COMPARISON OF GINGIVAL AND PERIODONTAL STATUS BETWEEN PATIENT WITH POLYCYSTIC OVARY SYNDROME AND NORMAL CONTROLS

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ABSTRACT

Polycystic cystic ovary syndrome (PCOS) is characterized by several clinical features which includes hormonal imbalance, insulin resistance, an ovulation, irregular menstruation, amenorrhea, infertility, and obesity. Female sex hormones such as estrogens and progesterone normally believed to cause gingival hyperplasia. Hormonal imbalance in PCOS possibly can lead alteration in gingival and periodontal status. Aim and Objectives: To assess the gingival and periodontal status in patients with PCOS and to compare it with age matched normal control subjects. Method: Gingival and periodontal status was assessed by utilizing Gingival index (GI) and community periodontal index (CPI) and the oral hygiene status was assessed by simplified oral hygiene index (OHI-S). Results: Mean GI interpretation score for PCOS patients group and control group was 1.977 and 1.513 respectively. Mean CPI score for PCOS group and control group was 2.617 and 1.323 respectively. Comparison of GI score and CPI score using Mann – Whitney U test between PCOS group and the control group showed statistically significant difference with p-value (<0.001). Conclusion: Gingival inflammation and periodontal loss of attachment is more in PCOS patients compared to normal controls with good oral hygiene. This indicates PCOS as a risk factor for chronic inflammatory disease of the periodontium.

INTRODUCTION

Polycystic ovary syndrome (PCOS) is one of the most common endocrine disorders among women characterized by the presence of many small cysts around the surface of the ovaries. PCOS has a diverse range of causes that are not entirely understood, but there is evidence that it is largely a genetic disease. PCOS produces symptoms in approximately 5% to 10% of women of reproductive age [1].

The most common features are hormonal imbalance, insulin resistance, an ovulation, irregular menstruation, amenorrhea, infertility, and obesity [1].

It is a known fact that human gingival tissue contains specific receptors for estrogen and progesterone, which indicates that, this tissue may function as a target organ for sex hormones. Estrogen has the ability to regulate the cellular proliferation, differentiation and keratinization in gingival tissue and the progesterone can alter the microvasculature permeability, rate and pattern of collagen production which is essential for the tissue maintenance in the periodontium [2].

It has been shown that Insulin resistance with elevated blood glucose level can cause altered polymorpho neutrophils (PMNs) function; increased pro inflammatory cytokines and matrix metallo proteinases (MMPs) and all these factors can results in dysregulated inflammatory response in tissue such as periodontium, thus increases

susceptibility to periodontitis. With the above mentioned facts, it is logical to expect alterations in the normal gingival and periodontal status of patients with PCOS.

Clinically oral hygiene, gingival and periodontal status can be effectively assessed by utilizing standard indices such as Simplified oral hygiene index (OHI – S), Gingival index (GI), and Community periodontal index (CPI). [3 & 4]

With this background the current study was done to assess the gingival and periodontal status in patients with PCOD and in normal healthy control subjects by utilizing simple, yet standard and effective method.

MATERIALS AND METHODS

This is a cross sectional comparative study and the study population included 30 patients diagnosed with PCOS and 30 normal controls subjects. Institutional ethical clearance was obtained for proceeding with the study. The study participants were explained about the procedure and written consent was obtained.

Patients diagnosed with PCOS formed the patient group and the age matched subjects without previous and present history of PCOS formed the Control group. Patients not willing to participate in the study, with other known systemic diseases and history of medications which can affect the periodontal status and subjects who underwent periodontal treatment within six month period at the time of clinical examination were excluded from the study

Selected Study subjects based on the above inclusion and exclusion criteria were first examined for oral hygiene status by clinical oral examination using Simplified oral hygiene index (OHI-S). Individuals with very poor oral hygiene were also excluded from the study. Individuals with good oral hygiene from patient group and control group were assessed for severity of gingival inflammation and periodontal loss of attachment using GI and CPI index respectively and the scores were recorded.

The GI and CPI interpretation scores were compared using Mann-Whitney U test between patient and normal group.

RESULTS

The mean OHI – S index interpretation scores for the case and control group were 1.306 and 1.341 respectively.

The mean GI index interpretation scores for the case and control group were 1.977 and 1.513 respectively.

The mean CPI index score for the case and control group were 2.617 and 1.323 respectively.

Table 1. Comparison of the GI and CPI interpretation scores between case and control group

	Group	N	Mean	Std. Deviation	Mean difference	P-value
GI	Control	30	1.513	0.335	-0.463	<0.001*
	Cases	30	1.977	0.296		
CPI	Control	30	1.323	0.274	-1.293	<0.001*
	Cases	30	2.617	0.420		

* denotes statistically significant using Mann-Whitney U test

Gingival index score of cases was 1.977 ± 0.296 and controls was 1.513 ± 0.335, the mean difference was -0.463 which was found to be statistically significant with p-value (<0.001). CPI index score of cases was 2.617 ± 0.420 and controls was 1.323 ± 0.274 was found to be statistically significant with p-value (<0.001).

DISCUSSION

Polycystic ovary syndrome (PCOS) is mainly characterized by chronic an ovulation, hyperandrogenism and polycystic ovary. It affects the womens of reproductive age and is one of the most common endocrine disorders. Type II diabetes mellitus, dyslipidemia, endothelial dysfunction, visceral obesity are the potential risk factors associated with this syndrome. [5, 6]

Proinflammatory cytokines such as Interleukin -6, Interleukin – 1[7], tumour necrosis factor α were shown to be elevated in women's suffering with PCOS.[7] With this back ground the present study was undertaken to assess the gingival and periodontal status in patients diagnosed with PCOS and in normal controls.

In the present study the gingival inflammation was found to be more severe compared to the control groups. Also the periodontal disease was more severe in patients with PCOS compared to the control the group.

This study results were in accordance with the results of Dursun et al 2011. [8]

General oral hygiene status of the individuals affects the gingival and periodontal status to large extent; hence in this study individuals with poor oral hygiene were excluded.Exclusion of individuals with poor oral hygiene eliminated the most important independent risk factors for gingival and periodontal diseases. This allowed having fair interpretation of the effects of PCOS on periodontium in the present study.

CONCLUSION

Severe gingival and periodontal inflammation in PCOS compared to systemically healthy individuals suggests PCOS individuals are under the risk of chronic inflammatory disease of the periodontium. These clinical changes may be due to elevated proinflammmatory cytokines and hormonal imbalance in PCOS.

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