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Research Article

COMPARATIVE RESEARCH TO ASSESS THE LEVEL OF C-REACTIVE PROTEIN (CRP) AMONG SMOKERS AND NON-SMOKERS DIAGNOSED WITH CHRONIC PERIODONTITIS**¹Dr. Aneela Tariq, ²Dr. Saad Asim, ²Dr. Tayyaba Nasir**¹House Officer in DHQ Hospital, Faisalabad, ²House Officer in Allied Hospital, Faisalabad.**Article Received:** February 2019**Accepted:** March 2019**Published:** April 2019**Abstract:**

Objective: This research aimed at the comparison of smoking effects on the CRP (C-Reactive Protein) levels among chronic periodontal disease patients. The effect and response of periodontal management on the level of CRP was also observed while comparing Smokers and Non-Smokers.

Patients and Methods: This research was carried out at Allied Hospital, Faisalabad from October 2017 to May 2018 on a total of 100 chronic periodontitis patients. We verified the smoking history and accordingly classified the patients in two groups respectively Group – A as Smokers and Group – B as Non-smokers. Every patient was also assessed for periodontal assessment for level of CRP through blood sampling. Every patient received the same management of chronic periodontitis that is calculus removal through mechanical way with a prescription of mouth rinses and antimicrobials. Blood samples and periodontal assessment was again repeated at an interval of three months to verify the level of CRP for possible variation.

Results: We observed that at baseline, level of CRP was increased in Smokers (Group – A) than Non-Smokers (Group – B). After being treated the outcomes of second assessment was improved after treatment about periodontal health. There was a significant decrease in the Mean level of CRP of both smokers and non-smokers.

Conclusion: There is a significant effect of Chronic periodontitis on the levels of CRP. Chronic periodontitis may increase an individual's inflammatory burden which can be changed through suitable treatment. Adverse smoking effects do not affect such response.

Keywords: Smokers, Non-Smokers, CRP (C-Reactive Protein), Health, Chronic Periodontitis and Periodontal.

Corresponding author:**Dr. Aneela Tariq,**

House Officer in DHQ Hospital, Faisalabad.

QR code



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INTRODUCTION:

Chronic Periodontal infections pose a potential risk for various pathologies such as atherosclerosis, cardiovascular disease, diabetes mellitus, stroke, stroke, preterm labour and various respiratory conditions [1 – 3]. Luckily, it is a risk that can be modified as we can easily treat and prevent periodontal disease [4]. Researchers are eager to observe the role of CRP level in the healthy and diseased individuals [5 – 7]. CRP is an acute phase protein which is liver synthesized. It shows its normal presence as a plasma constituent trace in both healthy and diseased individuals. Increased level of CRP has a direct association with various heart disease risk factors such as obesity, smoking, increased cholesterol, high blood pressure and it rarely occurs in the absence of these risk factors. Recently, ESR is suggested as a routine diagnostic test which is valuable to monitor cholesterol in lipid profile to predict CVD onset among patients [8 – 10]. CVD has a strong relation with the habit of smoking along with brain stem infarction and high blood pressure along with periodontal disease [11]. It also involves loss of periodontal attachment which leads to active disease progression. The harmful active smoking effects on musculoskeletal system, bone wound healing and soft tissue are also documented [12].

Even in the presence of various hazardous health risks, the act of smoking is common among the Pakistani population. One among every three individuals of middle age is in a habit of smoking in Pakistan [13]. Various epidemiological research studies have proved to smoke as a behavioral primary risk factor which heavy accumulates plaque and loss of Periodontal attachment [14, 15].

METHODOLOGY:

This research was carried out at Allied Hospital, Faisalabad from October 2017 to May 2018 on a total of 100 chronic periodontitis patients. We verified the smoking history and accordingly classified the patients in two groups respectively Group – A as Smokers and Group – B as Non-smokers. Every

patient was also assessed for periodontal assessment for level of CRP through blood sampling. Every patient received the same management of chronic periodontitis that is calculus removal through mechanical way with a prescription of mouth rinses and antimicrobials. Blood samples and periodontal assessment was again repeated at an interval of three months to verify the level of CRP for possible variation. Ethical approval and patient's consent was sought before research commencement. We selected all those patients who had a periodontal index of 6 & 8 with Chronic Periodontitis. We did not include any patient with lactation, pregnancy, diabetes mellitus, asthma, hypertension, coronary artery disease, epilepsy, skin disease and chronic diseases as it may increase the level of CRP among patients. A number of cigarettes smoked in a day, per month packs consumption and the smoking period was also documented. The periodontal assessment included PD (Periodontal Pocket Depth) which was measured through Gingival Index (GI), CPITN Probe, Periodontal Attachment Level (AL) and Gingival Bleeding (GB). We took readings before the commencement of research and after three months of disease management. Significant P-Value was < 0.01. The research analyzed the research outcomes on SPSS software.

RESULTS:

In the total research sample of one hundred smokers and non-smokers were respectively 38 and 62. We observed that at baseline, level of CRP was increased in Smokers (Group – A) than Non-Smokers (Group – B). After being treated the outcomes of second assessment was improved after treatment about periodontal health. There was a significant decrease in the Mean level of CRP of both smokers and non-smokers. After three months of periodontal management, patients showed an improvement in periodontal health. Both the groups, Group – I and Group – II has a level of CRP as (6.79 ± 2.8) and (6.06 ± 1.9) respectively. Level of CRP decreased in both groups with respective mean and SD value of (6.11 ± 2.5) and (5.23 ± 1.6) .

Table – I: Group-Wise Comparison of CRP Levels

CRP	Before Treatment			After Treatment		
	Mean	±SD	Range	Mean	±SD	Range
Smokers	6.79	2.8	2 to 12	6.11	2.5	2 to 12
Non-Smokers	6.06	1.9	2 to 12	5.23	1.6	2 to 12

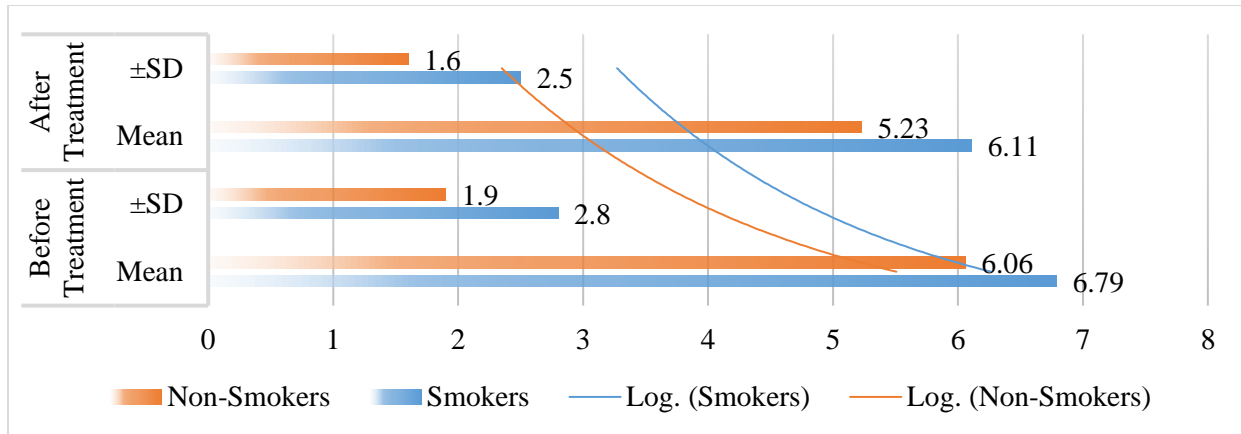
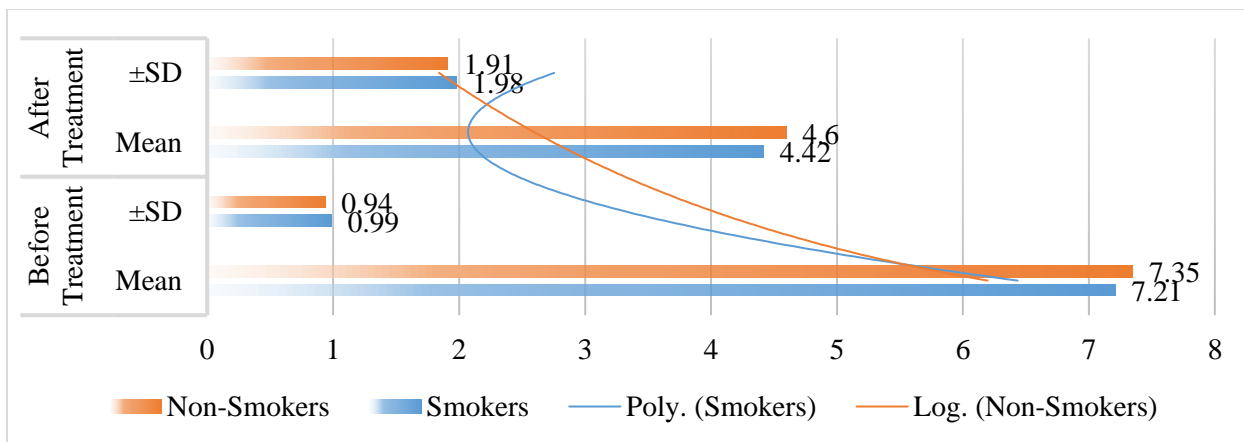


Table – II: Group-Wise Comparison of Periodontal Index

CRP	Before Treatment			After Treatment		
	Mean	±SD	Range	Mean	±SD	Range
Smokers	7.21	0.99	6 to 8	4.42	1.98	2 to 6
Non-Smokers	7.35	0.94	6 to 8	4.6	1.91	2 to 6



DISCUSSION:

The chronic periodontitis is one of the locally inflamed diseases which is an outcome of gums inflammation and multiple bloodstream exposures to bacterial invasion that also lead to an onset of bacteremia. Tooth extractions, Tooth brushing and periodontal management may be the possible cause of bacteria exposure in the circulation of blood [16].

Chronic infections cause immune system activation which releases CRP in the bloodstream [17, 18]. Level of CRP is triggered by Chronic Periodontitis, IL – 6, thus increasing the chances of onset of CVD [1]. The combination periodontal disease and smoking is potent to enhance the level of CRP to a level which is

a threat to the health. We disclosed a few aspects which have a direct correlation with these parameters.

Smoker’s Periodontal index was satisfactory than non-smokers. Which is controversial and may have an association of localized vascular dysfunction of the smokers and abridged gingival blood flow. As this reduced blood flow reduces the localized gum inflammation.

Factors like a number of cigarettes, smoking mode and age define the gingival blood flow [19]. An individual’s practice of oral hygiene also balances the smoking effect for the maintenance of periodontal health. Tobacco reduces the supply of nutrients and

oxygen to gums which make the gums more vulnerable to the possible attack of bacterial infection [20, 21]. Smoking increases the CRP by its effect on the accumulation of plaque and effects on the host response. According to Jennifer O’Loughlin, there is a positive relationship between increased CRP levels and smoking which is increased in those who smoke heavily [22]. Rima Azar proved that both passive and active smoking can lead to increased CRP levels [23]. Kristina Bertl reported that smoking elevates the salivary Histamine and level of CRP in the course of the periodontal disease. CRP levels were quite high among smokers which is the same as reported in above-mentioned research studies [24].

CONCLUSION:

Chronic periodontitis significantly affects the levels of C-Reactive Protein. We can reduce the level of CRP among smokers through Periodontal Treatment. Same is effective for non-smokers as well. We conclude that individual’s inflammatory burden increases with chronic periodontitis which is controllable through suitable management of the disease. We also conclude that with the provision of appropriate periodontal treatment the periodontal health also improves and it will not have any effect of the smoking.

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