Case Report

A rare case of giant cell fibroma in a pediatric patient

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ABSTRACT

Fibrous hyperplastic lesions are frequently encountered in the oral cavity. Although clinically similar, these lesions show variations histologically. Giant cell fibroma (GCF) is one such nonneoplastic fibrous lesion with a characteristic histopathological feature of stellate-shaped multinuclear or mononuclear fibroblasts known as giant cell fibroblasts. In the recent years, more and more GCF cases have been reported in pediatric patients. This case report describes a papillary soft tissue growth in the lower right posterior region of the mandible in a 5-year-old child with a review on giant cell fibroblasts.

Key words: Giant cell fibroblasts, giant cell fibroma, pediatric

INTRODUCTION

Fibrous hyperplastic lesions are the most common benign soft tissue growths of the oral cavity. Different forms of fibrous hyperplasia are fibrous epulis, irritation fibroma, pyogenic granuloma, and giant cell fibroma (GCF). Most of the fibrous hyperplastic lesions are reactive in nature secondary to irritation. GCF first described in 1974 by Weathers and Callihan as a distinct entity is one such lesion that has different clinical and histological presentation.[1,2] GCF is found predominantly in Caucasians under the age of 30 years with slight female predilection. It derives its name owing to the characteristic histologic picture of large mononucleated or multinucleated stellate-shaped giant fibroblasts, which are in close proximity to the overlying epithelium. It represents approximately 2–5% of all fibrous lesions submitted for biopsy and 0.4–1% of total biopsies, although greater percentages have also been documented. Clinically, GCF is an asymptomatic sessile or pedunculated nodule with a papillary surface, usually <1 cm in size. Response to trauma or recurrent chronic inflammation characterized by changes in fibroblasts is the most accepted hypothesis for the etiology of GCF.[3]

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CASE REPORT

A 5-year-old male patient reported with a chief complaint of pain and swelling in the lower right posterior region of the jaw since 8–10 days. The past medical history revealed the presence of renal stones 1 year back for which he was treated.

On intraoral examination, a well-circumscribed ovoid to elongated swelling was presented distal to the lower right second deciduous molar. The swelling measured 1 cm × 0.7 cm, was pinkish in color and had a characteristic papillary surface.

Radiographs showed that no changes attributing to the fact that it was a soft tissue swelling.

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A provisional diagnosis of epulis was given.

The growth was excised, and the specimen was sent for histopathological analysis.

On histopathological examination, the scanner view showed a fibrocellular stroma with a thin atrophic epithelium. Low power view showed a dense fibrous stroma with stellate-shaped fibroblasts and atrophic epithelium [Figure 1]. High power view showed atrophic parakeratinized stratified squamous epithelium, a dense fibrocellular connective tissue stroma with large stellate-shaped mononuclear fibroblasts predominantly just below the overlying epithelium. The section showed few dilated blood vessels without any inflammation [Figure 2]. Based on these findings, a final diagnosis of GCF was formulated.

On immunohistochemical evaluation, the stellate-shaped giant cells were found to be positive for vimentin [Figure 3].

The patient was under follow-up for 6 months and did not show any recurrence.

DISCUSSION

Various types of fibrous hyperplasias have similar clinical characteristics and hence their diagnosis is often challenging. Several distinctions can be made among them according to characteristics such as age distribution, gender predilection, location, and etiology.

GCF has a few distinguishing clinical as well as histopathological features from that of other fibrous hyperplasias necessitating it to be described as a separate entity by most of the authors.[4]

GCF and irritation fibroma show similar clinical appearance but differ in their occurrence. GCF usually develops in the young adults, whereas irritation fibroma is found in older adults (fourth to sixth decade). Irritation fibroma is located more commonly on the buccal or labial mucosa along the line of occlusion, as opposed to GCF, which is most commonly located on the gingiva. Pyogenic granuloma generally appears as a reddish or pinkish nodule, which easily bleeds when touched which is not the case in GCF. GCF also differs from the peripheral giant cell granuloma, since the latter is exclusively located in the gingival mucosa, mesial to the first molar.[5]

In the recent years, many reported cases of GCF affecting the pediatric population have been documented.

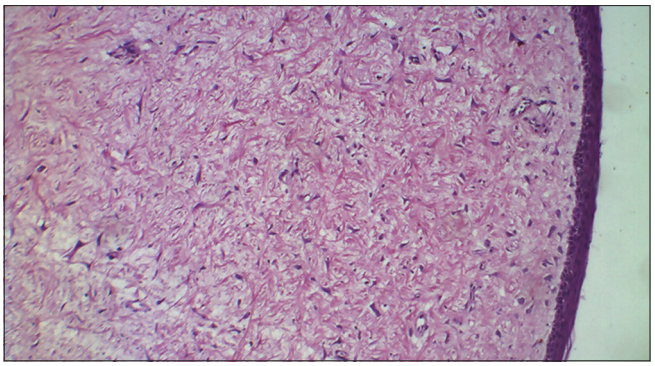

Figure 1: Pictomicrograph showing a dense fibrous stroma with stellate-shaped fibroblasts and atrophic epithelium (H and E, ×10)

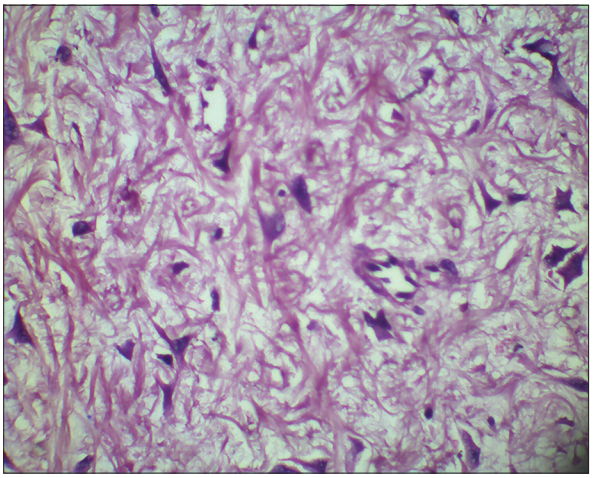

Figure 2: Pictomicrograph showing a dense fibrocellular connective tissue stroma with large stellate shaped mononuclear fibroblasts (H and E, ×40)

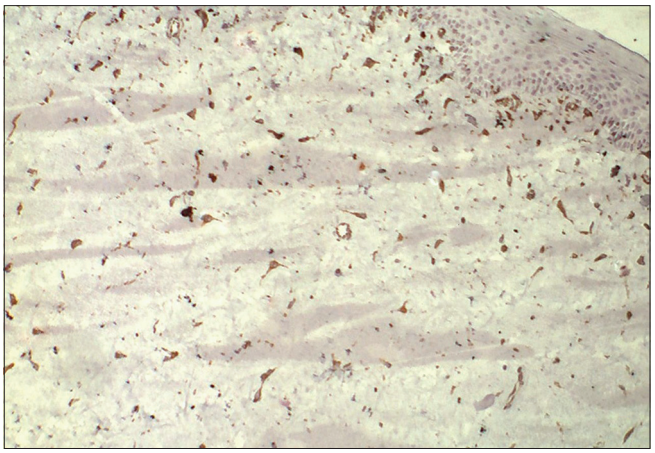

Figure 3: Immunohistochemistry revealed positivity for vimentin expressed by the stellate-shaped giant cells

In 2010, Campos *et al*. reported a GCF in the maxillary anterior palatal gingival region in an 11-year-old Caucasian female.[5]

Shapira and Akrish and Uloopi reported cases of GCF of the tongue in a 6-year-old female and a 12-year-old female, respectively.[6,7]

In 2013, Nikitakis *et al*. reported two cases of GCF in the mandibular anterior gingiva in a 6 and a 7-year-old male patient.[8]

Reddy *et al*. reported GCF in a 7-year-old male also involving the mandibular anterior gingiva.[3]

GCF is characterized by the presence of many large stellate mononucleated or multinucleated giant cell fibroblasts located beneath the epithelium in a fibrous connective tissue stroma containing abundant collagen. The cytoplasmic borders of these giant cells are usually distinct with some fading at the apex of angular extension. The cytoplasm is basophilic and granular. An artifactual space separating the giant cells from the collagen fibers is sometimes present.

Ultrastructurally, giant fibroblasts appear as stellate cells with a large hyperchromatic nucleus and a well-demarcated cytoplasm, and frequently the cells exhibit dendrite-like processes. Sometimes, these giant fibroblasts may be multinucleated.

Various immunohistochemical studies on these giant cells of GCF showed positivity only for vimentin and were negative for cytokeratin, neurofilament, muscle actin antibody (HHF), CD68, human leukocye antigen- antigen D related (HLA-DR), tryptase, leukocyte common antigen, S-100 protein.[9] The giant cells showed positivity for vimentin in the present case, suggesting a fibroblastic phenotype.

GCF multinucleated cells are positive for proliferating cell nuclear antigen but negative for Ki-67 indicating that these multinucleated cells are not formed by cell division but possibly by fusion of mononuclear fibroblasts.

All GCFs can be treated by conservative surgical excision without subsequent recurrence. Of the 464 cases reported by Houston, recurrence was noted in two cases. Kuo *et al*. studied 24 cases of GCFs, all of which were excised surgically without any recurrence.[10]

CONCLUSION

GCF is found uncommonly in the pediatric population. Dentists, as well as pediatricians, should be aware of the clinical, histological, and immunohistochemical features of GCF as described in this case report. These features can help familiarize with the unusual nature of this lesion and aid in differentiating it from other oral soft tissue lesions.

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Conflicts of interest

There are no conflicts of interest.

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