CASE REPORT

'Granuloma gravidarum': persistence in puerperal period an unusual presentation

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Accepted 26 December 2014

SUMMARY

Granuloma gravidarum (GG), an inflammatory lesion, develops in the oral mucosa of pregnant women in response to chronic low-grade irritants and hormonal factors. A persistent granuloma gravidarum post partum and appropriate management strategies are discussed. Patients must be encouraged to undergo regular dental check-ups during the gestational period. Simple oral hygiene measures are highly effective in combating most oral lesions encountered in pregnancy.

BACKGROUND

This case highlights the importance of good oral hygiene in preventing localised gingival overgrowths that may compromise maternal health owing to deficient masticatory efficiency. Regular dental check-ups are mandatory and though the lesion may persist post partum, as in the present case, it resolves spontaneously in most cases.

CASE PRESENTATION

Pyogenic granuloma was first described by Hüllihen¹ in the English literature in 1844. It was earlier known as 'botryomycosis hominis'.² Hartzell, in 1904, minted the term 'pyogenic granuloma' (PG) or 'granuloma pyogenicum'; was referred to by an array of other names including Crocker and Hartzell's disease, and granuloma gravidarum (GG) in pregnant women.³ The overall delineated prevalence of GG is 0.2–9.6%, although the true occurrence is difficult to gauge due to the reluctance of such patients in seeking professional dental care. GG has a proclivity for intraoral locations, predominately affecting the gingiva followed by the lower lip, tongue, buccal mucosa, upper lip and palate.⁴ No racial predilection has been reported so far. The maxillary facial gingiva (with propensity for the anterior region) is involved more frequently.⁵ The archetypal lesions of GG involve the interproximal gingiva, which gradually increases in size to cover a major portion of the neighbouring teeth. These lesions can also present as asymptomatic, pedunculated, raspberry-like nodules, which can be ulcerated due to secondary trauma.⁶

Soft tissue enlargements of the oral cavity often present a diagnostic challenge because of their analogy to normal anatomic structures, developmental anomalies, inflammatory lesions, cysts and neoplasms. The aetiopathogenesis of oral pyogenic granuloma is still obscure and it seems that the amalgamation of factors such as periodontal pathogens, local irritants and circulating hormones may lead to the genesis of the lesion.⁷

In this case report, we present a case of GG of the gingiva in a 25-year-old pregnant woman presenting with a localised tumour-like growth in the upper right quadrant of the jaw. The lesion persisted post partum, thus highlighting that increased hormonal levels explain only one side of the story while the other side still remains to be explored. We have also reviewed the literature and discussed the present case along with the histological findings.

A 25-year-old prima gravida woman was referred to the Department of Periodontology from the Department of Obstetrics & Gynaecology at King George's Medical University, Lucknow, with progressively increasing, painless swelling of gums in the upper right region, which she had experienced for 2 weeks (figure 1). The swelling made the patient extremely apprehensive since it was interfering with mastication and speech (figure 2). Her medical history disclosed that the patient had attained gestational age of 20 weeks. Her dental history was unremarkable. On extra oral examination, no abnormalities were detected. Intra oral examination revealed sessile, lobulated gingival overgrowth between the right upper right permanent canine, deciduous canine and premolar. On palpation, the growth was moderately firm in consistency and was non-tender. On the labial aspect, the gingival overgrowth was red, smooth and shiny and bled on slight provocation; it measured 1 cm×2 cm. On the palatal aspect, the lesion was similar, but the size was more pronounced. Local irritants were found around the involved teeth. Based on the clinical findings, the lesion was provisionally diagnosed as GG.

INVESTIGATIONS

Routine blood investigations were performed, which were found to be within reference range. Orthopantomogram revealed normal bone topography (figure 3).

Figure 1 Preoperative palatal view showing gingival overgrowth in upper right anterior region.

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To cite: Purwar P, Dixit J, Sheel V, et al. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2014-206878

Figure 2 Preoperative facial view showing the gingival tissue interfering with occlusion.

DIFFERENTIAL DIAGNOSIS

The differential diagnoses of peripheral giant cell granuloma, peripheral ossifying fibroma, haemangioma and foreign body reactions were made based on the clinical specifications. The appearance of peripheral giant-cell granuloma is similar but is usually bluer in comparison to pyogenic granuloma and can be sessile or pedunculated. Peripheral ossifying fibroma occurs as a gingival nodule composed of a cellular fibroblastic connective tissue stroma, which is associated with the formation of randomly dispersed foci of mineralised product consisting of bone, cementum-like tissue, or dystrophic calcification. A haemangioma is a benign and usually self-involuting tumour of the endothelial cells, and is characterised by an increased number of normal or abnormal vessels filled with blood.

TREATMENT

During the patient's initial treatment visit, gentle scaling and root planing were carried out, and oral hygiene instructions were given. Although plaque control measures improved the periodontal status dramatically, the lesion decreased in size at 23 weeks post partum but did not resolve completely. The patient was regularly followed up and was able to follow normal routine thereafter hence the treatment was deferred until post partum in the expectation that the lesion would subside on its own. The patient was recalled 4 weeks post partum for further evaluation. The lesion was persistent despite maintenance of good oral hygiene. Complete excision up to the periosteum was planned with surgical scalpel under local anaesthesia; a full thickness mucoperiosteal flap was reflected involving permanent canine, deciduous canine and premolar ([figure 4](#)). Root planing and flap curettage were performed, while irrigating with saline. The flap was repositioned with figure of eight sutures and non-eugenol surgical periodontal dressing was placed ([figure 5](#)). Post-operative instructions as well as medications were

Figure 3 Panoramic radiograph showing bone morphology.

Figure 4 Intraoperative photograph.

prescribed. The excised gingival tissue appeared pale pink and fibrous, and were cut in two small sections measuring 0.7 cm×1 cm; they did not differ from any usual enlarged gingival tissue ([figure 6](#)). The specimens were sent for histopathological examination.

OUTCOME AND FOLLOW-UP

The patient was recalled after 10 days for follow-up. The dressings were removed and healing took place uneventfully. Oral hygiene instructions were reinforced. No recurrence has been observed at 6 months follow-up ([figure 7](#)).

DISCUSSION

PG is a benign neoplasm of vascular phenotype and presents as an elevated, smooth or exophytic, sessile or pedunculated growth covered with red haemorrhagic and compressible erythematous papules that appear lobulated and warty, showing ulcerations and covered by yellow fibrinous membrane; the colour varies from red, reddish purple to pink, depending on the vascularity.⁷ PG is categorised as 'conditioned enlargements', as the systemic condition of the patient exaggerates and impairs the normal gingival response to dental plaque.⁸

The definitive aetiological agent of PG is yet to be determined, however, some causative factors include: a stimulant or injury such as from calculus or foreign material within the gingival crevice⁹ and repeated trauma to the gingiva during brushing.¹⁰ Other factors include release of a variety of endogenous substances and angiogenic factors, which causes disturbances in the vascularity of the affected area and trauma to the deciduous teeth, immunosuppressive drugs such as cyclosporine and wrong selection of healing cap for implants. The term PG is a misnomer on clinical as well as histological grounds since the entity is not associated with pus or granulation tissue.

Figure 5 Placement of surgical periodontal dressing.

Figure 6 Excised gingival tissue measuring 0.8×1 cm.

At the molecular level, an imbalance in angiogenesis enhancers and inhibitors may lead to the overproduction of VEGF and bFGF, and decreased amounts of angiostatin, thrombospondin-1 and oestrogen receptors, leading to PG.¹¹ The correlation between gingivitis and the quality of plaque is greater after parturition than during pregnancy, suggesting that pregnancy introduces features that can aggravate the gingival response to local irritants. Most of the authors agree that female hormones have a central role to play. Ojanotko-Harri *et al*¹² suggested that progesterone functions as an immunosuppressant through depression of the maternal T lymphocyte response, thus preventing a rapid acute inflammatory reaction against plaque. Increased levels of progesterone during pregnancy produce dilation and tortuosity of the gingival microvasculature, circulatory stasis and increased susceptibility to mechanical irritation, all of which favour leakage of fluid into the perivascular tissues.¹³

Alternatively, an increased number of periodontal pathogens, especially *Porphyromonas gingivalis* and *Prevotella intermedia*, in pregnancy may directly affect gingival fibroblasts and keratinocytes thus leading to the exuberant tissue response against plaque leading to the formation of PG. In most cases, the regression of PG occurs in natural course after parturition. It has been proposed that, in the absence of VEGF, angiopoietin-2 (Ang-2) causes blood vessels to regress and decrease in inflammatory cytokine through negative feedback mechanism.¹⁴ However, in the present case the lesion did not regress even after post partum, hence the need to report this seminal case in the literature.

Microscopic examination showed partial covering by parakeratotic squamous epithelium of variable thickness, which showed areas of ulceration and fibrinopurulent membrane. Under fibrous connective tissue stroma, numerous small

Figure 7 Postoperative photograph.

Figure 8 Histopathological slide of the lesion.

and large endothelium-lined channels are formed that are engorged with red blood cells. A mixed population of inflammatory cell infiltrates comprising of neutrophils, plasma cells and lymphocyte is evident (figure 8). Angelopoulos histologically described it as 'haemangiomatous granuloma' due to the presence of numerous blood vessels and inflammatory characteristics of the lesion.¹⁵

The treatment of this localised inflammatory lesion consists of the removal of causative irritant factors followed by excision with techniques such as conventional scalpel use, cryotherapy, electrocautery, sclerotherapy and laser therapy. Surgical intervention is generally not the treatment of choice during pregnancy since the lesions have a tendency to bleed heavily and may result in serious morbidity or fetal mortality.

The patient acceptance was also assessed by a 3-point rating scale during follow-up, as described by Purwar *et al*.¹⁶ Regular follow-up appointments with a dental surgeon are recommended. In pregnancy, treatment of gingival growth limited to the removal of tissue, without complete elimination of local irritants, is usually associated with recurrence. The high rates of recurrence observed have prompted investigators to suggest postponement until parturition.

CONCLUSION

The diagnosis of oral lesions is complex, and presence of localised gingival overgrowth is no exception owing to the resemblance to inflammatory tumours and true neoplasms. In general, oral health is neglected during pregnancy, leading to development of reactive lesions such as GG. These enlargements lead to aesthetic and functional deficiencies, which may lead to adverse pregnancy outcomes. The lesions subside after post partum if adequate oral hygiene is maintained, but in a few cases they persist even after post partum. Careful surgical excision provides a valid treatment modality.

Patient's perspective

I am highly satisfied with the treatment and its outcome and assign it a score of 3 (highly satisfied) on the grounds of pre surgical protocol, surgical protocol, post operative care and cost effectiveness of the treatment.

Learning points

- ▶ Poor oral hygiene may lead to development of reactive lesions which usually develops in the first trimester and regress post partum and may compromise maternal health.
- ▶ The second trimester is safest for dental treatment. Appointments should be short.
- ▶ Some lesions are associated with bone loss and cause erosion of bone, and have a tendency to bleed profusely.
- ▶ In a few cases, the lesions exist post partum and excisional biopsy up to the periosteum is required.
- ▶ Regular dental appointments and use of a soft brush along with maintenance of good oral hygiene prevents recurrence of such lesions.

Acknowledgements The authors extend their regards to Professor Ravi Kant (Honorable Vice Chancellor, King George's Medical University, Lucknow) for creating a paradigm shift towards evidence based approach which has immensely helped me to manage and report the current case.

Contributors PP was involved in treatment of the patient. JD was involved in supervision of the case and manuscript writing. VS took part in manuscript writing. MMG was involved in gathering histological slides and photographs.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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