

Assessment Of Serum C- Reactive Level InPatients With Peri-Implantitis- A ClinicalStudy

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ABSTRACT

Background: Peri-implant disease is a chronic inflammatory condition caused by bacterial plaque contamination. The present study was conducted to assess serum C-reactive level inpatientswith peri-implantitis.

Materials & Methods: 40 radiographically and clinically confirmed patients with peri-implantitis and equal number of controls was enrolled. Patients were divided into 2 groups.Group I was patients with peri- implantitis and group II were healthy control. Serum Creactiveproteins levelsweredetected with autoanalyser.

Results: There were 25 males and 15 females in group I and in group II, 22 males and 28females. The mean serum C- reactive protein level in group I was 412.6 pg/ml and in groupIIwas 194.2 pg/ml. Thedifferencewas significant ($P < 0.05$).

Conclusion: There was increased serum C reactive level in patients with peri-

implantitis.**Keywords:** Bacterial plaque,C reactivelevel, Peri-implantitis

1. INTRODUCTION

Implant dentistry, as a scientific discipline, has grown rapidly over the last four decades withthe aim of facilitating early and effective osseointegration affording successful long-termoutcomes. Over these years, the onset of complications has been neglected as representingonlyisolatedevents.¹Nowadays,however,duetotheincreaseinprevalenceofsuchproblems, one of the major endeavors in this field is the prevention and efficient managementofbiologicalcomplications referred toas peri-implant diseases.²

Peri-

implantdiseaseisachronicinflammatoryconditioncausedbybacterialplaquecontamination.Itcanbe classifiedasperi-implantmucositis,whichisreversibleinflammation confined to the soft tissue, or peri-implantitis, characterized by a progressiveinflammatoryresponsethatleadstoalveolarbone loss.³Clinicalsignsofperi-

implantitis that imitate chronic periodontitis include bleeding on probing (BOP), soft-tissue inflammation, increased probing depth (PD), pain, and suppuration. Although bacterial plaque is the primary factor in the etiology of peri-implantitis, microbial virulence factors such as lipopolysaccharides enhance the severity of inflammatory responses aided by cytokines released by host immune cells.⁴

Detection of proteomics biomarkers could intuitively and accurately determine the survival of oral microbes and their responses to the environment changes, including the osteocalcin, alkaline phosphatase, matrix metalloproteinases (MMPs), and C-reactive protein (CRP). Moreover, genetic biomarkers have been shown to be associated with the pathogenesis of peri-implantitis, including the interleukin (IL), prostaglandin E2, CD14, lipopolysaccharide receptors, and osteoprotegerin.⁵ The present study was conducted to assess serum C-reactive level in patients with peri-implantitis.

2. MATERIALS & METHODS

The present study comprised of 40 radiographically and clinically confirmed patients with peri-implantitis of both genders. Equal number of controls was also enrolled. All were informed regarding the study and their consent was obtained.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups. Group I was patients with peri-implantitis and group II were healthy control. A thorough oral examination was carried out in all the patients. Gingival crevicular fluid (GCF) samples were obtained. Serum C-reactive proteins levels were detected with autoanalyser. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

3. RESULTS

Table I Distribution of patients

Groups	Group I	Group II
Status	Peri-implantitis	Healthy
M:F	25:15	22:18

Table I shows that there were 25 males and 15 females in group I and in group II, 22 males and 18 females.

Graph I Distribution of patients

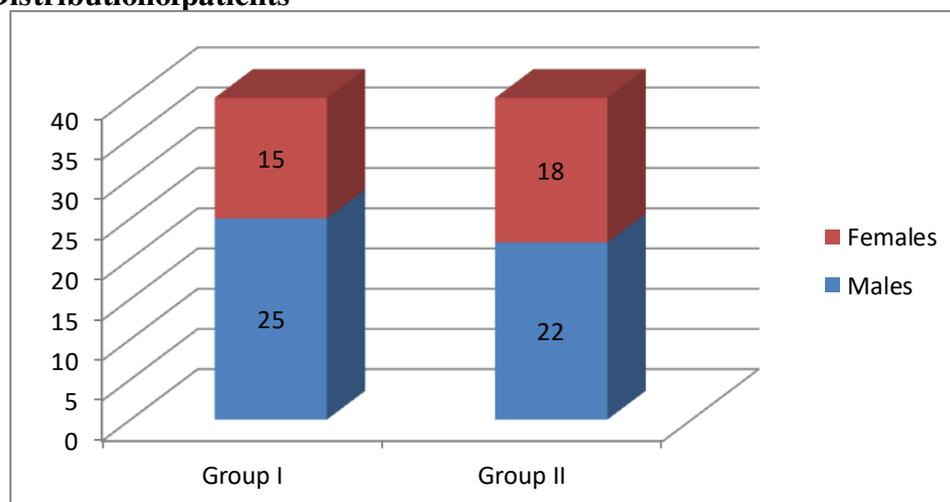
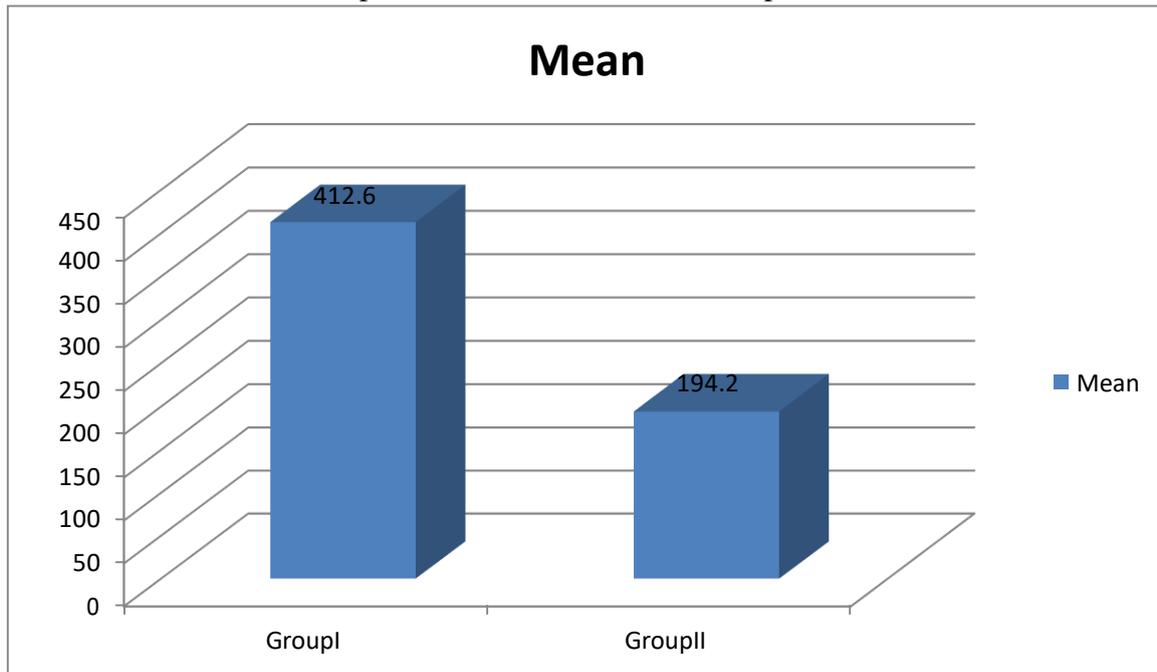


Table II Determination of C-reactive protein

Groups	Mean	Pvalue
Group I	412.6	0.01
Group II	194.2	

Table II, graph II shows that mean serum C-reactive protein level in group I was 412.6 pg/ml and in group II was 194.2 pg/ml. The difference was significant ($P < 0.05$).

Graph II Determination of C-reactive protein



4. DISCUSSION

Peri-implant disease refers to the pathological inflammatory changes that take place in the tissue surrounding a load-bearing implant.⁶ Two entities are described within the concept of peri-implant disease: peri-implant mucositis and peri-implantitis. Peri-implant mucositis is defined as a reversible inflammatory reaction in the soft tissues surrounding an implant. Peri-implantitis is an inflammatory reaction with loss of supporting bone in the tissues surrounding an implant.⁷ The conversion process from peri-implant mucositis mirrors the progression from gingivitis to periodontitis, with the constant formation of plaque features in the peri-implant tissues, characterized by erythema, bleeding, exudation, and tumefaction.⁸ At a histological level, the establishment of B- and T-cell dominated inflammatory cell infiltrates has been evidenced. However, the clinical and histopathological characteristics during the conversion process are still not fully clear. Following conversion, peri-implantitis progresses in a nonlinear and accelerated manner.⁹ The present study was conducted to assess serum C-reactive level in patients with peri-implantitis.

In present study, there were 25 males and 15 females in group I and in group II, 22 males and 28 females. Sudan et al¹⁰ in their study a total of 10 patients with clinical and radiographic evidence of peri-implantitis and 10 healthy controls were enrolled. Mean C reactive proteins levels among the patients of the peri-implantitis group and the control group were found to be

397.4 pg/mL and 188.9 pg/mL respectively. While comparing statistically, it was observed that mean C reactive proteins levels of the patients of the peri-implantitis group was found to be higher in comparison to the patients of the control group.

We found that mean serum C- reactive protein level in group I was 412.6 pg/ml and in group II was 194.2 pg/ml. Kour et al¹¹ in their study a total of 120 patients were enrolled and were broadly divided into two study groups with 60 patients in each group as follows: Group A: Peri-implantitis patients, and Group B: Healthy controls. Mean CRP levels among patients of group A and group B was found to be 401.8 pg/ml and 198.4 pg/ml respectively. On statistical analysis, it was observed that peri-implantitis patients had significantly higher level of CRP in comparison to the healthy controls.

Fahim Vohra et al¹² compared clinical and radiographic peri-implant inflammatory parameters in patients with different levels of obesity and correlated these parameters with CRP levels. Eighty-four patients who participated in this study were divided into 4 groups: class I obese (group 1), class II obese (group 2), class III obese (group 3), and non-obese individuals (group 4) were included. Clinical (plaque index [PI], bleeding on probing [BOP], probing depth [PD]) and radiographic (marginal bone loss [MBL]) peri-implant parameters were recorded. Serum CRP were quantified using enzyme-linked immunosorbent assay (ELISA). Clinical peri-implant parameters and serum CRP concentrations were analyzed using 1-way analysis of variance. Peri-implant PI, BOP, PD, and MBL were significantly higher in group-1, -2, and -3 patients as compared to non-obese individuals. Peri-implant PI, BOP, PD, and MBL were significantly higher in obese patients of group-2 and group-3 as compared to obese patients in group-1 ($P < .01$). Mean PI, BOP, PD, and MBL were comparable between group-2 and group-3 patients ($P > .05$). A significant positive correlation was found between CRP levels and BOP ($P = .0148$) and PD ($P = .0425$).

The shortcoming of the study is small sample size.

5. CONCLUSION

Authors found that there was an increased serum C reactive level in patients with peri-implantitis.

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