An Unusually Large Oral Pregnancy Tumor

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Abstract:

Pregnancy tumor is a clinical term used to describe a red or reddish purple, often nodular, and/or ulcerated localized tumor that bleeds easily and occurs in pregnant women. On the basis of its clinical presentation and histologic appearance, some authors believe that it simply represents a pyogenic granuloma (PG), whereas others believe that the lesion is unique because of the apparent influence of female sex hormones.

A 22-year-old female reported with the complaint of an unesthetic growth in upper anterior region of jaw since one month. The patient's history, clinical, radiographical and histopathological findings were suggestive of pregnancy tumor. Pyogenic granuloma of the gingiva develops in up to 5% of pregnant women, hence the terms "pregnancy tumor" and "granuloma gravidarum" are often used. It is a common tumor like growth in the oral cavity that is considered to be non-neoplastic in nature.

Keywords: *Pregnancy tumor, Pyogenic granuloma, Inflammatory hyperplasia, Oral cavity.*

Introduction

Pregnancy tumor is a clinical diagnosis for a red swelling, usually an epulis, in pregnant women. Though histologically similar to pyogenic granuloma, pregnancy tumor is a clinically distinct lesion occurring in pregnancy.[1]

Pyogenic granuloma is a form of inflammatory hyperplasia. The term "inflammatory hyperplasia" is used to describe a large range of nodular growths of the oral mucosa that histologically represent inflamed fibrous and granulation tissues[2,3]. It includes fibrous inflammatory hyperplasia (clinical fibroma, epulis fissuratum, and pulp polyp), palatal papillary hyperplasia, giant cell granuloma, pregnancy epulis and pyogenic granuloma.[3]

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Hullihen's description in 1844 was most likely the first pyogenic granuloma reported in English literature. The term "pyogenic granuloma" or "granuloma pyogenicum" was coined by Hartzell in 1904.

The term pyogenic granuloma is a misnomer because the lesion is unrelated to infection and in reality arises in response to various stimuli such as low-grade local irritation, traumatic injury or hormonal factors. It predominantly occurs in the second decade of life in young females, possibly because of the vascular effects of female sex hormones.[4]

This article describes a case of an unusually large pregnancy tumor in a 22 year old patient.

Case Report

A 22-year-old female reported with an unesthetic growth in upper anterior region of jaw of one month duration (Fig. 1). It started as a small asymptomatic peanut sized growth 4 months back which increased to the present size leading to pain, inability to close the mouth and difficulty in mastication since last one month.

Obstetric history revealed that the patient was in third trimester of pregnancy. Extraoral examination revealed incompetent lips due to protruding soft tissue overgrowth.

Figure 1: Pre-treatment photograph (labial view)

Intraoral examination revealed a single pedunculated growth, 7cm x 3cm x 4 cm, arising from interdental gingiva of maxillary central incisors and covering the labial surfaces of both teeth and extending downwards palatally from the maxillary right first premolar to left first premolar (Figure 2). The overlying mucosa was reddish in most of the area except a small area which was brownish black in colour. Growth was soft to firm in consistency, non-tender and friable. It bled easily to touch.

Figure 2: Pre-treatment photograph (Palatal view)

Intra-oral periapical radiograph of anterior maxillary region revealed interdental alveolar crestal bone resorption, suggestive of pressure effects.

Since the patient was in the last trimester of pregnancy and was due for delivery in a week's time, localized scaling and debridement was carried out and the patient was advised to report for review after her delivery.

Post partum, surgical excision of the lesion under local anesthesia was planned with gynaecologist consent. The growth was excised (Fig. 3 & 4) and sent for histopathological examination. Scaling and root planning of the involved region was carried out. Spacing and Grade 2 mobility had developed between the anterior teeth due to the pressure effect of the lesion therefore splinting of the 6 anterior teeth was done.

Figure 3: Post-treatment photograph

Figure 4: Post-treatment photograph

Hematoxylin and eosin stained tissue sections of the specimen (Fig. 5) exhibited fibrovascular connective tissue with overlying ulcerated stratified squamous epithelium with features of atrophy and proliferation at different places. The ulcerated area was covered by fibrinous exudate. The connective tissue was fibrocellular with abundant vascularity. There were numerous endothelium lined vascular spaces, budding endothelial cells and proliferation of fibroblasts. A moderate degree of chronic inflammatory cell infiltrate, composed chiefly of lymphocytes and plasma cells, was present.

Figure 5: Photomicrograph of H & E stained section showing surface epithelium (a), ulcerated surface covered by fibrinous exudate (b), and vascularity of the lesion (c). (10 x H&E stain)

These microscopic features are typical for a pyogenic granuloma i.e. the overlying epithelium is supported by exuberant proliferation of granulation tissue.

The patient's history, clinical, radiographical and histopathological findings were suggestive of pregnancy tumor.

Discussion

Pyogenic granuloma of the gingiva develops in about 5% of pregnant women, hence the terms "pregnancy tumor" and "granuloma gravidarum" are often used. The raised progesterone levels during pregnancy heightens the individual's response to irritation, however, bacterial plaque and gingival inflammation are necessary for subclinical hormone alterations leading to gingivitis.[2,5] The development of this particular kind of gingivitis, typical in pregnancy, not different from that appearing in non-pregnant women, suggests the existence of a relationship between the gingival lesion and the hormonal alterations observed in pregnancy. Occasionally, pregnancy gingivitis has a tendency towards localized hyperplasia, which is called pregnancy granuloma. It usually appears in the second / third trimester of pregnancy with a tendency to bleed and a possible interference with mastication. During the first months of pregnancy, the persistent influence of plaque induces catarrhal inflammation of the gingiva that serves as a base for development of hyperplastic gingivitis during the later months which is modulated by the cumulating hormonal stimuli. In uncontrolled cases, pyogenic granuloma may arise.

The molecular mechanism behind the development and regression of pyogenic granuloma during pregnancy have been extensively studied. The profound changes in the levels of estrogen and progesterone during pregnancy is frequently associated with changes in the function and structure of the microvasculature of the skin and mucosa.[6] Estrogen enhances vascular endothelial growth factor (VEGF) production in macrophages, an effect that is antagonized by androgens and which may be related to the development of pregnancy tumor. Progesterone functions as an immunosuppressant in the gingival tissues of pregnant women, preventing a rapid acute inflammatory reaction against plaque, but allows an increased chronic tissue reaction, resulting clinically in an exaggerated appearance of inflammation.[7] Angiostatin is expressed significantly less in pyogenic granuloma than in healthy gingiva and periodontally involved gingiva.

The molecular mechanism for regression of pregnancy tumor after parturition remains unclear. It has been proposed that, in the absence of VEGF and Angiopoietin-2 (Ang-2) causes blood vessels to regress. The protein level of Ang-2 is highest in granulomas in pregnancy, followed by those present after parturition and those with normal gingiva. The amount of VEGF is high in the granulomas in pregnancy and almost undetectable after parturition.[4]

Although conservative surgical excision and removal of causative irritants are the usual treatment, it should be ensured that the excision should extend down to the periosteum and that the adjacent teeth be thoroughly scaled to remove the source of continuing irritation.[2,8] Recently, treatment protocols, other than excisional surgery, have been proposed, which include Nd:YAG (neodymium-doped yttrium aluminium garnet; Nd:$Y_3Al_5O_{12}$) laser, flash lamp pulsed dye laser, cryosurgery, intralesional injection of ethanol or corticosteroid and sodium tetradecyl sulfate sclerotherapy.[4]

Treatment considerations during pregnancy are very important. During this period, careful oral hygiene, removal of dental plaque, and use of soft toothbrushes are important to avoid occurrence of a pregnancy tumor. Steelman and Holmes believed that maintenance of oral hygiene and regular follow up appointments should be recommended in pregnant women.[9] Surgical and periodontal treatment should be completed, when possible, during the second trimester, with continued surveillance of home care after delivery. Some authors believe that in the gravid patient, recurrence is likely and treatment, to be successful, should await parturition.[2,3] In pregnant women, post parturition lesion shrinkage may make surgery unnecessary.[10]

Conclusion

Pregnancy tumor arising as a result of alteration in the levels of estrogen and progesterone during pregnancy is one of the most common causes of pyogenic granuloma. During pregnancy, careful oral hygiene, removal of dental plaque, and use of soft tooth brushes are important to avoid occurrence of pyogenic granuloma.

Lesions that do not cause significant functional or esthetic problems should not be excised during pregnancy because they may recur, and some of them may ultimately resolve spontaneously after parturition. Those which do not resolve may be excised after they have organized, in order to minimize bleeding.

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