Peripheral Ossifying Fibroma – A Case Report

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Abstract:

Peripheral ossifying fibroma (POF) a is reactive gingival hyperplasia which originates from cells of the periodontal ligament. Clinical presentations of POF are similar to that of other gingival hyperplasias and definitive diagnosis requires histopathological examination. We report a case of POF in maxillary gingiva. The lesion was asymptomatic, slow growing, reddish pink in colour and histopathologically revealing stratified squamous epithelium and foci of mineralization in the form of bony trabeculae in the connective tissue. This article highlights the nomenclature, clinicopathological features and pathogenesis of POF.

Keywords: Reactive Lesions, Gingival Hyperplasia, Fibroma, Ossification, Peripheral Ossifying Fibroma.

Introduction

Gingival swellings are common lesions that are observed in our day to day practice. Peripheral ossifying fibroma (POF) is a part of the spectrum of such reactive lesions occurring in gingiva. POF is a distinct clinicopathological entity which should not be confused as the peripheral counterpart of the intraosseous neoplasm with similar terminology known as central ossifying fibroma.[1] Although POF is non-neoplastic and innocuous lesion, it is important to know about this entity because of its similarity with other localized reactive hyperplastic lesions of gingiva.

Case Report

A 42 year old male patient reported with a slow growing gingival swelling. The swelling was first noted nearly 6 months back. On intra oral examination a pinkish red roughly oval pedunculated swelling was noted labial to maxillary left first molar, 1.5 ×1 cm in size, firm in consistency and non tender (Fig.1). Provisional diagnosis of pyogenic granuloma was given. Radiographic examination revealed no significant evidence. Patient's past medical and dental history was not significant.

Fig. 1: Pinkish red growth on gingiva in relation to maxillary left first molar.

Excisional biopsy was performed. The hematoxylin and eosin(H&E) stained section showed stratified squamous parakeratinized

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epithelium overlying a fibrocellular stroma. The stroma showed fibroblastic proliferation and centres of ossifications deep into the connective tissue in the form of bony trabeculae (Fig. 2). A final diagnosis of peripheral ossifying fibroma was given based on microscopic findings.

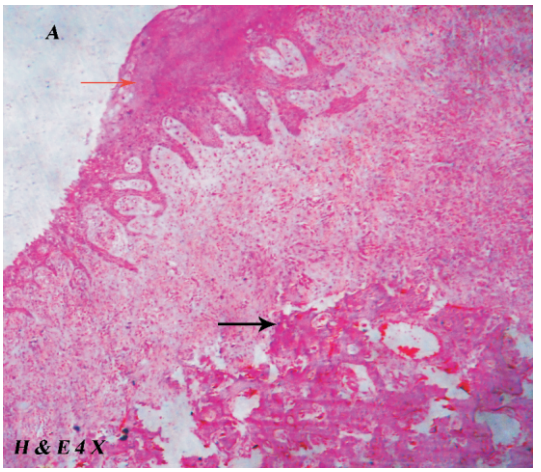

Fig. 2 : Photomicrograph showing stratified squamous epithelium and bony trabeculae deep in the connective tissue. [H & E (4 x), Red arrow indicating the surface epithelium and black arrow showing trabeculae of bone]

Discussion

Connective tissue reactive lesions of oral cavity include irritational fibroma, pyogenic granuloma, peripheral giant cell granuloma (PGCG); denture induced fibrous hyperplasia and papillary hyperplasia, myosperulosis and nodular fasciitis. POF is such a reactive lesion that must be associated with gingival tissues, and this terminology cannot be used for lesions at other oral sites. It was first reported by Shepherd in 1844 as "alveolar exostosis"[1] and in 1982, Gardner coined the term "peripheral ossifying fibroma".[2] Other terminologies of POF include ossifying fibroid epulis, peripheral fibroma with calcification, calcifying fibroblastic granuloma and peripheral cementifying fibroma (depending on whether bone or cementum is seen microscopically). Peripheral odontogenic fibroma and POF were used synonymously, but now peripheral odontogenic fibroma is considered as a separate entity.[3]

POF presents as a painless, hemorrhagic, and often lobulated mass of the gingiva especially in maxilla, perhaps with large areas of surface ulceration. POF accounts for 3.1% of all oral tumors and 9.6% of gingival lesions.[4]

Early lesions are quite irregular and red, but older lesions can have a smooth salmon pink surface and may be indistinguishable clinically from the more common irritation fibroma. Although this tumor occurs at any age, peak incidence is at 2nd and 3rd decades. POF shows female predilection. Most POFs are 1 to 2 cm in size. Radiographs occasionally show irregular, scattered radiopacities.[1,3]

Pathogenesis of POF is uncertain and it is considered to be a reactive lesion rather than a neoplasm. It has been suggested that these lesions originate from the cells of the periodontal ligament as it exclusively appears in the gingival tissue close to the periodontal ligament.[5,6] The pluripotent cells of the periodontal ligament have the apparent ability to transform or metaplastically change into osteoblasts, cementoblasts, or fibroblasts.[1]

Immunohistochemical studies support the fibroblastic-myofibroblastic nature of the lesion.[7] Hormonal influences can be considered as an etiological factor because of high female predilection, rare occurrence in the first decade, and decline in incidence after 30 years of age.[5,6] Other factors that have been implicated in the etiopathogenesis of POF are trauma and local irritants such as plaque, calculus, ill fitting dental appliances and microorganisms.[6,7]

Definite diagnosis of POF is through histopathologic examination. Microscopic picture of POF includes stratified squamous epithelium and fibrous proliferation in association with mineralized materials. If the epithelium is ulcerated the surface is covered by a fibrinopurulent membrane with a subjacent zone of granulation tissue.[3]

The connective tissue is often cellular with fibroblasts and myofibroblasts. Mineralized material can be mature, lamellar or woven bone, cementum-like material, or dystrophic calcifications. Usually, the bone is woven and trabecular in type, although older lesions may demonstrate mature lamellar bone. Dystrophic calcifications are characterized by multiple granules, tiny globules, or large, irregular masses of basophilic mineralized material. Occasionally multinucleated giant cells can be seen.[3,8]

Although reactive lesions of gingiva appear to be similar clinically, they can be differentiated histopathologically. Some gingival masses may contain large areas of classic pyogenic granuloma, irritational fibroma, PGCG or POF like areas. In such cases, the pathologist should make appropriate diagnosis based on the predominant lesional type.[1] (Table 1)

Table 1: Differential diagnosis of reactive lesions of gingiva

Lesions	Differentiating features	
	Radiographic features	Histologic features
Pyogenic granuloma	_	Vascular spaces lined by plump endothelial cells.[1,3]
Irritational fibroma	_	Highly fibrous, no areas of calcification.[1,3]
PGCG	Cupping resorption of underlying bone.[1,3]	Osteoclast like giant cells Foci of hemorrhage with liberation of hemosiderin pigment.[1,3]
POF	Irregular, scattered radiopacities/ slight bone resorption.[1,3]	Fibrous proliferation associated with the formation of a mineralized product (trabecular bone/ cementum like material/ dystrophic calcification).[8]

Osteogenic sarcoma may mimic POF clinically. Osteogenic sarcoma is less frequent gingival lesions compared to POF. A band like asymmetric widening of the periodontal ligaments of involved teeth is another finding suggestive of osteogenic sarcoma. Individual cells must be carefully examined for dysplastic changes to rule out osteosarcoma.[1,3]

Giant cell fibroma is another lesion of concern. But giant cell fibroma contains entirely of relatively avascular fibrous connective tissue. The hallmark is the presence of large, stellate fibroblasts within the superficial connective tissue. Few cells may contain multiple nuclei.[1]

Oral soft tissue metastasis is common in gingiva and it resembles hyperplastic / reactive lesion. But metastatic lesion may cause pain, bleeding, halitosis etc. Radiographically it is characterised by destruction of underlying alveolar bone. Although a slight bony resorption may occur beneath the POF, more worrisome bony changes typically are seen with malignant lesions. Microscopically metastatic lesions show resemblance to tumor of origin.[9]

Peripheral odontogenic fibroma is a tumor of odontogenic ectomesenchyme with or without odontogenic epithelium. This uncommon lesion of the gingival tissue is histologically similar to the WHO type of odontogenic fibroma. One may occasionally encounter dysplastic dentin, ovoid cementum–like calcifications, or spicules of osteoid within the lesional tissue. But unlike peripheral ossifying fibroma these lesions have a significant amount of odontogenic epithelium associated with its fibroblastic proliferation.[4]

Treatment of choice of POF is surgical excision including periosteum. Thorough scaling and root planing of adjacent teeth and removal of other sources of irritants should be accomplished. Recurrence rate of 8 to 16 % has been reported. Malignant transformation has not been reported for this lesion.[3,10]

Conclusion

POF is a slow growing gingival mass with comparatively high rate of recurrence. Pathologists should be aware of various aspects of POF as it can be easily confused with other reactive gingival hyperplasia clinically.

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