

Original Research

Assessment of salivary C Reactive proteins levels in patients in periodontitis patients

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ABSTRACT:

Background: Periodontitis is an inflammatory disease of the supporting tissues of the teeth which is caused by specific microorganisms and characterized by extensive destruction of periodontal ligament and alveolar bone with pocket formation, gingival recession or both. Hence; the present study was conducted for assessing C Reactive proteins levels in patients in periodontitis patients. **Materials & methods:** A total of 20 chronic periodontitis patients and 20 healthy controls were enrolled. Complete demographic and clinical details of all the patients were obtained. Patients with presence of diabetes, hypertension or any other systemic disorder were excluded from the present study. Salivary samples were obtained and were sent to laboratory for assessment C Reactive Proteins levels. Autoanalyzer was used in the laboratory for assessment. **Result:** Mean C reactive proteins levels of the periodontitis patients and healthy controls was 4852.5 pg/ml and 2875.6 pg/ml respectively. Significantly results were obtained while comparing the mean CRP levels among periodontitis patients and healthy controls. **Conclusion:** Our results provide robust evidence that periodontitis is associated with systemic inflammation as measured by salivary CRP levels.

Key words: C Reactive proteins, Periodontitis

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INTRODUCTION

Periodontitis is an inflammatory disease of the supporting tissues of the teeth which is caused by specific microorganisms and characterized by extensive destruction of periodontal ligament and alveolar bone with pocket formation, gingival recession or both. Gingivitis is a gum inflammatory disease and clinically the presence of identifiable attachment loss in periodontitis makes it be distinguishable from gingivitis.¹⁻³

CRP has given much attention due to its key role in atherosclerosis. So, that if it increases by more than 0.5 milligrams per liter, the risk of cardiovascular diseases increases. Several studies have also suggested a correlation between periodontitis and cardiovascular diseases. In some studies, it has even been claimed that there are some correlations between periodontal disease and atherosclerotic heart disease and heart attacks and strokes. Although their cause and effect relationship has not been established, but it is likely that elevation of CRP levels in periodontitis may help to understand the relationship between

cardiovascular diseases and periodontitis.⁴⁻⁶ Hence; the present study was conducted for assessing C Reactive proteins levels in patients in periodontitis patients.

MATERIALS & METHODS

The present study was conducted for assessing C Reactive proteins levels in patients in periodontitis patients. A total of 20 chronic periodontitis patients and 20 healthy controls were enrolled. Complete demographic and clinical details of all the patients were obtained. Patients with presence of diabetes, hypertension or any other systemic disorder were excluded from the present study. Salivary samples were obtained and were sent to laboratory for assessment C Reactive Proteins levels. Autoanalyzer was used in the laboratory for assessment. All the results were assessed by SPSS software and values were compared by Mann Whitney U test.

RESULTS

Mean age of the periodontitis patients and healthy controls was 42.5 years and 46.5 years respectively. Majority of the patients of both the periodontitis group and the control group were males. Mean C reactive proteins levels of the periodontitis patients and healthy controls was 4852.5 pg/ml and 2875.6 pg/ml respectively. Significantly results were obtained while comparing the mean CRP levels among periodontitis patients and healthy controls.

Table 1: Comparison of CRP levels

Group	Mean	SD
Healthy controls	2875.6	986.1
Periodontitis	4852.5	2543.5
p- value	0.001 (Significant)	

DISCUSSION

CRP is a pentameric plasma protein with homologs in vertebrates and many invertebrates that participate in the systemic response to inflammation. It is a pattern recognition molecule that is extremely sensitive and non-specific acute-phase marker for inflammation, produced in response to many forms of injury other than binding to specific molecular configurations that are typically exposed during cell death or found on the surfaces of pathogens. It is regulated by cytokines like interleukin-6 (IL-6), interleukin-1 β (IL-1 β) and tumour necrosis factor- α (TNF- α). These in turn cause systemic changes including hepatic release of a range of plasma proteins, activation of complement proteins and various metabolic changes.⁷⁻⁹ Hence; the present study was conducted for assessing C Reactive proteins levels in patients in periodontitis patients.

Mean age of the periodontitis patients and healthy controls was 42.5 years and 46.5 years respectively. Majority of the patients of both the periodontitis group and the control group were males. Mean C reactive proteins levels of the periodontitis patients and healthy controls was 4852.5 pg/ml and 2875.6 pg/ml respectively. Shojaee M et al compared the amount of salivary C-Reactive protein (CRP) in healthy subjects and patients with periodontal disease. This case-control study was done on 90 patients. These subjects were divided into three groups of healthy (n = 30), gingivitis (n = 30), and chronic periodontitis (n = 30), based on Gingival Index (GI) and Clinical Attachment Loss (CAL) indices. 2ml saliva samples were collected from these people and clinical indicators including GI, CAL, Periodontal Pocket Depth (PPD), and Bleeding Index (BI) were assessed. ELISA method was used to evaluate the salivary CRP levels. Collected data were analyzed using SPSS statistical software by non-Parametric Kruskal-Wallis and Mann-Whitney test and Spearman correlation coefficient and P<0.05 was considered significant. The mean salivary CRP levels were 5332.62 \pm 5051.63pg/ml in periodontitis patients, 3545.41 \pm 3061.38pg/ml in gingivitis group and 3108.51 \pm 3574.47pg/ml in healthy subjects. The

statistic analysis showed a significant difference in salivary CRP concentrations between the periodontitis patients and healthy subjects (P=0.045). The results indicated that there is a significant association between periodontitis and salivary CRP concentrations.⁹

In the present study, significantly results were obtained while comparing the mean CRP levels among periodontitis patients and healthy controls. A Pejic et al assessed the relationship between periodontitis and systemic inflammatory factor, as well as to discover whether there is a relation to the severity of periodontitis and to the periodontopathogens. Periodontal examinations and serum C-reactive protein (CRP) level measurements were performed in 50 patients with periodontitis. Periodontal health indicators included the gingival bleeding on probing index and periodontal disease status. The patients with moderate periodontitis had low attachment loss and pocket depth <4 mm. The patients with severe periodontitis had high attachment loss and pocket depth >5 mm. The control group comprised 25 volunteers with healthy gingiva, gingival sulcus <2 mm and no attachment loss. The presence of Porphyromonas gingivalis and Aggregatibacter actinomycetemcomitans in subgingival plaque samples was analysed by the polymerase chain reaction (PCR) method. The periodontal parameters and CRP levels were significantly higher in the patients with periodontitis. Patients who had severe periodontitis, with high levels of mean clinical attachment loss, and subjects with moderate periodontitis had higher mean CRP levels. The percentage of subjects with elevated levels of CRP >5 mg/l was greater in the higher clinical attachment loss group compared to the group with lower attachment loss. The presence of P. gingivalis and A. actinomycetemcomitans were also associated with elevated CRP levels and poor periodontal status.¹⁰

CONCLUSION

Our results provide robust evidence that periodontitis is associated with systemic inflammation as measured by salivary CRP levels.

REFERENCES

1. Laxman VK, Annaji S. Tobacco use and its effects on the periodontium and periodontal therapy. J Contemp Dent Pract. 2008;9:97–107.
2. Paraskevas S, Huizinga JD, Loos BG. A systematic review and meta-analyses on C-reactive protein in relation to periodontitis. J Clin Periodontol. 2008;35:277–90.
3. Nunes BK, Lacerda RA, Jardim JM. [Systematic review and meta-analysis of the predictive value of C-reactive protein in postoperative infections] Rev Esc Enferm USP. 2011;45:1488–94.
4. Giannobile WV, Beikler T, Kinney JS, et al. Saliva as a diagnostic tool for periodontal disease: current state and future directions. Periodontol. 2009;50:52–64.

5. Pitiphat W, Savetsilp W, Wara-Aswapati N. C-reactive protein associated with periodontitis in a Thai population. *J Clin Periodontol.* 2008;35:120–5.
6. Saito T, Murakami M, Shimazaki Y, Oobayashi K, Matsumoto S, Koga T. Association between alveolar bone loss and elevated serum C-reactive protein in Japanese men. *J Periodontol.* 2003;74:1741–46.
7. Persson GR, Pettersson T, Ohlsson O, Renvert S. High-sensitivity serum C-reactive protein levels in subjects with or without myocardial infarction or periodontitis. *J Clin Periodontol.* 2005;32:219–24.
8. Salzberg TN, Overstreet BT, Rogers JD, Califano JV, Best AM, Schenkein HA. C-reactive protein levels in patients with aggressive periodontitis. *J Periodontol.* 2006;77:933–39.
9. Ramamoorthy RD, Nallasamy V, Reddy R, Esther N, Maruthappan Y. A review of C-reactive protein: A diagnostic indicator in periodontal medicine. *J Pharm Bioall Sci.* 2012;4(2):422–26.
10. Shojaee M, Fereydooni Golpasha M, Maliji G, Bijani A, Aghajanpour Mir SM, Mousavi Kani SN. C - reactive protein levels in patients with periodontal disease and normal subjects. *Int J Mol Cell Med.* 2013;2(3):151-155.
11. A Pejcic, L J Kesic, J Milasin. C-reactive protein as a systemic marker of inflammation in periodontitis. *Eur J Clin Microbiol Infect Dis.* 2011 Mar;30(3):407-14.