CASE REPORT

Extragingival pyogenic granuloma on the tongue: A rare case report and review of literature

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Abstract

Pyogenic granuloma is a benign oral soft tissue inflammatory hyperplasia. It occurs as a tumor-like proliferation of the oral mucosa, which usually seen in response to nonspecific infection. Due to its high frequency in the oral cavity, this is a case of pyogenic granuloma in a male patient aged 13 years which occurred on the lateral border of tongue. Clinical and histopathologic features and also differential diagnosis are mentioned in this case report which helps in the treating the lesion and also reducing the chances of recurrence.

Keywords:
Hyperplasia, pyogenic granuloma, recurrence

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Received: 17 April 2017; Accepted: 28 May 2017
doi: 10.15713/ins.jmrps.94

Introduction

Pyogenic granuloma is a well-known lesion of the oral cavity. This term is a misnomer because clinically there is no pus formation and histologically does not bear any resemblance to granulomatous lesion.[1] The gingiva is a common site of occurrence. Extra gingivally, other sites such as lips, tongue, palate, and buccal mucosa are also affected due to any trauma in these sites. In the oral cavity, it is the second most common lesion. Although clinically it appears as a tumor-like growth it has no malignant potential.

Case Report

A male patient aged 13 years came to the department of oral medicine and maxillofacial radiology with the complaint of growth in the left lateral region of the tongue since a duration of 3 months. The growth was initially small and slowly growing and attained the present size.

The patient reported discomfort associated with the growth which increased during chewing food. Medical history was noncontributory.

Extraorally bilateral symmetry is noticed as shown in Figure 1. Intraorally, a single well-circumscribed nonpedunculated growth noticed on the left lateral border of tongue measuring about 1.5 cm × 2 cm seen extending from teeth region from mesial aspect of 74 to mesial aspect of 75 [Figure 2]. The inspectory findings were confirmed with palpation. On palpation, the growth was firm in consistency, nontender and there was no discharge. Bleeding on provocation was negative. Hard tissue examination revealed stains and calculus and sharp cusps irritational 74 and 75.

With the above clinical findings and history, we came to a provisional diagnosis of irritational fibroma.

Excisional biopsy was done under local anesthesia as shown in Figures 3 and 4, and the excised specimen was sent for histopathology.

Histopathology showed a hyperplastic, parakeratinized stratified squamous epithelium with acanthosis, and pseudopitheliomatous hyperplasia. The underlying fibrovascular connective tissue was composed of numerous proliferating capillaries; dense mixed inflammatory infiltrate predominantly lymphocytes and extravasated RBC’s. Based on the histopathological report, we came to final diagnosis of pyogenic granuloma.

After a week the patient was recalled, and the excised area was observed for healing as shown in Figure 5. Healing was satisfactory.
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Figure 1: Extraoral picture of the patient

Figure 2: Intraoral picture of growth

Figure 3: Intraoral picture of excised growth

Figure 4: Picture of excised specimen

Figure 5: Healing site

Discussion

Pyogenic granuloma is the second most common, acquired, benign vascular proliferation of fibrovascular or granulation tissue with extensive endothelial proliferation of skin and mucosa.\(^1\)

Synonyms

- Granuloma pediculatum benignum,
- Lobular capillary hemangioma,
- Vascular tumor of Benign origin,
- Pregnancy tumor,
- Hemangiomatous granuloma (Angelopoulos),
- Granuloma telangiectacticum (Cawson et al.).

History

In humans, pyogenic granuloma was first described by Poncet and Dor in 1897.\(^2\) It was called as “Botryomycosis hominis.” In 1844, “Hullihen SP” reported the 1st case of pyogenic granuloma.
In 1904, Hartzell introduced the term “pyogenic granuloma” or "granuloma pyogenicum." Later, it was noticed as a misnomer.\(^{[6]}\)

**Epidemiology**

Although its occurrence is noticed in all age groups, it is more prevalent in children, adults, and pregnancy.\(^{[5]}\) In children, peak incidence of age is 6-7 years, whereas in adults, it is seen in 3rd decade of life. In around 2-5% of pregnant women, gingiva is usually affected in the 2nd or 3rd trimester. Due to this reason, it is also known as granuloma gravidarum, epulis gravidarum, or pregnancy tumor. The oral lesions showed more predilection for women when compared to men.\(^{[5]}\)

**Incidence and prevalence**

| Author           | Incidence and prevalence                                                                 |
|------------------|------------------------------------------------------------------------------------------|
| Bhaskar et al.   | Constitutes for about 1.85% of all oral pathoses                                         |
| Cawson et al.    | This is relatively common in the oral cavity                                            |

**Etiology and pathogenesis**

The exact etiology is unknown. It occurs as a reactive vascular response to stimuli such as trauma and increased levels of female sex hormones. It is due to increased expression of basic fibroblast growth factor and vascular endothelial growth factor.\(^{[7]}\) Other etiological agents include injury to a primary tooth, inflammation of gingiva, chronic irritation due to shedding of deciduous teeth, permanent teeth eruption, faulty restorations at the site of tumor, impaction of food, chronic periodontitis, toothbrush injury, etc.\(^{[8]}\) Other contributing factors include acitretin, isotretinoin, indinavir, lamivudine, cyclosporine, and imatinib \(^{[9,11,12]}\)

**Table 1: Etiological factors suggested by different authors**

| Author       | Etiology                                                                                           |
|--------------|----------------------------------------------------------------------------------------------------|
| Kerr         | *Staphylococci* and botryomycosis, foreign bodies, and localization of infection in walls of blood vessel as contributing factors\(^{[10]}\) |
| Bhaskar et al.| Bacterial strains have demonstrated the presence of Gram-positive and Gram-negative bacilli in oral lesions; these organisms were more common near surface than in deeper aspects suggesting that these organisms may have been contaminants from oral flora |
| Shafer et al.| It arises as a result of infection by either *Staphylococci* or *Streptococci*, partially because these microbes could produce colonies with fungus like characteristics. They also stated that it is now arises as a result of some minor trauma to the tissues that provide a pathway for invasion of nonspecific types of microorganisms\(^{[11]}\) |
| Reichert et al.| Granulation tissue may become contaminated by flora of oral cavity and its surface may often become covered by fibrin which may mimic pus. However, still suppuration is not a characteristic to support infectious origin\(^{[12]}\) |
| Regezi et al. | Represents an exuberant connective tissue proliferation to a known stimulus or injury like calculus or foreign material within the gingival crevice |

**Clinical manifestations**

Clinically, the lesion presents as a soft, dome-shaped papule/nodule with a sessile or pedunculated base on the skin or oral mucosa.\(^{[4]}\) The surface may be smooth, glistening or friable.\(^{[4,5]}\) It occurs either single or multiple lesions.\(^{[4,13]}\)

Initially, the color varies from bright red to dusky red but as the blood supply reduces, the lesion may be more collagenized and appears pink. Usually, it is without symptoms and pain. Due to its rich blood supply, it tends to bleed more even with slight provocation of trauma because of this reason patients often shows the “band-aid sign.”

Orally, the gingiva is most commonly involved, followed by the lips, tongue, and buccal mucosa\(^{[5,10]}\) with slightly more common on the gingiva of maxilla, anterior, facial aspect than the mandible, posterior areas and the lingual or palatal aspect.\(^{[14]}\)

Other variants of pyogenic granulomas such as satellite, intravenous, subcutaneous, and disseminated forms are seen clinically but occurs rarely.\(^{[9]}\)

**Diagnosis**

It is mainly diagnosed by clinical examination. Dermoscopy test shows uniform red areas which indicates proliferating blood vessels and hyperplastic epithelium. This helps in obtaining diagnostic accuracy of the lesion.\(^{[15]}\) This procedure should not be considered as a substitute for histological examination. If the diagnosis is in doubt, it should be confirmed with biopsy (to rule out amelanotic melanoma).

**Radiographic features**

No obvious radiographic changes are apparent in granuloma pyogenicum. In rare instances “localized resorption of alveolar bone” of chronic tumors of gingiva which was noticed by Angelopoulos.\(^{[16]}\)

**Histopathology**

Histologically, the lesion is covered by parakeratotic or nonkeratinized stratified squamous epithelium. Mainly comprises mass of hematogenous tissue either lobulated or a nonlobulated which indicates a lobular proliferation of capillaries, with the separation of lobules are by a fibromyxoid stroma.\(^{[5]}\)

Connective tissue has relatively less amount of collagen. Surface may show ulceration and edema which is infiltrated by neutrophils, plasma cells, and lymphocytes.

**Immunohistochemistry**

Enhanced expression of the antiCD34 antibodies.

Vascular morphogenesis factors such as angiopoietin 1, angiopoietin 2, ephrin B2, ephrin B4.\(^{[7]}\)

**Differential diagnosis**

- Fibroma,
- Peripheral giant cell granuloma,
- Vascular lesion like hemangioma,
- Granulation tissue,
- Inflammatory gingival hyperplasia,
- Non-Hodgkin's lymphoma,
- Kaposi's sarcoma and angiosarcoma.

Complications
It includes hemorrhage, infection, and ulceration. However, no malignant potential is reported.

Management
Pyogenic granuloma's which develops during pregnancy usually does not require any treatment, and after delivery they tend to subside by itself.[5]

Other treatment modalities include surgical excision, lasers, electrodessication, curettage, cryotherapy, sclerotherapy, topical silver nitrate, and imiquimod.[5,7]

Any other foreign bodies, calculus, or defective margins of a restoration should be done as part of the excision.[5,13] Surgical excision, however, may leave scars.[17]

Recurrence
These are mainly contributed to improper removal or inadequate destruction of the lesions.[4]

Conclusion
It is a most noticed oral lesion. Although it is common, its etiopathogenesis is still debatable. It most frequently occurs interproximally between teeth on the buccal gingiva. A history of trauma is causative agent in extragingival areas like tongue which is noticed in this present case, whereas irritation leads to most lesions of the gingiva. Hence, surgery excision is preferred to reduce recurrence rate.

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How to cite this article: Nagaraj T, Irugu K, Okade DR, Saxena S. Extragingival pyogenic granuloma on the tongue: A rare case report and review of literature. J Med Radiol Pathol Surg 2017;4:10-13.