ORIGINAL RESEARCH

Assessment of C reactive proteins levels in peri-implantitis patients: An observational study

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ABSTRACT

Background: Peri-implantitis is an inflammatory reaction with loss of supporting bone in the tissues surrounding an implant. Hence; the present study was undertaken for assessing the levels of C reactive proteins levels in peri-implantitis patients.

Materials & methods: We calculated any deviation in the levels of CRP in the gingival crevicular fluid (GCF) of patients with peri-implantitis as compared to healthy normal subjects. A total of 30 subjects were enrolled in the current research. Out of these 30 subjects, 15 subjects were of confirmed cases of peri-implantitis while the remaining 15 subjects were healthy controls. The GCF of all the patients was collected and sent to laboratory for precise measurements of CRP levels and their comparison with the control groups. Based on the lab reports all the data was assimilated on the excel sheets for further assessment. SPSS software was used for statistical analysis. Chi square test and student test were used to compare and analyse the variables. P value of less than .05 was considered significant.

Results:Mean GCF levels of C-Reactive proteins among subjects of peri-implantitis group was 395.5 pg/mL and was found to be significantly higher in comparison to the subjects of control group (171.6 pg/mL).

Conclusion: Enhanced periodontal inflammation in peri-implantitis patients is accompanied by a considerable increase in the concentration of CRPs.

Key words: C Reactive proteins, Peri-implantitis

INTRODUCTION

Peri-implantitis is an inflammatory reaction with loss of supporting bone in the tissues surrounding an implant. The overall frequency of peri-implantitis was reported to be 5% to 8% for selected implant systems. An increasing number of studies suggests that anaerobic plaque bacteria may have an adverse effect on peri-implant tissue health leading to peri-implantitis.[1, 2] Peri-implantis can also be directly is related to inadequate distribution of the chewing pressure on the tissues surrounding the implant, thus leading to loosening of the artificial supports, infection of the surrounding tissues, and consequently inflammatory processes. Failure of a dental implant is often related to failure in osseointegration. A dental implant is considered to be a failure if it is lost, mobile, or shows peri-implant bone loss of

greater than 1.0 mm in the first year and greater than 0.2 mm a year after.[3, 4]Recent animal studies have shown elevation of peripheral levels of pro-inflammatory biomarkers (e.g., total protein, albumin, and white blood cells [WBC]) after ligature-induced experimental peri-implantitis. It is worth mentioning that the surgical treatment of experimental peri-implantitis by means of open flap debridement led to a reduction of these systemic inflammatory parameters, which reached similar values to baseline.[4, 5] It could be hypothesized that similarly to periodontitis, the inflamed and ulcerated peri-implant pocket epithelium allows the entrance of locally produced inflammatory mediators (e.g., leukocytes and cytokines) into the bloodstream, evoking a systemic immune and acute inflammatory response.[6- 8]Hence; the present study was undertaken for assessing the levels of C reactive proteins levels in peri-implantitis patients.

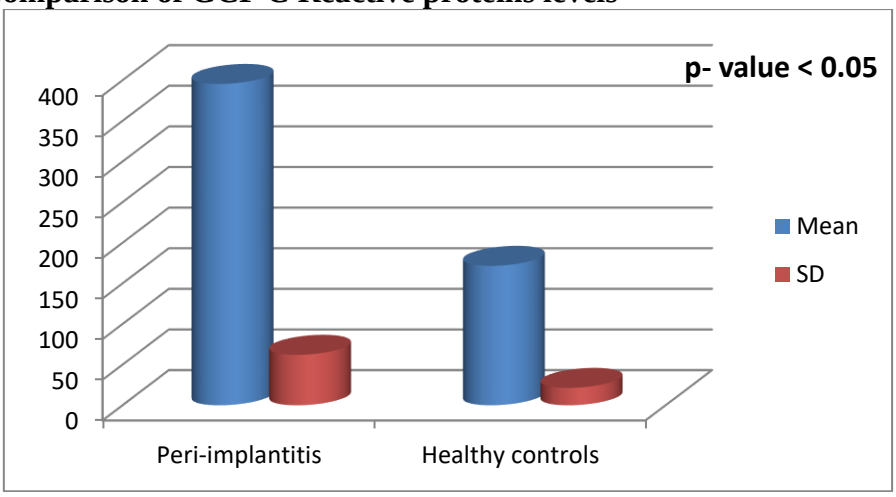
MATERIALS & METHODS

The present study was undertaken for assessing the levels of C reactive proteins levels in peri-implantitis patients.We calculated any deviation in the levels of CRP in the gingival crevicular fluid (GCF) of patients with peri-implantitis as compared to healthy normal subjects. A total of 30 subjects were enrolled in the current research. Out of these 30 subjects, 15 subjects were of confirmed cases of peri-implantitis while the remaining 15 subjects were healthy controls. Only those subjects were enrolled in the peri-implantitis group which had definitive evidence of peri-implantitis as diagnosed both clinically and radiographically. The demographic data of each patient was obtained. It was ascertained that all the patients did not have any other disease. The GCF of all the patients was collected and sent to laboratory for precise measurements of CRP levels and their comparison with the control groups. Based on the lab reports all the data was assimilated on the excel sheets for further assessment. Statistical Package for Social Sciences software was used for statistical analysis. Chi square test and student test were used to compare and analyse the variables. P value of less than .05 was considered significant.

RESULTS

A total of 30 subjects were enrolled in the current research. Out of these 30 subjects, 15 subjects were of confirmed cases of peri-implantitis while the remaining 15 subjects were healthy controls. Mean age of the subjects of the peri-implantitis group and control group was 41.6 year and 44.9 years respectively. Mean GCF levels of C-Reactive proteins among subjects of peri-implantitis group was 395.5 pg/mL and was found to be significantly higher in comparison to the subjects of control group (171.6 pg/mL).

Graph 1: Comparison of GCF C Reactive proteins levels



DISCUSSION

Peri-implant inflammations represent serious diseases after dental implant treatment, which affect both the surrounding hard and soft tissue. Due to prevalence rates up to 56%, peri-implantitis can lead to the loss of the implant without multilateral prevention and therapy concepts. Specific continuous check-ups with evaluation and elimination of risk factors (e.g. smoking, systemic diseases and periodontitis) are effective precautions. In addition to aspects of osseointegration, type and structure of the implant surface are of importance. For the treatment of peri-implant disease various conservative and surgical approaches are available.[7- 9]

A greater concentration of these mediators of inflammation such as C-reactive protein (CRP), fibrinogen, and cytokines are observed in patients suffering from periodontal diseases. Raised levels of interleukin (IL-6) have been demonstrated by various studies which tend to decrease with suitable periodontal treatment. IL-6 stands out to be the chief pro-coagulant cytokine. Moreover, it also leads to the induction of CRP expression which further stimulates the responses of the pro-coagulants and mediators of inflammation.[8- 10]Hence; the present study was undertaken for assessing the levels of C reactive proteins levels in peri-implantitis patients.

A total of 30 subjects were enrolled in the current research. Out of these 30 subjects, 15 subjects were of confirmed cases of peri-implantitis while the remaining 15 subjects were healthy controls. Mean age of the subjects of the peri-implantitis group and control group was 41.6 year and 44.9 years respectively. In a similar study conducted by Khichy A et al, authors assessed the C-reactive proteins (CRP) levels and IL-6 levels in patients with peri-implantitis. A total of 20 patients with confirmed clinical and radiographic diagnosis of peri-implantitis were included in the present study. Another set of 20 subjects who reported for routine health check-up were included as healthy controls. Mean levels of CRPs in patients of the peri-implantitis group and the control group was found to be 0.795 mg/dL and 0.294 mg/dL respectively. Mean IL-6 levels among the patients of the peri-implantitis group and the control group was found to be 12.178 pg/ml and 6.458 pg/ml respectively. While analyzing statistically, significant results were obtained. Enhanced periodontal inflammation in peri-implantitis patients is accompanied by a considerable increase in the concentration of CRPs and IL-6.[11]

In the present study, man GCF levels of C-Reactive proteins among subjects of peri-implantitis group was 395.5 pg/mL and was found to be significantly higher in comparison to the subjects of control group (171.6 pg/mL). Kulkarni S et al, in a similar study, evaluated the levels of CRP in patients with active peri-implantitis. 40 patients were included in their study. These were divided into two groups. Group 1 comprised of 20 patients with definitive evidence of peri-implantitis as diagnosed both clinically and radiographically. Group 2 had 20 healthy patients with no evidence of peri-implantitis (control group). The GCF of all the patients was collected and sent to laboratory for precise measurements of CRP levels and their comparison with the control groups. Based on the lab reports all the data was assimilated on the excel sheets for further assessment. The mean value of CRP in group with peri-implantitis patients was 402.6 pg/ml. The mean value of CRP in control group was 190.4 pg/ml. Group 1 and group 2 showed standard deviation of 57.6 and 29.1 pg/ml respectively. It was observed that the CRP levels in patients with periimplantitis were significantly higher than the control group. This variation was statistically significant.[12]In the study by Pederson et al., the participants were distributed into five groups: Healthy, gingivitis, moderate periodontitis, severe periodontitis, and a group of edentulous patients. CRP levels ranged from 0 to 472 pg/ml, and CRP was significantly lower in a group of healthy patients than in all other groups. Pederson et al. suggest that levels of salivary CRP are directly related to an individual's periodontal status.[8]

CONCLUSION

From the above results, the authors conclude that enhanced periodontal inflammation in peri-implantitis patients is accompanied by a considerable increase in the concentration of CRPs.

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