



ISSN: 0976-3031

Available Online at <http://www.recentscientific.com>

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research
Vol. 9, Issue, 4(C), pp. 25699-25702, April, 2018

**International Journal of
Recent Scientific
Research**

DOI: 10.24327/IJRSR

Research Article

ASSESSMENT OF PERIODONTAL STATUS IN WOMEN WITH POLYCYSTIC OVARY SYNDROME: AN OBSERVATIONAL STUDY

Kranti. K*, Ashwini. S and Gayathri K

Department of Periodontology, Faculty of Dental Sciences, Ramaiah University of Applied Science, Bangalore, Karnataka State, India

DOI: <http://dx.doi.org/10.24327/ijrsr.2018.0904.1912>

ARTICLE INFO

Article History:

Received 10th January, 2018
Received in revised form 21st
February, 2018
Accepted 05th March, 2018
Published online 28th April, 2018

Key Words:

Polycystic Ovary Syndrome, chronic periodontitis, women, metabolic syndrome

ABSTRACT

Polycystic ovary syndrome (PCOS) is a common disorder affecting women of reproductive age where there is increased production of steroid hormones that is associated with increased gingival inflammation. Aim of the study was to assess the periodontal status in women with polycystic ovary syndrome and comparing with healthy women. A total of 72 women, group 1 (36 women with PCOS) and group 2 (36 women without PCOS) were included in the study by convenient sampling technique. Periodontal clinical parameters were assessed using plaque index (PI), gingival index (GI), probing pocket depth (PPD) and clinical attachment level (CAL), and oral hygiene using simplified-oral hygiene (OHI-S) index in both the groups. Mann-Whitney U test was used for comparison of values between two groups which were statistically significant ($p < 0.001$). Disease severity compared between both the groups using Chi-Square test was statistically significant ($p = 0.04$). The prevalence of periodontal disease seems to be higher in women with PCOS and further longitudinal studies are required to correlate the association between PCOS and periodontal disease.

Copyright © Kranti. K., Ashwini. S and Gayathri K, 2018, this is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Polycystic Ovary Syndrome (PCOS) is a common disorder affecting 4% to 12% of women of reproductive age. It develops shortly after puberty and causes accumulation of underdeveloped follicles in ovaries which later becomes a cyst¹. Periodontitis is a chronic inflammatory disease of the tooth supporting structures, triggered against pathogenic bacterial microflora. The subsequent exuberant inflammatory response leads to alveolar bone loss resulting in loss of tooth. The fact that both periodontal disease and metabolic syndrome are associated with systemic inflammation and immune response^{2,3}; these two disorders may be linked through a common pathophysiological pathway^{4,5}. Taking the above said factors into consideration, the present study is aimed to assess the periodontal status in women with PCOS in comparison with healthy women.

MATERIALS AND METHODS

Patients reporting to the Department of Obstetrics and Gynaecology, M.S. Ramaiah Medical College and Hospital, Bangalore who are diagnosed with PCOS and the patients reporting to the Department of Periodontology, Faculty of

Dental Sciences, Ramaiah University of Applied Sciences, Bangalore were included in this study. The sample size was estimated using the GPower software v. 3.1.9.2. Considering the effect size to be measured (d) at 67% for two-tailed hypothesis, power of the study at 80% and the margin of the error at 5%, the total sample size needed was 72.

Women in the age range of 18 – 45 years having minimum of 20 teeth, PCOS group who were diagnosed with PCOS as per Rotterdam criteria and systemically healthy women were included in the study. Pregnant and lactating women, smokers, women suffering from malignancy or osteoporosis and women who underwent periodontal treatment during the last 6 months were excluded from the study. Informed consent was obtained from all the patients. Ethical clearance was obtained from the institutional ethics committee.

The clinical parameters Plaque Index (PII) (Silness J & Loe H, 1964), Gingival Index (GI) (Loe H & Silness J, 1963), Oral Hygiene Index – Simplified (OHI - S) (John C Greene & Jack R Vermillion, 1964), Probing depth (PD) and Clinical attachment level (CAL) were recorded for both the groups. Using William's periodontal probe PD, CAL and GI was recorded. Using explorer PII and OHI - S were recorded.

*Corresponding author: **Kranti. K**

Department of Periodontology, Faculty of Dental Sciences, Ramaiah University of Applied Science, Bangalore, Karnataka State, India

Statistical analysis

Statistical Package for Social Sciences [SPSS] for Windows Version 22.0 Released 2013. Armonk, NY: IBM Corp., was used to perform statistical analyses. Mann Whitney U test and Chi-square test was used for the comparison of variables between both the groups. The level of significance was set at P<0.05.

RESULTS

The periodontal status in women with PCOS was assessed and compared with the healthy women. In this observational study, 36 women with PCOS and 36 women without PCOS were included. The mean age compared using Mann Whitney U test in PCOS and healthy groups were 28.17 ± 6.60 years and 30.11 ± 7.24 years respectively (Table I, Graph I).

Graph I: Comparison of mean age between two study groups

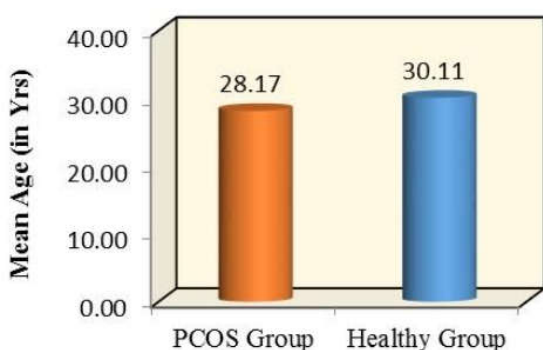


Table I Comparison of mean age between 02 groups using Mann Whitney U Test

Variables	Group	N	Mean	SD	95% Conf. Interval		Mean Diff	Z	P-Value
					Lower	Upper			
Age (yrs)	PCOS Group	36	28.17	6.60	25.93	30.40	-1.94	-0.942	0.35
	Healthy Group	36	30.11	7.24	27.66	32.56			

Oral hygiene status was assessed using indices PI, GI and OHI-S, and compared using Mann Whitney U test. PI assessed had a score of mean 1.29 ± 0.39 and 0.88 ± 0.36 in PCOS and healthy groups respectively. Mean GI score was 0.86 ± 0.31 and 0.59 ± 0.35; and mean OHI-S score was 2.33 ± 0.69 and 1.68 ± 0.62 in both PCOS and healthy groups respectively (Table II, Graph II) which were statistically significant at p<0.001. Periodontal status was assessed using the parameters PPD and CAL, and compared using Mann Whitney U test.

Graph II: Comparison of mean Index Scores between two study groups

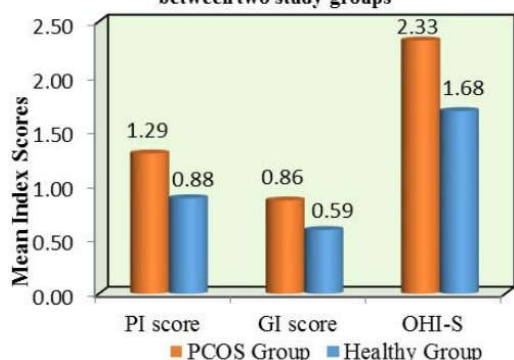


Table II Comparison of study variables between 02 groups using Mann Whitney U Test

Variables	Group	N	Mean	SD	95% Conf. Interval		Mean Diff	Z	P-Value
					Lower	Upper			
PI score	PCOS Group	36	1.29	0.39	1.16	1.42	0.41	-4.517	<0.001*
	Healthy Group	36	0.88	0.36	0.76	1.00			
GI score	PCOS Group	36	0.86	0.31	0.75	0.96	0.27	-3.823	<0.001*
	Healthy Group	36	0.59	0.35	0.47	0.71			
OHI-S	PCOS Group	36	2.33	0.69	2.10	2.56	0.65	-4.271	<0.001*
	Healthy Group	36	1.68	0.62	1.47	1.89			
PPD (mm)	PCOS Group	36	3.07	2.26	2.30	3.84	1.29	-2.612	0.009*
	Healthy Group	36	1.78	2.15	1.05	2.51			
CAL (mm)	PCOS Group	36	1.18	1.24	0.76	1.60	0.63	-2.122	0.03*
	Healthy Group	36	0.56	0.84	0.27	0.84			

Mean PPD was 3.07 ± 2.26mm in PCOS group and 1.78 ± 2.15mm (Table II, Graph III) in healthy group which were statistically significant at p 0.009. Mean CAL was 1.18 ± 1.24mm in PCOS group and 0.56 ± 0.84mm (Table II, Graph III) in healthy group which were statistically significant at p 0.03. Periodontal disease severity was compared between both the groups using Chi Square test. Periodontal disease was absent in 47.2% of PCOS group and 63.9% of healthy group; mild in 30.6% of PCOS group and 33.3% of healthy group and moderate in 22.2% of PCOS group and 2.8% of healthy group which were statistically significant at p 0.04 (Table III, Graph IV).

Graph III: Comparison of mean Periodontal parameters between two study groups

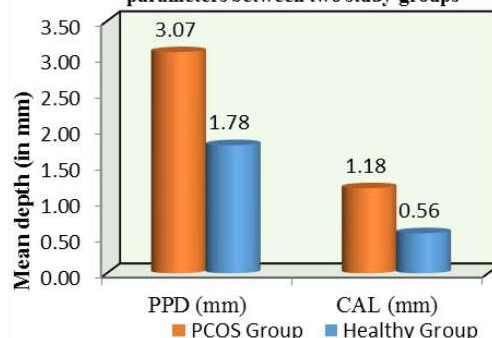
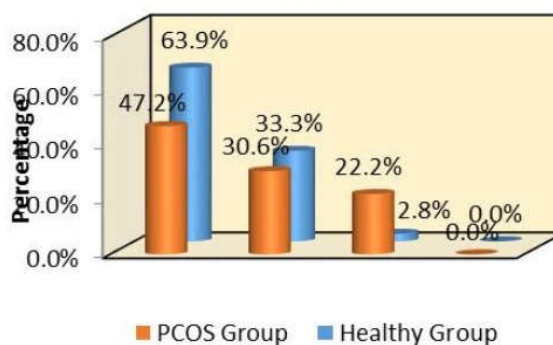


Table III Comparison of Periodontal disease Severity between PCOS & Healthy groups using Chi Square test

Severity	PCOS Group		Healthy Group		c ² Value	P-Value
	N	%	n	%		
Absent	17	47.2%	23	63.9%	6.388	0.04*
Mild	11	30.6%	12	33.3%		
Moderate	8	22.2%	1	2.8%		
Severe	0	0.0%	0	0.0%		

Graph IV: Comparison of Periodontal disease Severity between PCOS & Healthy groups



DISCUSSION

Polycystic ovary syndrome (PCOS) is a complex endocrinal disorder that manifests with a wide range of variations in clinical manifestations^{6,7}. PCOS is mainly characterized by chronic anovulation, hyperandrogenism and polycystic ovary. It affects the women of reproductive age and is one of the most common endocrine disorders^{8,9}. The study was aimed to assess the periodontal status in women with polycystic syndrome and compared them with the healthy women.

A higher prevalence of periodontal disease was observed in women with PCOS compared to women without PCOS (healthy controls) in this study. The mean age in PCOS group and healthy group were 23.6 ± 4.46 and 23.40 ± 4.47 years respectively whereas it was 28.17 ± 6.60 years and 30.11 ± 7.24 years respectively [10].

Mean GI interpretation score for PCOS group and healthy group was 1.977 and 1.513 respectively [5] and 2.13 ± 0.26 and 1.12 ± 0.12 [5] whereas GI score was 0.86 ± 0.31 and 0.59 ± 0.35 in this study. The mean OHI – S index interpretation scores for the PCOS and healthy groups were 1.306 and 1.341 respectively [5] whereas it was 2.33 ± 0.69 and 1.68 ± 0.62 in both PCOS and healthy groups respectively according to this study.

CAL observed was 1.18 ± 1.24 mm and 0.56 ± 0.84 mm in PCOS and healthy groups respectively which is in collaboration with a study conducted by [10] where CAL was 1.28 ± 1.31 mm and 0.57 ± 0.73 mm in both the groups. PPD was noted as 3.07 ± 2.26 mm in PCOS group and 1.78 ± 2.15 mm in healthy groups which was in accordance with the PPD values 1.8 ± 0.3 mm and 1.5 ± 0.3 mm [2] in PCOS and healthy groups respectively.

PI and CAL were significantly higher in women with PCOS and may be related to the role of chronic systemic inflammation in the pathophysiology of both PCOS and periodontal diseases^{10,11} which is compatible with the present study. Clinical periodontal parameters PD, GI, PI were higher in women with PCOS when compared with the controls group which is in support with this study^{12,13}. However, the frequency of periodontitis in women with and without PCOS was not statistically significant in a recent study conducted by which is contradictory to our study where in moderate periodontitis was higher in PCOS group compared to healthy control group without PCOS¹⁴. Similar to our study the gingival inflammation and periodontal loss of attachment is more in PCOS patients when compared to normal controls with good oral hygiene¹⁵.

CONCLUSION

Gingival inflammation and periodontal loss of attachment was significantly higher in women with PCOS. Due to the short duration of the study and smaller sample size the results of this study cannot be generalized. Further longitudinal studies are required to correlate the association between PCOS and periodontal disease.

References

Asmathulla, S., Kripa, S. and Rajarajeswari, R., 2016. Insulin resistance and its relation to inflammatory status and

serum lipids among young women with PCOS. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*, 2(3), pp.325-329.

Dursun, E., Akalin, F.A., Güncü, G.N., Çınar, N., Aksoy, D.Y., Tözüm, T.F., Kılınc, K. and Yıldız, B.O., 2011. Periodontal disease in polycystic ovary syndrome. *Fertility and sterility*, 95(1), pp.320-323.

Farah, L., Lazenby, A.J., Boots, L.R. and Azziz, R., 1999. Prevalence of polycystic ovary syndrome in women seeking treatment from community electrologists. Alabama Professional Electrology Association Study Group. *The Journal of reproductive medicine*, 44(10), pp.870-874.

Genco, R.J., Grossi, S.G., Ho, A., Nishimura, F. and Murayama, Y., 2005. A proposed model linking inflammation to obesity, diabetes, and periodontal infections. *Journal of periodontology*, 76(11-s), pp.2075-2084.

Kaliamoorthy, S. and Murugaboopathy, V., Comparison of gingival and periodontal status between patient with polycystic ovary syndrome and normal controls.

Katz, J., Flugelman, M.Y., Goldberg, A. and Heft, M., 2002. Association between periodontal pockets and elevated cholesterol and low density lipoprotein cholesterol levels. *Journal of periodontology*, 73(5), pp.494-500.

Kim, J. and Amar, S., 2006. Periodontal disease and systemic conditions: a bidirectional relationship. *Odontology*, 94(1), pp.10-21..

Knochenhauer, E.S., Key, T.J., Kahsar-Miller, M., Waggoner, W., Boots, L.R. and Azziz, R., 1998. Prevalence of the polycystic ovary syndrome in unselected black and white women of the southeastern United States: a prospective study. *The Journal of Clinical Endocrinology & Metabolism*, 83(9), pp.3078-3082.

Murri, M., Luque-Ramírez, M., Insenser, M., Ojeda-Ojeda, M. and Escobar-Morreale, H.F., 2013. Circulating markers of oxidative stress and polycystic ovary syndrome (PCOS): a systematic review and meta-analysis. *Human reproduction update*, 19(3), pp.268-288.

Nair, S.D., Varma, S., Suragimath, G., Zope, S., Kale, V. and Abbayya, K., 2017. Prevalence of periodontal disease in women with polycystic ovary syndrome-a comparative descriptive study. *Journal of evolution of medical and dental sciences-jemds*, 6(65), pp.4733-4736.

Norman, R.J., Dewailly, D., Legro, R.S. and Hickey, T.E., 2007. Polycystic ovary syndrome. *The Lancet*, 370(9588), pp.685-697.

Peter, S., 2009. Indices in dental epidemiology. *Essentials of Preventive and Community Dentistry*. Arya Medi Publishing House Pvt. Ltd. New Delhi, pp.343-346.

Porwal, S., Tewari, S., Sharma, R.K., Singhal, S.R. and Narula, S.C., 2014. Periodontal Status and High-Sensitivity C-Reactive Protein Levels in Polycystic Ovary Syndrome With and Without Medical Treatment. *Journal of periodontology*, 85(10), pp.1380-1389.

Rahiminejad, M.E., Moaddab, A., Rabiee, S., Esna-Ashari, F., Borzouei, S. and Hosseini, S.M., 2014. The

relationship between clinicobiochemical markers and depression in women with polycystic ovary syndrome. *Iranian journal of reproductive medicine*, 12(12), p.811.

Rotterdam ESHRE/ASRM-sponsored PCOS consensus workshop group, 2004. Revised 2003 consensus on diagnostic criteria and long-term health risks related to polycystic ovary syndrome (PCOS). *Human reproduction*, 19(1), pp.41-47.

How to cite this article:

Kranti. K., Ashwini. S and Gayathri K.2018, Assessment of Periodontal Status In Women With Polycystic Ovary Syndrome: An Observational Study. *Int J Recent Sci Res.* 9(4), pp. 25699-25702. DOI: <http://dx.doi.org/10.24327/ijrsr.2018.0904.1912>
