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Giant Cell Fibroma: A Case Report Concerning an Unusual Lesion of the Oral Cavity

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Authors' contributions

This work was carried out in collaboration between all authors. Author MAGMB wrote the draft of the manuscript. Author GB managed the literature searches. Author VM designed the figures, managed literature searches and contributed to the correction of the draft. Author CM provided the case, the figures and supervised the work. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Aims: We describe the case of a young man with giant cell fibroma (GCF) of the oral cavity. Cases such as this are rare and we believe that our research adds to the literature concerning this area of study.
Presentation of the Case: An asymptomatic, sessile lesion was excised from the tongue of a young man who had no previous history of chronic irritation. The final diagnosis was GCF and no recurrences have been reported to date.
Discussion: GCF is a debated lesion, clinically indistinguishable from other benign lesions of the oral cavity. Large, stellate and multinucleated giant cells in a loose, poorly vascularized stroma are characteristic histological features that differentiate it from other fibrous lesions. Our case was negative for CD34 and positive for vimentin and factor XIIIa, which supports origin from a subpopulation of fibroblasts that are normally resident in the oral cavity.
Conclusion: Our findings further support the view that GCF should be classified as a distinct entity.

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Keywords: Giant cell fibroma; benign oral lesions.

ABBREVIATIONS

GCF: Giant Cell Fibroma; DF: Desmoplastic Fibroma.

1. INTRODUCTION

Giant cell fibroma (GCF), first described by Weathers and Callihan in 1974 [1], is a benign, asymptomatic lesion that occurs most frequently in Caucasians in their thirties [2]. Clinical presentation of GCF is almost indistinguishable from that of other fibrous hyperplastic lesions ("fibromas") of the oral cavity [2,3], although some differences in size, pathogenesis, patient age and location have been noticed [4]. Consequently, some authors have disputed the need to classify GCF as a separate entity from classic fibroma [5]. However, in this case, we highlight the key features of GCF that suggest that this lesion is a distinct entity.

2. PRESENTATION OF THE CASE

A 24-year old male presented at the dental clinic with a 3 mm, slightly elevated lesion on the tongue with the color of normal mucosa. He stated that it had been present for some months and had not shown any signs of change in size; he also said that he did not have any history of irritation. Excisional biopsy was performed. The specimen was then routinely processed for histological examination. In addition to Hematoxylin and Eosin, other sections were immunostained for vimentin (SRL33, ready to use, Novocastra, Milan, Italy); CD 34 (QBEnd/10, ready to use, Novocastra); factor XIIIa (E980-1, ready to use, Novocastra); CD 68 (514H12,dil.1:1500, Novocastra); smooth muscle actin (ASM1, dil.1:100, Novocastra); desmin (DE-R-11, ready to use, Novocastra); CD10 (56C6, ready to use, Novocastra); muscle specific actin (HHF35, ready to use, Novocastra); CD 99 (12E7, ready to use, Novocastra); EMA (GP 1.4, ready to use, Novocastra); Ki 67 (K2, dil.1: 50, Novocastra).

Histologically, we observed the following: a hyperplastic epithelium, elongation of the rete ridge and a poorly vascularized collagenous stroma (Fig. 1, A). Additionally, there were two distinct populations of cells: numerous medium-to-large stellate cells as well as giant multinucleated cells (Fig. 1, B), which were both positive to factor XIIIa (Fig. 1, C) and vimentin (Fig. 1, D). Instead, they were negative to the other tested antibodies. Inflammatory cells were nearly absent, with just a few CD68+ macrophages. The final diagnosis was giant cell fibroma (GCF).

3. DISCUSSION

Whereas conventional fibroma is more frequent in the oral cavity, GCF, after its identification by Weathers and Callihan, has rarely been described, and in the main has been limited to single case reports or small series [6,7]. GCF can occur at any time, with the mean age reported being 29 years [6]. Some studies have shown a slight female preponderance [2]. Clinically, GCF presents as an asymptomatic, sessile or pedunculated lesion with the color of normal oral mucosa, usually measuring 5 to 10 mm [2,8]. The tongue, as in our case, is amongst the most frequent sites of origin [6,9]. Histologically, numerous large stellate and multinucleated giant cells are present in fibrous, loosely arranged and poorly vascularized connective tissue [2,8]. The cells have well-defined cell borders and show dendritic processes. The overlying epithelium is hyperplastic, with thin elongated rete ridges. Inflammatory infiltrate is usually absent [2].

The pathogenesis of GCF remains unclear. It is not usually associated with chronic irritation, unlike other forms of fibroma [8]. Some authors have suggested that minor, unapparent trauma can trigger its development, through functional changes in fibroblastic cells [7,9]. As in many previously reported cases, our patient had no history of irritation of the oral cavity. Immunohistochemical studies which were performed to determine the origin of the multinucleated giant cells showed positivity for vimentin [7,9,10,11], suggesting a fibroblast phenotype. Additionally, in a few cases there was positivity for factor XIIIa [7,10]. In our case, both vimentin and factor XIIIa were positive. Factor XIIIa+ cells are a sub-population of dermal fibroblasts that are normally present both in the skin and oral cavity [12,13]. They are also present in an array of cutaneous and mucosal lesions [11,12], in which Factor XIIIa most likely acts as a growth factor [13].

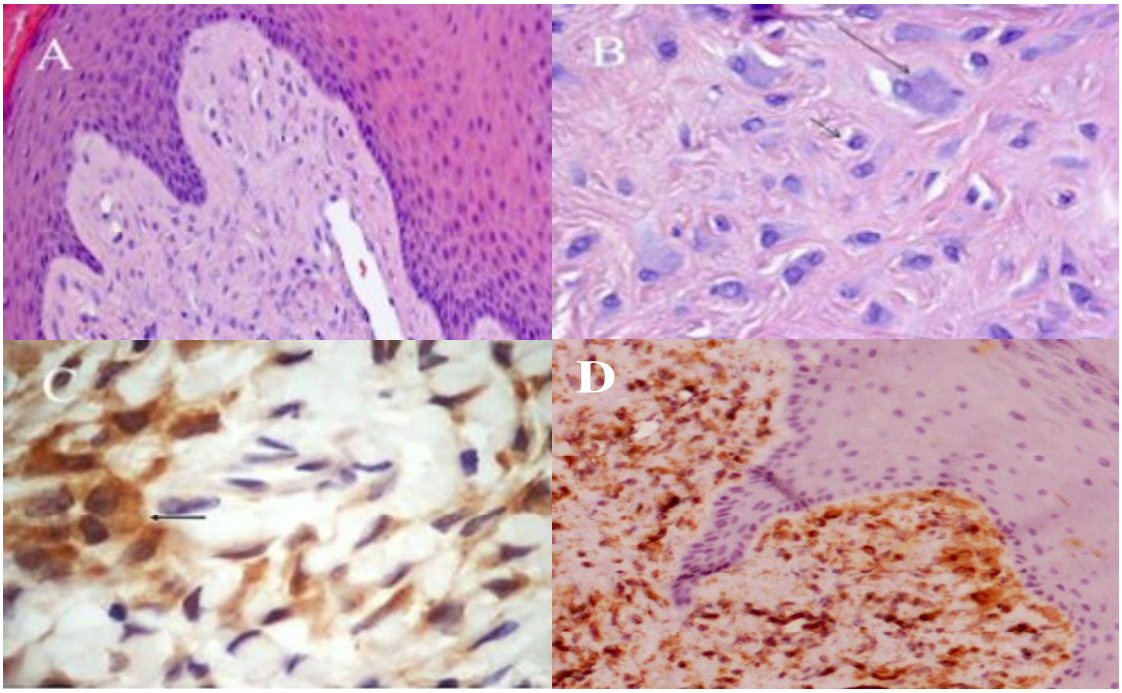

Fig. 1. At scanning power, elongated rete ridge and collagenous stroma (A), with a dual population of cells: multinucleated giant cells (B, long arrow) and stellate cells (B, short arrow). The stromal cells show positivity to factor XIIIa (C), which is also positive in the multinucleated giant cells (C, arrow), and diffuse positivity to vimentin (D)

A, B: Hematoxylin and Eosin, original magnification: A: x 100x; B: x 400. C: Immunohistochemistry, factor XIIIa, diaminobenzidine counterstain, original magnification: x 630. D: Immunohistochemistry, vimentin, diaminobenzidine counterstain, original magnification: x 100

Another lesion that closely resembles GCF is desmoplastic fibroblastoma (DF), also known as collagenous fibroma, in which there are stellate or spindle shaped fibroblasts, with round or elongated nuclei, as well as binucleated and multinucleated cells [14]. However, in DF, the collagenous stroma is more prominent. It presents in older patients and usually grows to a larger size than GCF. Moreover, in DF the cells are usually focally positive to smooth muscle actin [14]. In our case, the negativity to muscle markers seems to suggest that a myofibroblastic nature is not present.

As reported in previous reports [4,6,7,9], our lesion differs from the more common fibrous lesions of the oral cavity, not only because of the clinical data (absence of local trauma; patient's age; site of involvement), but primarily because of its histological appearance.

The choice of treatment for GCF is surgical excision in adults, whereas in children electrosurgery or laser excision is preferred [7]. Usually, GCF does not recur. In our case, there have been no recurrences, after 18 months of follow up.

4. CONCLUSION

In conclusion, our case also supports the view that GCF is a distinct entity of the oral cavity, and the diagnosis confirms the importance of histological examination. Based on the literature and in our experience, Factor XIIIa may be positive in both common fibroma and GCF.

CONSENT

All authors declare that 'written informed consent was obtained from the patient for publication of this case report and accompanying images.

ETHICAL APPROVAL

Not applicable.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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