

## Original Research

### Serum c reactive protein levels in peri-implantitis patients

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#### ABSTRACT:

**Background:**The present study was conducted for assessing serum c reactive protein levels in peri-implantitis patients.**Materials & methods:**A total of 20 patients with presence of peri-implantitis and 20 healthy controls were enrolled. Complete demographic and clinical details of all the patients was obtained. All the patients were recalled in the morning and blood samples were obtained. All the samples were sent to laboratory where C reactive protein levels were recorded using an auto-analyzer. All the results were recorded and compared using SPSS software. **Results:**A total of 20 patients and 20 healthy controls were enrolled. Mean age of the patients of the study group and control group was 40.8 years and 42.9 years respectively. Mean peri-implantitis levels among patients of the study group and control group was 0.899 mg/dl and 0.227 mg/dl. While comparing the results, significant results were obtained. **Conclusion:**C Reactive protein levels were significantly raised among peri-implantitis patients.

**Key words:** Implant, Peri-implantitis, C Reactive protein levels

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#### INTRODUCTION

The dental implant has revolutionized oral rehabilitation and become a part of routine treatment in prosthetic rehabilitation. There has been marked advancement in implant design, materials used, and surgical protocols. A high implant survival rate (94.6%) has been reported over a 13.4-year follow-up. Approximately 90% of patients who received an implant were satisfied with their chewing ability and accessibility for plaque control at the implant sites. Despite high long-term survival rates, complications due to peri-implant diseases are frequent and, in severe cases, result in the loss of the implants and their prostheses.<sup>1-3</sup>

The histopathologic and clinical conditions leading to the conversion from peri-implant mucositis to peri-implantitis are not completely understood. The onset of peri-implantitis may occur early during follow-up and the disease progresses in a non-linear and accelerating pattern. Peri-implantitis sites exhibit clinical signs of inflammation and increased probing depths compared to baseline measurements. At the histologic level, compared to periodontitis sites, peri-

implantitis sites often have larger inflammatory lesions. Surgical entry at peri-implantitis sites often reveals a circumferential pattern of bone loss.<sup>4-6</sup> C-reactive protein (CRP) is an acute inflammatory protein that increases up to 1,000-fold at sites of infection or inflammation. CRP is produced as a homopentameric protein, termed native CRP (nCRP), which can irreversibly dissociate at sites of inflammation and infection into five separate monomers, termed monomeric CRP (mCRP). CRP is synthesized primarily in liver hepatocytes but also by smooth muscle cells, macrophages, endothelial cells, lymphocytes, and adipocytes. Evidence suggests that estrogen in the form of hormone replacement therapy influences CRP levels in the elderly.<sup>7-9</sup> Hence; the present study was conducted for assessing serum c reactive protein levels in peri-implantitis patients.

#### MATERIALS & METHODS

The present study was conducted for assessing serum c reactive protein levels in peri-implantitis patients. A total of 20 patients with presence of peri-implantitis and 20 healthy controls were enrolled. Complete

demographic and clinical details of all the patients was obtained. All the patients were recalled in the morning and blood samples were obtained. All the samples were sent to laboratory where C reactive protein levels were recorded using an auto-analyzer. All the results were recorded and compared using SPSS software.

## RESULTS

A total of 20 patients and 20 healthy controls were enrolled. Mean age of the patients of the study group and control group was 40.8 years and 42.9 years respectively. Mean peri-implantitis levels among patients of the study group and control group was 0.899 mg/dl and 0.227 mg/dl. While comparing the results, significant results were obtained.

**Table 1: Comparison of C Reactive protein levels**

Groups	Mean	SD
Peri-implantitis group	0.899	0.227
Control group	0.232	0.128
p-value	0.001 (Significant)	

## DISCUSSION

Despite the success rates of dental implants, peri-implantitis presents as the most common complication in implant dentistry. The identified risk indicators of peri-implant diseases are plaque, smoking, history of periodontitis, surface roughness, residual cement, emergence angle >30 degrees, radiation therapy, keratinized tissue width, and function time of the implant, sex, and diabetes. Peri-implantitis treatments can be divided into nonsurgical (mechanical, antiseptic, and antibiotics), surface decontamination (chemical and laser), and surgical (air powder abrasive, resective, and regenerative). However, mechanical debridement alone may fail to eliminate the causative bacteria, and this treatment should be combined with other treatments (antiseptics and surgical treatment). Surface decontamination using chemical agents may be used as an adjuvant treatment; however, the definitive clinical benefit is yet not proven. Laser treatment may result in a short-term decrease in periodontal pocket depth, while air powder abrasive is effective in cleaning a previously contaminated implant surface. Surgical elimination of a pocket, bone recontouring and plaque control are also effective for treating peri-implantitis.<sup>7-9</sup> Hence; the present study was conducted for assessing serum c reactive protein levels in peri-implantitis patients.

A total of 20 patients and 20 healthy controls were enrolled. Mean age of the patients of the study group and control group was 40.8 years and 42.9 years respectively. Mean peri-implantitis levels among patients of the study group and control group was 0.899 mg/dl and 0.227 mg/dl. While comparing the results, significant results were obtained. Khichy Aet al 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. All the subjects were recalled in the morning and fasting (minimum of 12 h) venous blood samples were obtained. Plain vials were used for collecting the venous blood which was sent to the laboratory for biochemical analysis. In the laboratory, levels of CRP were assessed by means of latex enhanced nephelometric method, and interleukin 6 (IL-6) was assessed by means of Elisa kit. 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.<sup>10</sup> Priyadharsini KS et al compared CRP levels among peri-implant health and disease conditions. A total of 40 patients with peri-implant health (n = 10), peri-mucositis (n = 10), early peri-implantitis (n = 10) and advanced peri-implantitis (n = 10) were enrolled. Unstimulated salivary samples were collected and subjected to latex agglutination assay for CRP analysis. CRP levels were then correlated with peri-implant health and diseases. CRP level in peri-implant health, peri-implant mucositis, early peri-implantitis and advanced peri-implantitis were  $0.18 \pm 0.04$  mg/dL,  $2.05 \pm 0.61$  mg/dL,  $4.14 \pm 1.82$  mg/dL and  $6.21 \pm 1.35$  mg/dL respectively. There was a statistically significant difference in CRP levels between all the tested groups. Pearson correlation coefficient analysis revealed a strong positive correlation between CRP and peri-implant health status. CRP level was high among patients with peri-implantitis followed by peri-implant mucositis and peri-implant health.<sup>11</sup>

## CONCLUSION

C Reactive protein levels were significantly raised among peri-implantitis patients.

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