Pyogenic granuloma: Reappraisal of etiopathogenesis and case report of large sized pyogenic granuloma

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ABSTRACT
The Connective tissue disorder category encompasses variety of lesion & in that list pyogenic granuloma is most common. Though the term is a misnomer as there is no pyogenic organism involved in its pathogenesis but it's just a reactive inflammatory lesion due to local trauma, hormonal influence & few drugs. Usually the pg are small in size not exceeding 2-3 cms but sometime it can grow to large extent as it is observe in our case. In such scenario proper diagnosis & differential diagnosis become mandatory as clinician may misdiagnose the lesions with some malignant lesion due its mammoth size. Our case report highlights the thorough evaluation of large pyogenic granuloma.

Keywords: Pyogenic granuloma, large size, Local Trauma, LCH

History

Pyogenic granuloma (PG) is a benign inflammatory reactive localized lesion of the gingiva also called a epulis (on the gingiva).[1)] Hullihen (1844) reported the first case followed by the coining of the term "pyogenic granuloma" by Hartzell. In the past also called as crooks & Hartzells disease.[2]Angelopoulos named it as Hemangiomatous granuloma because of presence of numerous blood vessels.[2] literature reviews shows that there are many etiological factors attributed to the formation of PG such as chronic low grade trauma,[3] physical trauma,[4]hormonal factors,[5] bacteria, viruses [6] & certain drugs.[7] Reckoning the clinical presentation PG is observed mostly in second decade of life with predilection females & the most common site involved are facial aspect of anterior upper gingiva, lips, tongue & buccal mucosa. [2-7] Reported cases & literature shows that the size of PG ranges from mm to centimeters rarely exceeding 2.5 cms but few cases are reported where the size is huge. [1, 2] When the size is big there are chances that it may get misdiagnosed as a malignant lesion. Here we report a case of large sized pyogenic granuloma &its importance of proper differential diagnosis & exact clinical & histological diagnosis.

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Case report

A 50 year old female patient reported with the chief complaint of mass on the upper right posterior teeth region since 1-2 years which cause chewing, speech & mastication problems.The mass initially small in size & gradually grown to present size. On intraoral examination, a smooth localized exophytic gingival mass measuring 6x5 [Figure 1] was present in the region of 16 & 17.The mass was extending both on buccal side & palatal side with the indentation of lower teeth on the occlusal surface of the lesion. [Figure 1] The lesion was smooth reddish pink with a broad base. Margins were irregular appeared to rise from the interdental region of 15-17 regions. On palpation there was bleeding seen. The hard tissue showed a fracture

tooth (17), root stumps (16) & calculus on teeth. Medical history was non significant. Radiograph reveals no bony involvement. Clinical diagnosis was made as pyogenic granuloma with a differential diagnosis of peripheral ossifying fibroma, peripheral giant cell granuloma, hemangioma & last fibroma. After taking patient consent first oral prophylaxis was done &later surgical procedure was planned under L.A. The enlarged localized mass was excised up to the base of the lesion by use of surgical blade & it was ensured that the lesion was completely removed along with the soft tissue adjacent to the tooth to prevent recurrence. The excised lesion was submitted for histopathological examination & the histopath feature showed lobular arrangement of the blood vessels & areas of diffusely spread out many small/large dilated capillaries (mainly subepithelial) The lesional tissue displays highly cellular areas composed of proliferating round & ovoid plump cells. The underlying connective tissue exhibits intense inflammatory infiltrate which is masking the true finding of the lesion.[Figure 2 & 3]There is no evidence of malignancy in the given specimen. The histopathological examination confirmed the diagnosis of pyogenic granuloma of lobular capillary hemangioma (LCH) type. The case was followed for 1 year without any recurrence.[Figure 4]

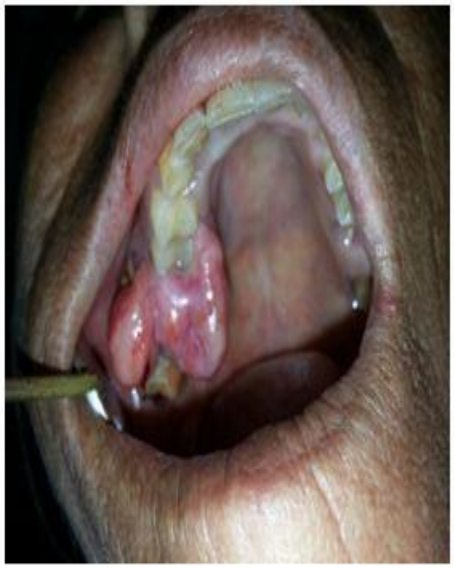

Fig 1: Intraoral examination reveals a localized large sized gingival growth (5x6cms) in upper right posterior back teeth region.

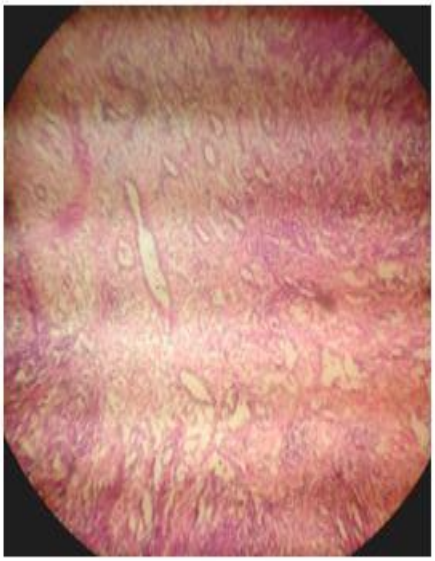

Fig 2: Photomicrograph-showing connective tissue with numerous endothelial lined blood vessels along with loose fibrillar connective tissue & inflammatory cells (10x)

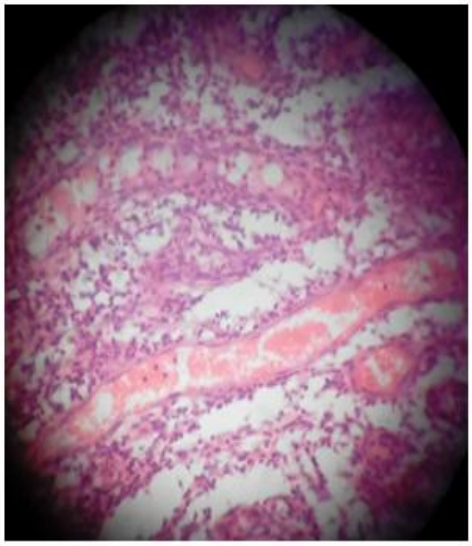

Fig 3: Photomicrograph exhibiting blood vessels with extravasated RBC's (40x) & loose fibrillar connective tissue.

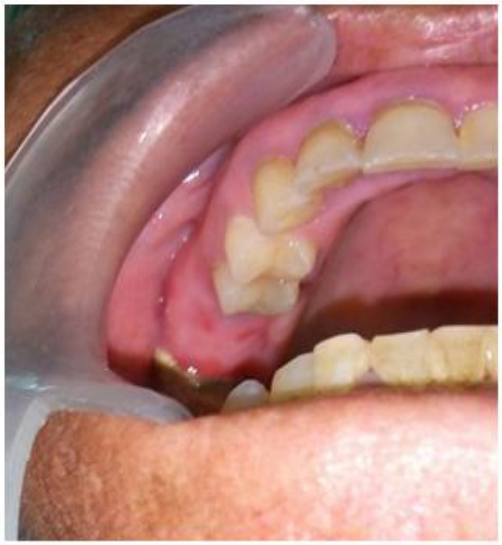

Fig 4:After 1 Year follow up

Discussion

Etiopathogenesis

Regezi *et al* [4]proposed that calculus & other foreign material within the gingival crevice instigated the excessive proliferation of the connective tissue where as Ainamo *et al* [7] reported that because of repeated trauma to the gingiva due to repeated brushing can lead to this lesion. Other etiologic factors in this include the endogenous substances& angiogenic factors, trauma to deciduous teeth,[8] aberrant tooth development,[9] occlusal interference,[10] immunosuppressive drugs such as cyclosporine [11] & wrong selection of healing caps.[12] In our case excessive trauma to region followed by the more accumulation of calculus in that region may be the main cause for development of the lesion. Oral pyogenic granuloma occurs in all ages but they are most frequently encountered in 2-3 decade of life with high predilection for females.[12] But in our case age of patient is 50 years which is contradictory to the above observation but the sex predilection is same. Neville [3] & Regezi [4] reported that pyogenic granuloma of oral cavity appears as elevated, smooth or exophytic, sessile or pedenculated growth which may be lobulated & warty showing ulceration & covered by yellow fibrinous membrane. All the above observation is in accordance to our case with only difference that in our case the lesion base was broad. Related to the sites it is seen mostly in anterior upper facial aspect but in our case it is observed in the posterior teeth interdental region. Considering the size of the lesion usually ranges from few mm to centimeters (2.5 cms). But in our case the lesion was abnormally large size. Focusing on the clinical differential diagnosis it mainly includes peripheral ossifying fibroma, peripheral giant cell granuloma, hemangioma, Kaposi sarcoma & Angiosarcoma. Peripheral ossifying fibroma mostly seen on gingiva with minimal vascular component whereas in peripheral giant cell granuloma there is significant bone loss with appearance of multinucleated giant cells. Hemangiomas are differentiated from the pyogenic granuloma firstly because of its age, color, blanching & histology. Pyogenic granuloma is distinguish Kaposi sarcoma in AIDS first by the medical history, clinical presentation including other oral clinical features, Diagnostic test& histology which mainly shows the dysplastic spindle cells, vascular clefts, extravasated erythrocytes & intracellular hyaline globules, none of which are features of pyogenic granuloma. It can be distinguish from angiosarcoma by its lobular growth pattern, well defined vessels & cytological bland endothelial cells. [13]Histology of

pyogenic granuloma mainly exhibits LCH & Non LCH type [14, 15]the LCH type has proliferating blood vessels organized in lobular aggregates with no specific change in edema, capillary dilatation or inflammatory granulation. Non LCH consisted of central core resembling the granulation tissue along with blood vessels with perivascular mesenchymal cells foci of fibrosis. Epivatianos *et al* [16] & Sato *et al* [15] suggested that LCH & Non LCH has separated path of evolution proposing that the endothelial receptor tyrosine kinase Tie 2 is expressed in the LCH significantly emphasing its role in development of LCH type. Yuan *et al* (4) suggested that the imbalance between angiogenesis enhancers vascular endothelial growth factors (VEGF), basic fibroblast factor (bFGF) &angiogenesis inhibitor angiostatin & thombospodin. Vascular morphogenesis factors Tie 2, angiopoitin2, ephrin B2, were found to be regulated , Jafarzadeh *et al* showed that the importance of decorin, VEGF, connective tissue growth factors & fibroblast growth factor to be imp in pyogenic granuloma. Sternberg [18]traces out the natural course of the lesion in three phases cellular phase, vascular phase & involution phase. Our case showed lobular type of pyogenic granuloma.Pyogenic Granuloma is best treated with accurate diagnosis & treatment planning. Excision & biopsy is the latest served line of treatment. Conservative surgical excision of the lesion with the eradication of the plaque, calculus & foreign material along with other etiological factors is recommended. Excision of the lesion up to the periosteum with clear scaling & root planning is advocated. Other treatment modalities includes Nd:YAG, CO_2 laser, pulse dye laser, cryosurgery & sodium tetradecyl sulfate scelrotherapy.In present case careful excision of the lesion till the level of periosteum is adapted along with scaling & root planning.A careful management of the lesion also helps in preventing the recurrence of this benign lesion

Conclusion

Current presentation shows that the size of pyogenic granuloma can grow beyond 2-4cms. Patient may ignore the lesion as it is a painless growth, as these lesion don't encroach the nerves & is just a reactive hyperplastic phenomenon contributing to the unhindered growth. Through this case presentation we want to emphasized that surgical excision of the lesion up to the level of alveolar ridge can minimize the recurrence

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