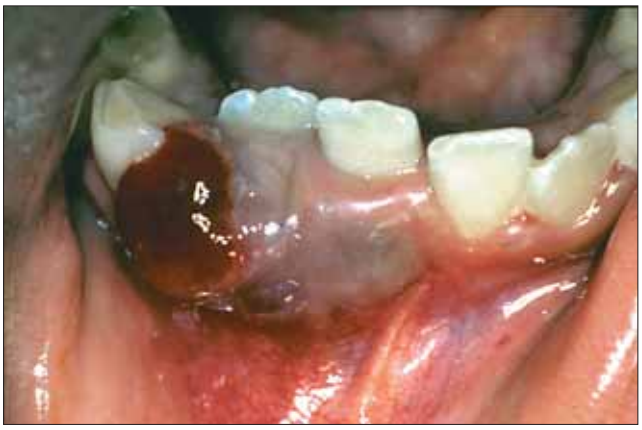

Fig 2. Lingual displacement of the lateral incisor by the gingival enlargement is evident.

Received March 29, 2000 Revision Accepted April 3, 2000

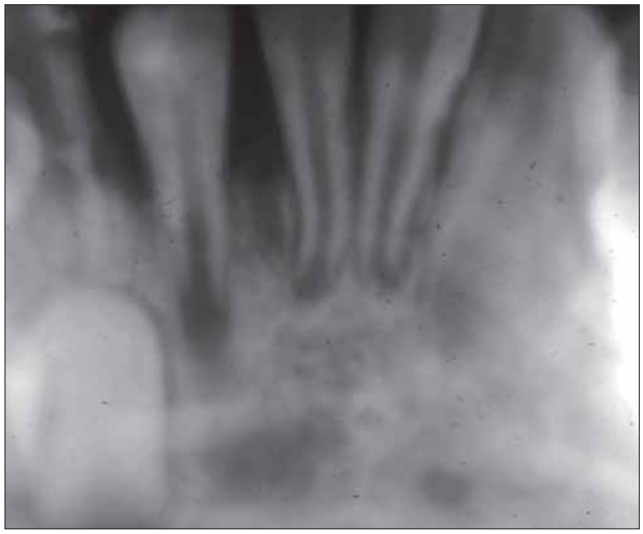

Fig 3. Periapical radiograph demonstrates a cupping defect of the alveolar bone.

common findings. The size of this reactive lesion varies from a small papule to a massive enlargement; however, most lesions are less than 2 cm in diameter. Pain is not a major complaint unless the growth is traumatized repeatedly. Radiographic evaluation of any gingival lesion, including the PGCG, is prudent in order to determine the extent and origin of the lesion. Superficial resorption or cupping of the alveolar bone is often noted on a periapical radiograph. In addition, a widened periodontal ligament space is associated frequently with tooth mobility but may represent lesion extension around the root.[3]

In rare instances, PGCG is an oral manifestation of hyperparathyroidism without obvious central bony involvement.[4,5] While this is an unusual initial presentation, hyperparathyroidism should be considered when multiple lesions are found or if repeated recurrences are documented despite adequate treatment. A parathyroid tumor or chronic renal disease may result in excess production of the parathyroid hormone that stimulates the formation of a giant cell lesion. In addition, children with X-linked hypophosphatemic rickets, a condition that is associated with subclinical hyperparathyroidism, are at increased risk for developing this entity.[6]

Diagnosis

Due to the large size of the lesion, an incisional biopsy, along with histopathologic evaluation, is recommended for the diagnosis of this progressively enlarging gingival mass, in order to establish a definitive diagnosis. In some cases when it is important to exclude hyperparathyroidism, laboratory studies including serum calcium, phosphate, alkaline phosphatase and parathyroid hormone are required.

Treatment

Management of this gingival lesion is surgical excision and elimination of any local contributing factors. The recurrence rate is approximately 10% but multiple recurrences with eventual loss of the adjacent teeth are a potential complication. In this case because of the large size of the surgical defect, a grafting procedure is needed to cover the exposed periosteum and roots of the incisors.

Differential diagnosis

Gingival lesions in children that mimic the PGCG are the pyogenic granuloma, parulis and peripheral ossifying fibroma. The pyogenic granuloma may be difficult to differentiate from the PGCG based on clinical features alone. In general the pyogenic granuloma presents as a soft, friable nodule that bleeds freely with minimal manipulation. Unlike the PGCG, displacement of teeth and resorption of alveolar bone are not observed. Another erythematous nodule of the gingiva is the parulis, which is associated with an entrapped foreign body, a gingival pocket and/or a nonvital tooth. Pain and the expression of a purulent exudate with fluctuation in lesion size help to differentiate this inflammatory disease from the PGCG. The peripheral ossifying fibroma is a reactive gingival growth that shares similar clinical features as the PGCG. Although this reactive lesion is often ulcerated and inflamed, it lacks the purple or blue discoloration that is commonly associated with the PGCG. Identification of small flecks of calcification within the tumescence on a radiograph aids in diagnosing the peripheral ossifying fibroma, when present. The final consideration based on the red or blue discoloration of the soft tissue nodule is a hemangioma. Although many hemangiomas are congenital lesions, some vascular malformations increase in size during childhood. Brisk bleeding, increased warmth of the tissue and blanching upon palpation are characteristic of this vascular entity.

Pediatric significance

In children, reactive oral lesions such as the PGCG can demonstrate a rapid growth rate and reach significant size within several months of initial diagnosis. These soft tissue nodules may be quite aggressive and resorb bone, interfere with eruption of teeth and produce minor to moderate tooth movement.[3] Radiographs are important for diagnosis to confirm that this giant cell lesion arises within the oral mucosa and does not represent a central bony lesion with cortical perforation and soft tissue extension. Early detection of the PGCG results in more conservative surgery with less risk for tooth and bone loss.

References

1. Giansanti JS, Waldron CA. Peripheral giant cell granuloma: review of 720 cases. J Oral Surg 27:787-91, 1969.
2. Katsikeris N, Kakarantza-Angelopoulou E: Peripheral giant cell granuloma: clinicopathologic study of 224 new cases and 956 reported cases. Int J Oral Maxillofac Surg 17:94-99, 1988.
3. Pandolphi, PJ, Felefli S, Flaitz CM, Johnson JV: An aggressive peripheral giant cell granuloma in a child. J Clin Pediatr Dent 23:353-55, 1999.
4. Smith BR, Fowler CB: Primary hyperparathyroidism presenting as a "peripheral" giant cell granuloma. J Oral Maxillofac Surg 46:65-69, 1988.
5. Burkes EJ, White RP: A peripheral giant-cell granuloma manifestation of primary hyperparathyroidism: report of a case. J Am Dent Assoc 118:62-64, 1989.
6. Stratakis CA, Mitsiades NS, Sun D, Chrousos GP, O'Connell A: Recurring oral giant cell lesion in a child with X-linked hypophosphatemic rickets: clinical manifestation of occult parathyroidism? J Pediatr 127:444-46, 1995.