Abstract

Peripheral giant cell granuloma is an inflammatory hyperplastic lesion that commonly occurs on peripheral tissues like gingiva, periodontal ligaments or alveolar mucosa. Clinically it is only seen in gingiva, particularly between the first permanent molars and incisors. It manifests itself as a benign tumor consisting of multinucleated giant cells.

This article reports a case of peripheral giant cell granuloma in the left mandibular premolar region in a 34-year-old man. The lesion was excised and sent for histopathological examination, and was diagnosed as peripheral giant cell granuloma. The lesion was recurrent. This case report shows the importance of confirming the diagnosis of the lesion by histopathological examination. Peripheral giant cell granuloma is a reactive lesion that shows a rapid growth rate and can cause minor tooth movement. As the name suggests, there is no bony involvement and the enlargement is a soft tissue extension. Early conservative management will reduce the risk of tooth loss.

Key words: peripheral giant cell granuloma, multinucleated giant cells, local trauma

Słowa kluczowe: nawrotowy nadziąślak olbrzymiokomórkowy, wielojądrowe komórki olbrzymie, uraz miejscowy
Peripheral giant cell granuloma (PGCG) is among the benign tumors of peripheral origin. It is also referred to as giant cell epulis, peripheral giant cell tumor, osteoclastoma, giant cell hyperplasia or giant cell reparative granuloma. It is an inflammatory hyperplastic lesion that commonly occurs on peripheral tissues like gingiva, periodontal ligaments or alveolar mucosa. As the name indicates, it does not represent a true neoplasm, but rather a reactive hyperplastic lesion secondary to local trauma or irritation. The exact etiology is, however, unknown.1

Clinically PGCG is only seen in gingiva, particularly between the first permanent molars and incisors; it presents as a smooth surface, either sessile or pedunculated, bluish red in color. It is asymptomatic, seen as red mass of gingiva composed of fibroblasts and multinucleated giant cells with more nuclei and amorphilic cytoplasm. The giant cells appear to be non-functional in terms of phagocytosis and bone resorption. When it occurs in edentulous areas (which is rare) it produces a cup-shaped radiolucency. It occurs in all age groups, but more commonly in 30- to 40-year-old patients; females have a greater predilection than males. It cannot be clinically separated from pyogenic granuloma.2,3

Case report

A systemically healthy 34-year-old male patient presented with a chief complaint of swelling in the lower left back region for 6 months. His history revealed that the swelling started after chewing on a fish bone 6 months previously and started increasing in size, gradually attaining the present size. There was occasional bleeding from the lesion while brushing. The patient was asymptomatic. Extra-oral swelling was not seen.

On intra-oral examination, an intra-oral swelling was present in the lower left back region, which is illustrated in Fig. 1. A swelling measuring 3 × 2 cm was seen adjacent to tooth number 21 (universal tooth numbering system). It was reddish pink in color, with a firm consistency, well defined and non-fluctuant; it was tender on palpation extending along both the buccal and lingual sides of the same tooth. The tooth was vital; it was slightly mobile, but there was no evidence of endodontic pathology associated with it.

A radiological examination revealed horizontal bone loss at tooth 21 but no evidence of bony involvement. Routine blood tests including a complete hemogram, bleeding time and clotting time and erythrocyte sedimentation rate (ESR) were found to be normal.

Treatment of the lesion

Scaling and root debridement were performed as Phase I therapy. The patient was recalled after one week for a re-evaluation. The lesion was excised under local anesthesia (Fig. 2) and sent for histopathological examination.

A routine histological examination with hematoxylin revealed the presence of areas of multinucleated giant cells with 6 to 8 nuclei and amorphilic cytoplasm in a background of plump ovoid and spindle shaped mesenchymal cells. Deposition of hemosiderin pigments along with collagen fibers intermixed with chronic inflammatory cell infiltrate (chiefly lymphocytes and plasma cells), blood vessels engorged with RBCs and areas of hemorrhage were also seen. The zone of giant cell proliferation was delineated from the overlying hyperplastic parakeratinized stratified squamous epithelium by a zone of normal lamina propria. The histological picture is shown in Fig. 3.

The diagnosis was suggestive of peripheral giant cell granuloma. A characteristic feature of PGCG is recurrence, which is seen in 5–11% of cases.4 Recurrence of peripheral giant cell granuloma was observed in the present case after 3 months.
Peripheral giant cell granuloma is the most common lesion in both jaws. The etiology of PGCG is still not clear. The literature indicates that PGCG has a female predilection, although the present case report concerns peripheral giant cell granuloma in a male patient, which is similar to the study by Bhaskar et al.5

Radiographic features in an edentulous area include cup-shaped resorption of alveolar bone that is called a “levelling effect”; and in a dentate region there will be widening of the periodontal ligament space and resorption of the alveolar crest in the interdental region.5

Bischof et al. reported a case of peripheral giant cell granuloma associated with implants.7

The observed recurrence of this lesion is from 5% to 11%. In the present case, recurrence was seen after 6 months, which coincides with a case report by Prabhat.8 To prevent recurrence, the excision of the lesion should be performed down to the peristomeum. In the present case, total excision and complete removal of the remnants of the lesion was advised to prevent recurrence.

Rodrigues et al. reported that the presence of lesions may cause mobility or displacement of neighboring teeth.1 In the present case, increased mobility of the tooth was noted after excision of the lesion. It was painless and it did not interfere with occlusion, hence it was not affected by traumatic forces. Rodrigues et al. also stated that the consistency of a PGCG lesion depends on its age: with time, there is an increase in collagen fibers, so a mature lesion is firm in consistency.1 In the present case, the consistency was firm.

El Mofty et al. stated that these giant cells are derived from bone marrow mononuclear cells and are present in the stroma only in response to an unknown stimulus.9 The giant cells are short-lived and disappear early in cultures, in contrast to the stromal cells, which show active proliferation.9

Willing et al. reported that factors that are secreted by stromal cells, such as monocyte chemo attractant protein-1 (MCP1), osteoclast differentiation factor (ODF) and macrophage-colony stimulating factor (M-CSF), are monocyte chemo attractants and are essential for osteoclast differentiation. This suggests that the stromal cells stimulate the immigration of monocytes from the blood into the tumor tissue and enhance their fusion into osteoclast-like, multinucleated giant cells.7 As Abe et al. wrote, “the recently identified membrane-bound protein family, a disintegrin and metalloprotease (ADAM), is considered to play a role in the multinucleation of osteoclasts and macrophage-derived giant cells from mononuclear precursor cells.”10

There are no pathognomonic clinical features that differentiate the peripheral giant cell granuloma from pyogenic granuloma, peripheral ossifying fibroma or giant cell fibroma. Along with clinical examinations, radiographic and histological examinations are needed to confirm the diagnosis.11–13

**Conclusions**

Even though the etiology is unclear, poor oral hygiene could be a predisposing factor in PGCG. Early diagnosis and conservative management is important in such lesions, since they can become more destructive over time. Peripheral giant cell granuloma can manifest as gingival enlargement, which is a reactive lesion with a rapid growth rate and involvement of soft tissue above underlying bone, without any central bony lesion. This could cause minor to moderate tooth movement because of resorption of underlying alveolar bone. Therefore, early management of these lesions can prevent the risk of tooth loss.

**References**


