Giant cell fibroma: A case report with literature review

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Abstract

A distinctive oral fibrous proliferation approximating only 2-5% of all benign gingival overgrowths is a unique lesion requiring adequate clinical diagnosis. With no subtle association with chronic irritation, this oral tumor is a diverse lesion. Giant cell fibroma (GCF) requires histopathological examination for its final diagnosis as clinic pathologic features are not sufficient to assess and confirm the lesion. Occurring most commonly during the first three decades of life this asymptomatic pedunculated or sessile lump clinically resembles fibroma and papilloma with no gender predilection. In this paper, we present a unique case of Giant cell fibroma (GCF) in a 4-year-old child.

Keywords: Pedunculated, fibroma, stellate, histopathologically, giant cells, pedunculated

Introduction

This oral tumor was first described by Weather and Callihan in 1974 as a separate category of fibroma who found 108 unique entities among 2000 fibrous hyperplastic lesions because of its distinct histopathological appearance and therefore does not is considered as conventional fibroma [1]. It was designated as Giant cell fibroma (GCF) because of the characteristic presence of stellate fibroblasts with multinucleated giant cells histopathologically [2, 3]. This categorization was made by Eversole and Rovin who clinically found Giant cell fibroma as indistinguishable, when they compared 279 fibrous hyperplastic lesions and categorized them into peripheral ossifying fibroma, peripheral giant cell granuloma, pyogenic granuloma and peripheral gingival fibroma [2]. These fibrous hyperplastic gingival lesions showed distinct characteristics during histopathological examination. This sessile or pedunculated asymptomatic nodule with bossolated or papillary surface with equal sex predilection & mostly occurring among 20 +-year olds can be mistaken from papilloma or fibroma [4]. In this paper, we present a unique case of giant cell fibroma in a 4 year old girl which was finally diagnosed on the basis of histopathological examination.

Case Report: A four-year old girl was referred to the department of oral medicine and radiology with a chief complaint of swelling in the upper front tooth region. The child was completely healthy and was a product of normal, uncomplicated pregnancy as revealed by her mother. Dental history revealed that the growth was asymptomatic, appeared one month ago & was increasing progressively. On intra- oral examination, a round well defined swelling was seen in the labial mucosa of maxillary anterior region w.r.t to tooth number 51, 52, 61 and 62 on inspection of the lesion (Figure 1). On palpation, the swelling was soft, non-tender, palpable and was not associated with any purulent discharge. The lesion was 12mm×12mm×6.5mm in size, pedunculated, reddish blue in color with lobulated surface (Figure 2). Patient’s oral hygiene was not satisfactory and showed grossly carious teeth w.r.t tooth number 51, 62 and pit and fissure caries w.r.t to 84 were also reported. There was a non-contributory medical history. Radiographic examination revealed a fibroma was made on the basis of clinical features. Complete excision of the lesion was done under local anesthesia and the soft, resilient and reddish blue tissue was sent for histopathological examination. The histopathological examination revealed hyperparakeratinized stratified squamous epithelium with long and thin rete ridges (Figure 3) overlying a connective tissue stroma showing dense amount of collagen fibers interspersed with fibroblasts (Figure 4).
The fibroblasts were large, stellate shaped with short dendritic processes and were multinucleated. Endothelial cell lined blood vessels were also seen and normal bone was also evident (Figure 5). Co-relating clinic-pathologically, the features were suggestive of Giant Cell Fibroma.

Discussion

Giant cell fibroma is categorized as a non-neoplastic fibrous growth which constitutes only 2-5% of all the oral fibrous proliferations sent for biopsy. The lesion’s clinical presentation and epidemiology mimics fibroma or papilloma and are distinguished only by histopathological features. Minor trauma according to many reports contributes as a major etiological factor which results in GCF due to change in fibroblasts functional status [5]. The lesion occurs usually at a younger age (10-30 years) and is diagnosed during the first 3 decades of life in 60% of the cases with no gender predilection. Slight female predilection is also reported in some studies. This papillary or bossolated mass is small and is less than 1 cm in diameter. Gingiva being the most common site of occurrence constituting 50% of all the cases of Giant cell fibroma. Mandibular gingiva is affected twice than maxillary gingiva followed by tongue and palate [6]. The site of occurrence of the lesion other than oral cavity is nose in giant cell fibroma which shows a tendency to reoccur and is distinguished on the basis of larger size of stellate fibroblasts [7]. According to Regrezi et al. gingival and palatal oral lesions shows highest amount of stellate cells whose presence are itself dependent on the collagen pattern in the lamina propria [8].

It clinically appears pebbly and papillary raised asymptomatic pedunculated or sessile nodule with less than 1 cm diameter with color of the normal mucosa and thus can be an important aspect of differential diagnosis among all fibrous lesions occurring in children [9]. On the basis of clinical presentation Sabarinath et al. diagnosed not a single correct lesion as GCF among all the 21 lesions [5]. Lesions such as peripheral ossifying fibroma have similar clinical presentation as GCF and can be only distinguished histopathologically because of the presence of osteogenic cell islands [10]. A microscopically similar developmental mucosal lesion with giant fibroblasts occurs in the gingiva lingual to mandibular cuspid and is known as retrocuspid papilla. With less than 5 mm in diameter, it clinically appears as small, pink papule with bilateral distribution. Representing a normal anatomic variation which disappears with age, it is reported in 25 to 99% of children and young adults with 6 to 19% prevalence in older adults [8]. Other mucosal lesions similar to GCF includes pearly penile papule of glans penis, a virus induced tumor of deer, fibroblastoma & fibrous papule of nose [1]. Savage and Monsuer in there retrospective study concluded that in pathologic or normal lesions, there were no sufficient
characteristic histological features in all the lesions which comes under fibro epithelial polyps and therefore grouping of lesions as separate entities is not required [11].

Microscopically, an encapsulated mass of vascular fibrous loosely arranged connective tissue is revealed. The hallmark for differentiating GCF from other fibromas is the presence of large, angular or stellate, non-hyper chromatic, plump/spindle shaped & multinucleated atypical fibroblasts appearing as giant cells seen in the periphery of the lesion as the central areas contains typical fusiform fibroblasts. These stellate fibroblasts are seen within the superficial connective tissue and are closely related to corrugated and atrophic epithelium with thin and elongated rete ridges [6, 12]. Giant cell origin is determined by immunohistochemistry and ultrastructural studies. Ultra structurally, multinucleated giant cells were fibroblasts [13]. Immunohistochemistry reveals a positive response to vimentin and prolyl-4-hydrolase thus suggesting it as a phenotypically fibroblastic origin [1]. Vimentin positivity and fibroblastic origin of stellate and multinucleated giant cell was also observed by Odell et al. in his study. In a study done by Jimson et al. on immunostaining with Ki 67 and PCNA, Ki 67 showed negative response while PCNA revealed expression variability and concluded monocuclear fibroblastic cell as the possible origin of multinucleated and stellate giant cell seen in GCF. Cytokeratin, neurofilament, HHF, CD 68, HLA DR, Tryptase, and S-100 protein showed negative reactivity. Giant cell origin was not considered as myofibroblastic as there was a negative response of Desmin for giant cells. Also, fibroblastic origin of giant cells was also supported by its positive reactivity to factor XIIIa [14].

The treatment modalities of GCF are surgical/laser excision along with periodic follow ups and the lesion reported rare recurrence.

Conclusion

These rare and unique lesions should be extensively considered and encountered in dental practice. Proper treatment planning and compulsive investigations should be done for correct diagnosis.

Conflicts of interest: Nil

References