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Original Research Article

Diagnostic Conundrum: Capillary Hemangioma or Pyogenic Granuloma

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Abstract: Pyogenic granulomas and hemangiomas of oral cavity are well-known benign soft tissue lesions. Though pyogenic granuloma is known to occur most commonly on the gingiva and capillary hemangioma on lips, cheek and tongue, occurrence of these lesions on buccal mucosa is rare. It makes clinical diagnosis quite challenging because of such an uncommon location, as they sometimes may mimic more serious lesions such as malignancies. An excisional biopsy was performed under local anaesthesia and excised growth was sent for histopathological examination. This case report presents a case of soft tissue exophytic mass present on the buccal mucosa which was initially thought to be a pyogenic granuloma clinically and turned out to be capillary hemangioma on histopathological examination. In spite of their benign nature, intraoral capillary hemangiomas are always clinically important to be diagnosed well in time and should be managed accordingly.
Keywords: Pyogenic granulomas, capillary hemangioma, buccal mucosa, malignancy

INTRODUCTION

Pyogenic granuloma and capillary hemangiomas are well known and commonly occurring benign vascular lesions of the oral cavity [1]. Pyogenic granuloma is a relatively common, soft‑tissue tumor of the oral cavity that is believed to be reactive and not neoplastic in nature. The name pyogenic granuloma is a misnomer since the condition is not associated with pus and does not represent a granuloma histologically [2]. Some authors use the term lobular capillary hemangioma (LCH) for pyogenic granuloma [3]. Hemangiomas show characteristic feature of rapid endothelial cell proliferation, followed by involution over time. The proliferating mass of vessels does not undergo malignant transformation. The lesion not only develops in children, but elder individuals may also be affected occasionally [4,5]. Though there are conflicting reports about its gender predilection, many clinicians reported that this lesion has higher incidences in females as compared to males [6]. Hemangiomas commonly occur in the head and neck region with rare occurrence in the oral cavity [7], especially in the oral soft tissue. Because of this, they are not commonly encountered by dental professionals [8].They are composed of blood vessels and based on their histological appearance, they are classified as capillary, mixed cavernous, or a sclerosing variety that tends to undergo fibrosis [9]. Capillary hemangioma is the most common type, and it occurs as a small localized lesion with the less-aggressive clinical behavior [10]. Both pyogenic granuloma and hemangioma rarely occur in buccal mucosa. Thus the differentiation between a capillary hemangioma and pyogenic granuloma is somewhat unclear at such time. Thus distinguishing between these two is of utmost importance [9]. This article reports an unusual presentation of capillary hemangioma of buccal mucosa.

CASE REPORT

A 50-year-old female reported a gradually increasing, painless soft tissue growth on the right

buccal mucosa opposite to the occlusal plane since a month which was causing interference during mastication. Her medical history was noncontributory. Extra‑oral examination revealed the insignificant lymph nodes involvement. Intraoral examination revealed single sessile exophytic soft tissue mass on the right buccal mucosa which was approximately 3 × 2 cm in size and reddish pink in color with well-defined margins. The growth had a smooth but slightly lobulated surface extending from mesial aspect of 15 to distal aspect of 17 at the occlusal level (Figure 1 and 2).

Fig 1: A soft tissue exophytic mass of right buccal mucosa

Fig 2. A clinical picture showing stalkless exophytic mass with large base

The soft tissue mass was soft to firm on palpation and showed blanching on application of pressure and it was not reducible. A provisional diagnosis of pyogenic granuloma was given based on its clinical appearance and characteristics of the growth. The hemogram of the patient was well within normal limits. An excisional biopsy was performed under local anaesthesia and excised growth was sent for histopathological examination (Figure 3).

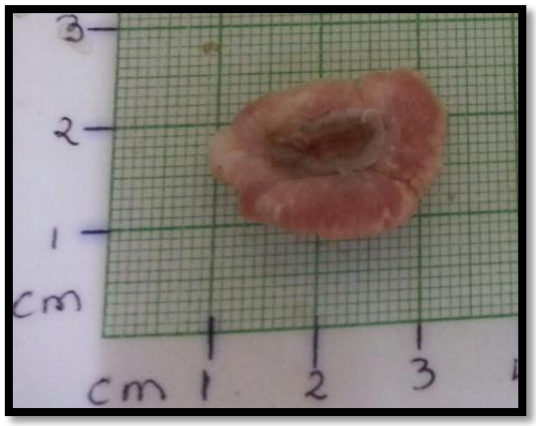

Fig 3: Excised specimen

Excised specimen was fixed in 10% formalin and was sent for routine hematoxylin and eosin (H and E) staining. Photomicrograph of H and E stained section of the excised specimen showed parakeratinized stratified squamous epithelium with long and slender rete ridges (Figure 4).

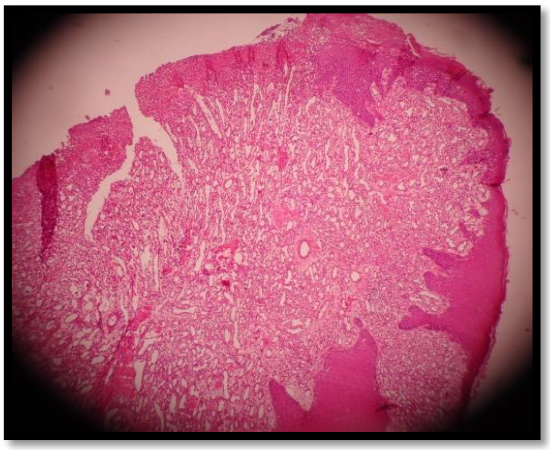

Fig 4: Photomicrograph showing parakeratinized stratified squamous epithelium with long and slender rete ridges (hematoxylin and eosin stain, original magnification ×4)

Also atrophic non keratinized stratified squamous epithelium which is ulcerated at places was noted. The lesional tissue was highly vascular and consists of numerous well canalized blood vessels showed hobnailing (Figure 5 and 6).

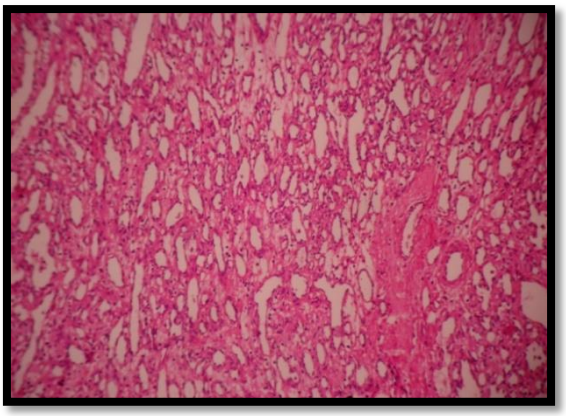

Fig 5: Numerous well canalized blood vessels (original magnification ×10)

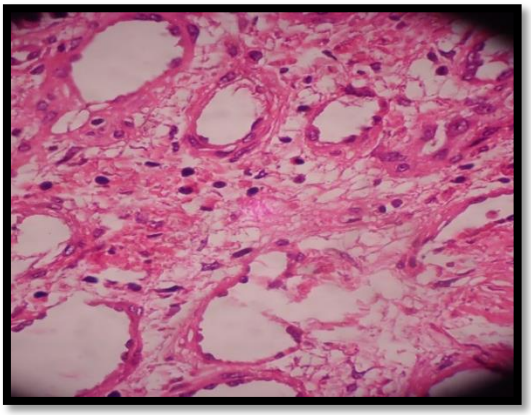

Fig 6: Blood vessels shows hobnailing (original magnification ×40)

Proliferation of plump endothelial cells was also noted. Numerous proliferating endothelial cell lined capillaries separated by fibrous septae in the connective tissue stroma. Focal chronic inflammatory cell infiltrate was seen chiefly lymphocytes and plasma cells were noted (Figure 7).

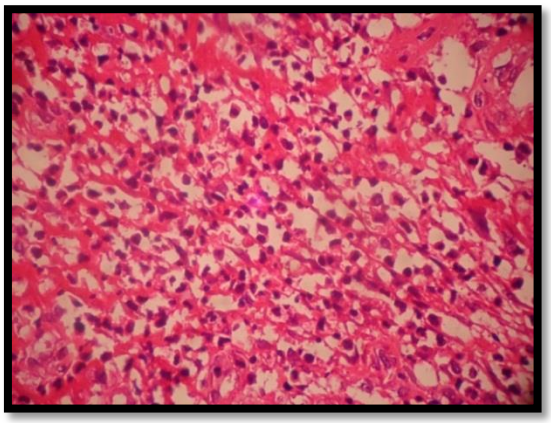

Fig 7: Inflammatory cell infiltrate chiefly lymphocytes and plasma cells (original magnification ×40)

The patient's history, clinical, radiographical and histopathological findings were suggestive of capillary hemangioma.

DISCUSSION

Hemangioma is considered to be one of the most common soft tissue tumors of the head and neck region. Hemangiomas are common tumors of infancy, affecting as many as 12% whites, but it rarely occurs in dark‑skinned individuals [6]. Hemangiomas are about three times more common in females than in males [13]. Clinical development of such lesions is slow, asymptomatic and painless, but it may also grow rapidly. The case reported here was painless, asymptomatic but had grown rapidly to reach the present size [12]. The most common location for occurrence of hemangiomas is head and neck region, and it accounts for almost 60% of all cases [10]. Intraoral hemangiomas are not common pathologic entities. The most frequent site of occurrence of intraoral hemangiomas are lips, tongue, buccal mucosa, and palate [14] The most commonly affected facial bones are the mandible and the maxilla, with a ratio of 2:1 reported in previous studies [15] but the involvement of zygoma has been reported rarely [16]. Intramuscular hemangiomas in the oral region are most commonly seen in the masseter, comprising 5% of all intramuscular hemangiomas [17]. Hemangiomas may mimic other lesions clinically, radiographically and histopathologically. The differential diagnosis includes the followings:

Hemangiomas may easily be confused with vascular malformations, pyogenic granuloma, pregnancy tumor, cavernous hemangioma, varicosity, arteriovenous aneurysm, peripheral giant cell granuloma, peripheral ossifying fibroma, irritational fibroma.

Vascular malformations are present at birth, whereas hemangiomas develop later in life [18]. Characteristic feature of vascular malformations is proportionate growth throughout the life of an individual [10]. They may classified depending on the vessel type involved or flow types: arterial and arterio-venous (high flow), capillary or venous (low flow) [20].

In the oral cavity, pyogenic granulomas show a strong predilection for the gingiva with interdental papillae as the most common site in 70% of cases. Based on histological features pyogenic granuloma is of 2 types, lobular capillary hemangioma (LCH) type and non‑lobular capillary hemangioma (non- LCH) type. LCH pyogenic granuloma is characterized by proliferating blood vessels that are organized in lobular aggregates. Superficially the lesion shows no specific change of edema, capillary dilation or inflammatory granulation tissue reaction. The non‑LCH pyogenic granuloma shows vascular proliferation that resembles

granulation tissue. The foci of fibrous maturation were seen in 15% of non‑LCH pyogenic granuloma which were totally absent in LCH type of pyogenic granuloma [11]. Histologically, LCH pyogenic granuloma has an attenuated endothelial lining surrounded by somewhat uniform proliferation of plump to spindled cells, in contrast to the more prominent endothelial cells and an array of capillary size blood vessels with lobular architecture of a capillary hemangioma [12].

Pregnancy tumor shows deep red color. It characteristically involves the interdental papillae. There is significant increase of these lesions during 1st and 2nd trimester of pregnancy and shows shrinkage after delivery showing its association with hormonal levels [19].

Cavernous hemangioma is a soft, nonfluctuant, dome-like bluish-red nodule and readily emptied by digital pressure. Furthermore, pulse is not detectable within the cavernous hemangioma. Aspiration of bluish blood with a fine-gauge needle contributes for a working diagnosis of cavernous hemangioma [19]. Histopathologically; it consists of large dilated blood sinuses with thin walls, each showing an endothelial lining. The sinusoidal spaces usually are filled with blood, although an admixture with occasional lymphatic vessels occurs in some instances [13].

Varicosity which is seen as an elongated enlargement of a superficial vein rather than a nodule or dome-shaped mass as seen in capillary hemangioma [19].

Arteriovenous aneurysm or arteriovenous fistula often has been mistaken clinically for a hemangioma. It represents a direct communication between an artery and a vein through which blood bypasses the capillary circulation. It may be congenital or acquired [13].

Peripheral giant cell granuloma is pedunculated or sessile lesion, red in appearance, rubbery too soft on palpation, more commonly occurs on gingiva anterior to molars, and seems to originate from periosteum, periodontal ligament and gingiva. Radiographically there may be a cupping type of resorption seen in the underlying bone [19].

Peripheral ossifying fibroma exclusively occurs on gingiva and involves interdental papillae. It most commonly involve maxilla and occurs anteriorly to the molar areas. It often contains calcified deposits cementum or osteo cementum, scattered throughout the fibrous tissue. If this calcified element is significant, radiopaque foci within the soft tissue tumor mass are observed on radiographs [19].

Irritational fibroma is the healed end product of an inflammatory hyperplasia lesion. It is sessile or slightly pedunculated with a smooth contour, pale pink color and firm in consistency [19]. It is most commonly seen on the buccal mucosa along the plane of occlusion [13].

The classification of hemangioma is based on histological appearance. Therefore histopathological assessment remains the most accurate and satisfactory means of diagnosis.

Diascopy is the technique of applying pressure to a suspected vascular lesion to visualize the evacuation of coloration and may facilitate the differentiation of small vascular lesion from a pigmented lesion. Angiograms are used to detect the lesion's depth. Computed tomography (CT) and magnetic resonance imaging (MRI) are also useful imaging techniques [20].

The management of hemangioma of the oral mucosa varies according to the patient, the size of the lesion and the site of involvement. The most common treatment of choice for hemangioma is surgical excision of the lesion with or without ligation of vessels and embolization. Sclerosing solutions are injected into the lesion to induce inflammation and formation of fibrous tissue which scleroses and shrinks the vascular spaces. This helps to reduce the amount of surgery needed and to reduce hemorrhage before surgery. Solutions of sodium tetradecyl sulfate and absolute ethanol have provided good results [19]. Proliferating hemangiomas have been shown to have estradiol-17 beta-receptors in the cytoplasm and corticosteroids block these receptors, so steroid treatment is the first line of treatment for proliferating lesions [13].Other treatment modalities includes elecrosurgery, Nd: YAG laser, CO_2 laser, cryosurgery [13] super selective intra-arterial embolization (SIAE) [20].

CONCLUSIONS

In this case, the clinical picture and location of the lesion led to a provisional diagnosis of pyogenic granuloma, but histological findings were suggestive of capillary hemangioma. Early detection and biopsy of such lesions is necessary for the appropriate management. In addition, the surgical management should be performed with caution as the tissues may bleed profusely intra‑operatively and post‑operatively. Dental surgeons should be aware of the risks while managing these lesions and should take necessary precautions prior to attempt the excision as these lesions often mimics other lesion clinically and requires appropriate clinical diagnosis and proper management.

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