

Inflammatory Gingival Enlargement And Polycystic Ovary Syndrome (PCOS) A Case Series

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Abstract

Polycystic ovary syndrome (PCOS) is the most common endocrine disorder among women of reproductive age, which negatively affects various health systems. There is an extensive literature regarding the association of PCOS and other systemic conditions such as diabetes mellitus, cardiovascular disease, and psychological disorders very less literature are there regarding the association of PCOS and gingival hyperplasia. In this article we have presented three case reports ,of patients with similar background with the history of PCOS that has been documented and similar clinical findings. The other confounding factors of this systemic disease have also been eliminated ,thus we would be directly able to correlate the positive interlinks between PCOS and gingival inflammation.

Keywords: PCOS-Polycystic ovary syndrome, gingival hyperplasia, periodontitis.

Introduction

Polycystic ovary syndrome (PCOS) is a complex disease characterized by hyperandrogenism and chronic anovulation. Polycystic ovary syndrome is a common disorder affecting 6%-8% of women of reproductive age (1). Women with PCOS have an adverse cardiometabolic risk profile, including insulin resistance (IR), central obesity, dyslipidemia and increase prevalence of cardiovascular risk factors. Accordingly, PCOS might be viewed as a gender –specific form of the metabolic syndrome (2)

Periodontitis is a common chronic infection characterized by an exaggerated gingival inflammatory response against pathogenic bacterial microflora (3) therefore ,PCOS may represent a model for studying the complex interaction among these CV risk factors, especially chronic inflammation.

Case Reports

Three female patients of age between 26-32 , at various time reported to our department with the chief complaint of pain and swollen gums. On examination patient gave the history of PCOS and were under treatment. PCOS diagnosis was confirmed by history, clinical signs, physical examination, and laboratory parameters. Based on the Rotterdam criteria they were characterized with hyperandrogenesim and oligo/anovulation.

Case report 1

A female patient aged 26, on clinical examination the patient had chronic inflammatory gingival enlargement that are clinically soft and friable with smooth shiny surface and they were bleeding easily.(figure 1) It was edematous and mandibular anterior region was commonly involved. The growth was painful. The presence of enlargement made plaque control difficult. On radiographic examination horizontal bone loss was seen in lower anteriors in relation to tooth no 32-42, No periapical pathology was seen and on assessment the tooth was vital.(figure 2)

Pt gave history of PCOS and the history was confirmed with clinical signs, physical examination, laboratory parameters, and ultrasound findings ,known as Rotterdam criteria (4)

BMI of the patient was less than $> 25 \text{ kg/m}^2$. The fasting blood glucose levels (FBS) 119/mg/dl, High density lipoprotein (HDL), low density lipoprotein (LDL) cholesterol, triglyceride(TG), were not significantly higher and serum nitric oxide (NO) LEVELS were assessed. It was within the range of 10.2-60 micro mol/l and other conditions including thyroid diseases ,hyperprolactinemia, cushing's syndrome, androgenic tumors, were all ruled out and no history of smoking, antibiotic therapy and oral contraceptives within 6 months period prior to the procedure, We aimed to minimize the effects of confounding factors.

The Periodontal parameters were examined with presence of generalized BOP, Probing pocket depth around 5mm,especially in lower anteriors. & size of the swelling 2*2 cms.

Surgical procedure

After scaling and root planing Periodontal flap surgery was planned under local anaesthesia in lower anteriors , with bark parker blade no 15 a crevicular incision was made from tooth no 33-43 and mucoperiosteal flap was raised ,(figure 3 and figure 4) thorough curettage was done and interrupted sutures placed with resorbable (5-0) sutures (figure 5 and figure 6)

Case report 2

A female patient aged 28 reported to OP and gave a history of PCOS similar to previous patient and on examination, her insulin resistance levels and diabetic status was higher.

On clinical examination

The patient had chronic inflammatory gingival enlargement that are clinically red are soft and with smooth shiny surface and were bleeding easily. It was edematous and maxillary anterior region was commonly involved. (Figure 7A,B&C)The growth was painful, bead like enlargement that extends to facial and lingual margins that covers a considerable portion of the crown but did not interfere with occlusion. The presence of enlargement made plaque control difficult. Gingivectomy procedure was planned and excision of gingival tissue done with bark parker handle and blade no 15 and Kirkland knives in other case the patient also reported with similar complaint and the inflammation of the gingiva was minimal and consistency was soft and edematous with probing pocket depth around $< 3 \text{ mm}$.C ase report 3 also recorded with similar finding (FIGURE 8).

Discussion

Polycystic ovary syndrome (PCOS) can cause wide range of symptoms (5) including

1. acanthosis nigricans
2. Prediabetes
3. Endometrial hyperplasia
4. High blood pressure
5. Elevated total cholesterol and high triglycerides
6. Body weight
7. Unresponsive acne and Scalp hair loss
8. Increased risk of cardiovascular diseases
9. Infertility due to lack of ovulation

Rotterdam criteria

High androgen levels

Polycystic ovaries

Irregular menstrual cycle

Association of polycystic ovary syndrome with periodontal disease in more recent studies showed significant associations between periodontal health and PCOS. The mechanisms that link two disease entities are not completely and clearly understood but involve various aspects of inflammation. The association of gingivitis with hormonal changes during puberty, pregnancy and menstrual cycle has been studied well (6) increased production of steroid hormones is associated with increased gingival inflammation. The effects of estrogen on the gingival epithelium, collagen synthesis osteoblasts, and bony tissues are important factors in the development of periodontal disease. Estrogen and progesterone affect the capillary system, inflammation and angiogenesis processes. These alterations lead to excessive proliferation of vascular endothelial cells and epithelial keratinization in gums.(7)(8)

PCOS is associated with low grade systemic inflammation and is indicated by elevation of multiple markers of inflammation such as C-reactive protein

(CRP), PROINFLAMMATORY cytokines and chemokines including interleukins 18(IL-8) monocyte chemoattractant protein -1 and macrophage inflammatory protein -1 and white blood count .furthermore increased oxidative stress and its biomarkers suggest PCOS as an inflammatory disease (9). Its deep rooted fact periodontitis is a chronic inflammatory disease and it is inflammation that links periodontitis with various systemic diseases.(10) Reactive oxygen species cause systemic oxidative stress in PCOS patients,including the development of IR and advanced glycation end products(AGE) .(11) AGE products are detrimental to the development and severity of periodontal disease. Through their RAGE (receptor-AGE) mediated effect.AGE products induce oxidant stress in the gingival,which accelerates tissue injury(11). High RAGE expression in periodontal tissues makes these tissues sensitive to products derived from oxidative damage As discussed by Asnani et al in a preliminary case study gingival enlargement will be due to expression for estrogen receptors.

Results

Considering above discussed literature we can excogitate that PCOS might exacerbate the periodontal condition that is caused by plaque. Through various pathophysiological links namely low grade systemic inflammation oxidative stress, IR, AGE products, and systemic hormonal levels. Evidence has suggested that periodontal disease cause chronic subclinical inflammation leading to IR initiating the development of type 2 diabetes which is a prominent feature in PCOS .hence we can contemplate that there exists a two way relationship between PCOS and periodontal disease

Conclusion

The dental consequences of this condition, highly prevalent among young females, are typically ignored.

Further studies warrant establishment of a clinical association and future diagnosis.

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Figures



Figure -1 Pre-Operative Picture



Figure -2 Radiograph Of Lower Anteriors



Figure 5 :Elevation Of Flap



Figure 3 Surgical Procedure



Figure 6 : Sutures Placed

Figure 7 : Case Report 2

Figure 7A



Figure 7B



Figure 4



Figure 7C



Figure 8 : Case Report 3