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Post-traumatic development of a peripheral giant cell granuloma in a child

CASE REPORT

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Abstract – The peripheral giant cell granuloma (PGCG) is a benign hyperplastic gingival lesion of unknown aetiology occurring mostly in adults. A few cases have been described in children where a more aggressive clinical behaviour has been observed. In this paper, we report a case of PGCG localized in the anterior region of the maxilla of a 6-year-old boy which developed 6 months following a traumatic event. Early detection and treatment of PGCG is important to reduce possible dento-alveolar complications such as bone loss or displacement of dental germs or teeth.

Peripheral giant cell granuloma (PGCG), also called giant cell epulis, is a relatively uncommon lesion of the gingiva or alveolar mucosa considered to be of reactive nature. Most of the affected patients are adults in the fourth to the sixth decades of life and it seems that the lesions have a slight predilection for women.

A few cases have been reported occurring in children and in these cases the lesion appeared to be more aggressive. We describe here a case of PGCG in a child apparently related to a traumatic event.

Case report

A 6-year-old boy, with non-contributory medical history, presented in November 2003 after falling down the stairs at home. The child complained of moderate pain in the right anterior maxilla, from the left central deciduous incisor to the right deciduous canine. Extraoral examination was not relevant. Mouth examination revealed intrusion and vestibular luxation of tooth 52 (Fig. 1) whereas tooth 51 presented no clinical signs although the boy did report tenderness upon tapping. Neither soft-tissue lesions nor associated bone or dental fracture could be found. Routine cold vitality test to 51, 52 and 53 was positive.

In May 2004, the child presented again with a painless 15-mm firm, well-delimited, pedunculated, erythematous gingival swelling which had developed around tooth 51 over the previous 2 weeks (Fig. 2). Radiological examination could not reveal bony resorption around the root.

Under local anaesthesia, the mass was excised, and submitted for histological examination with a preoperative diagnosis of reactive hyperplasia. Local haemostasis was obtained by electrocauterization.

The specimen revealed an ulcerated giant cell granuloma characterized by the proliferation of elongated fibroblastic cells with ovoid nuclei lacking atypia or mitosis and by the diffuse infiltration of osteoclast-like multinucleated giant cells in a fibrous connective tissue (Fig. 3). The non-keratinized squamous epithelium at the edge of the ulcer was infiltrated by neutrophils. Numerous small vessels and capillaries were also present on the upper part of the nodule and grow in calibre as they penetrate deeper into the lesion. Some of these vessels were surrounded by lymphocytes and plasma cells. Spicules of woven bone and calcifications were also present. The giant cell granuloma was incompletely excised and in June 2004 the patient was operated again.

The last follow up, 18 months later, showed a healthy attached gingiva in the region of 51 and 52 with no signs of recurrence.

Discussion

Among hyperplastic gingival lesions, fibrous or granulomatous lesions are far more frequent than giant cell lesions, no matter how old the patients are. In a clinicopathological study of 741 patients having such lesions, less than 10% were diagnosed as PGCG (1).

Peripheral giant cell granuloma is usually found in adults. A very few cases have been described in a population of children. Out of 12 cases reported in the literature, five patients were aged less and five more than 10 years of age, girls were more often affected, and PGCGs were more often located on the gingiva as well as

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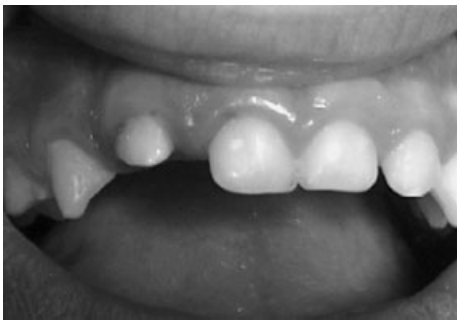

Fig. 1. Intrusion and vestibular displacement of the maxillary deciduous second lateral incisor.

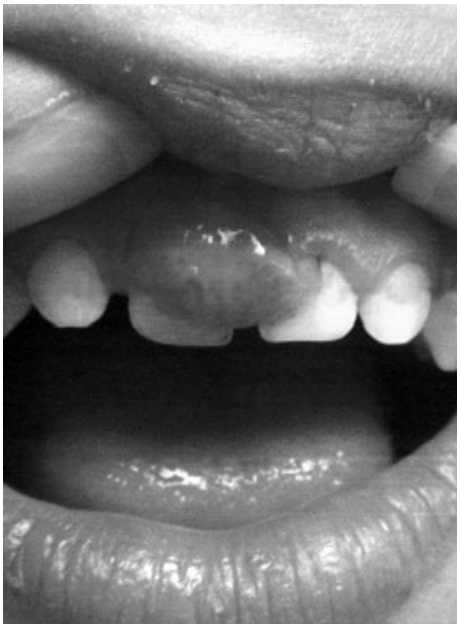

Fig. 2. Pedunculated nodule localized on the gingiva of right central deciduous tooth.

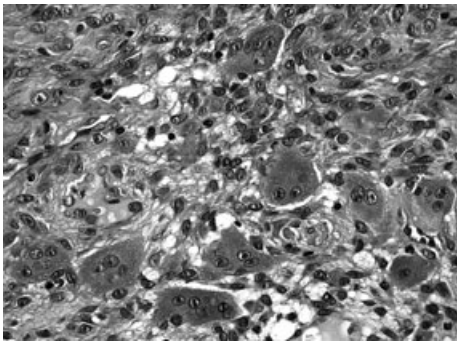

Fig. 3. Multinucleated giant cells intermingled with fibroblasts and capillaries (HES ×40).

on the alveolar mucosa in the posterior region of the maxilla. The size of these lesions varied from a few millimetres to 4 cm in diameter (2–12).

The aetiology of PGCG is unknown. Local irritation factors such as poor dental restorations, unstable dental prosthesis, dental extractions, plaque and calculus accumulation, food retention seem to play an important role in the development of a PGCG (1, 2, 13).

Traumatisms and irritation after an orthodontic treatment may also be held responsible for the apparition of a PGCG (14).

To our knowledge, the association of a dental traumatism and PGCG has been described only once (8). However, in that case, the association between the traumatism and the PGCG seems debatable as PGCG appeared 6 years after the accident in the traumatized region. In the case we describe, the time elapsed between the apparition of the lesion and the traumatism is much shorter (6 months) and thus the relationship between an identifiable trigger, that is dento-gingival trauma resulting from the fall in the stairs, and the apparition of the lesion is stronger.

Peripheral giant cell granuloma can behave very aggressively, especially in children. The criteria used to define aggressiveness of a PGCG are its size, the extension of the lesion in neighbouring tissues, its ability to relapse, the associated bone resorption, bone displacements and even the presence of unstable moving teeth in the vicinity of the lesion (6, 7).

Because of the high frequency of relapses, and to limit both irreversible bony destruction and extraction of permanent teeth, some authors advocate for a radical and extensive excision of PGCG which comprises not only the excision of the gingival lesion, but also of the adjacent periosteum and sometimes the superficial bony layer (2). This surgical approach requires combined graft techniques to cover the exposed periosteum and the neighbouring dental roots.

Clinically, PGCG is a smooth brown, red or bluish nodule, sessile or pedunculated, with a slight predilection for the posterior segments of the jaws (13).

Microscopically, PGCG is often ulcerated or eroded. The underlying connective tissue consists of fibroblasts and multinucleated osteoclast-like giant cells. Extravasated red cells and deposits of haemosiderin, which are responsible for the classic brown-reddish colour of the PGCG are often present. Inflammatory cells and bone (woven and/or metaplastic) are found in about one-third of the cases.

In rare cases, PGCG may be the sole expression of a hyperparathyroidism. Bergdhal showed that 1.9–6% of the patients with a gingival lesion with multinucleated cells also have hyperparathyroidism (15). PGCG usually is in relation with a primary hyperparathyrodism (16, 17); however, a few cases associated to secondary hyperparathyroidism have also been described (11, 12). A case of recurrent PCGC has also been described by Stratakis et al. in a 9-year-old boy affected by X-linked hypophosphatemic rickets, a condition associated with subclinical hyperparathyroidism (10). In a patient with typical lesions suggesting PGCG, especially when multiple or reoccurring after treatment, hyperparathyroidism should hence be excluded (11, 12, 16, 17).

A case of PGCG has been reported in a patient with a cyclic neutropenia (18). Recently, a gingival giant cell

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granuloma has been reported to occur in a patient with glycogen storage disease type Ib, a rare inherited metabolic disorder caused by a deficiency of glucose-6-phosphate translocase with consequent accumulation of glycogen, which was characterized by failure to thrive, hepatomegaly, hypoglycaemia, hyperlacticacidemia, neutropenia and neutrophilic dysfunction (19).

Conclusion

Peripheral giant cell granuloma is a disease encountered often in the adult population. It is very rarely found in children and represents only a very small proportion of the hyperplasic gingival lesions. PGCG, as our case illustrates it, may well occur after a dental traumatism. Because of the potential local aggressive behaviour of this type of lesion, an early diagnosis and effective surgical management is warranted.

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