

Original Research

Evaluation of Interleukin 6 in patients with Peri- Implantitis

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ABSTRACT:

Background: To evaluate Interleukin 6 in patients with Peri- Implantitis. **Materials & methods:** A total of 40 subjects were enrolled. 20 of them were the cases peri implantitis and 20 healthy controls were enrolled. They were classified as peri- implantitis cases and healthy control groups. **Results:** Mean IL 6 levels among the patients of the peri implantitis group and the control group was found to be 10.208 pg/ml and 4.324 pg/ml, respectively. IL-6 levels were significantly higher in peri-implantitis group. **Conclusion:** Increased periodontal inflammation in peri- implantitis cases is due to increase in Interleukin 6 levels.

Keywords: Interleukin 6, periodontal disease, peri- implantitis.

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INTRODUCTION

Peri-implantitis is a pathological condition occurring in tissues around dental implants, characterized by inflammation in the peri- implant mucosa and progressive loss of supporting bone. ⁽¹⁾ Dental implants may be considered a reliable routine procedure in clinical practice for the replacement of missing teeth. Results from long-term studies indicate that implant-supported dental prostheses constitute a predictable treatment method for the management of fully and partially edentulous patients. Implants and their restorations, however, are not free from biological complications. In fact, peri-implantitis, defined as progressive bone loss associated to clinical inflammation, is not a rare finding nowadays. This constitutes a concern for clinicians and patients given the negative impact on the quality of life and the sequelae originated by peri-implantitis lesions. ^(2,3)

Interleukin 6 (IL-6), promptly and transiently produced in response to infections and tissue injuries, contributes to host defense through the stimulation of acute phase responses, hematopoiesis, and immune reactions. Although its expression is strictly controlled by transcriptional and posttranscriptional mechanisms, dysregulated continual synthesis of IL-6 plays a pathological effect on chronic inflammation and autoimmunity. ⁽⁴⁾

IL-6 functions as a mediator for notification of the occurrence of some emergent event. IL-6 is generated in an infectious lesion and sends out a warning signal to the entire body. The signature of exogenous pathogens, known as pathogen-associated molecular patterns, is recognized in the infected lesion by pathogen-recognition receptors (PRRs) of immune cells such as monocytes and macrophages. ^(5,6)

MATERIALS & METHODS

A total of 40 subjects were enrolled. 20 of them were the cases peri implantitis and 20 healthy controls were enrolled. They were classified as peri-implantitis cases and healthy control groups. Data was collected. Patients were recalled in the morning and samples of venous blood were collected. Interleukin 6 levels were evaluated using ELISA kit. SPSS software was used for analysis.

RESULTS

A total of 40 subjects were enrolled. 20 patients with peri implantitis and 20 healthy controls were enrolled. 50% of the patients of the peri implantitis group and 60% of the patients of the control group belonged to the age group of more than 40 years. Mean age of the patients of the peri-implantitis group and the control group was found to be 44.6 years and 36.2 years,

respectively. Mean IL 6 levels among the patients of the peri implantitis group and the control group was found to be 10.208pg/ml and 4.32 pg/ml, respectively.

IL-6 levels were significantly higher in peri-implantitis group.

Table 1: Demographic data

Variables	Peri- implantitis group n/ %	Control group n/ %
Age group (years)		
<30	3 (15)	4 (20)
30-40	7(35)	4 (20)
> 40	10 (50)	12 (60)
Gender		
Male	12 (60)	15 (75)
Female	8 (40)	5 (25)

Table 2 comparison of Interleukin 6 levels (pg/ml)

IL-6	Peri-implantitis group	Control group	P- value
Mean	10.208	4.324	0.001*
SD	2.782	0.329	

SD : standard deviation

* : significant

DISCUSSION

Peri-implant mucositis is a reversible inflammation of the peri-implant tissues. Early and late mucositis occur as a result of changes in the microbial flora around implants leading to an increase in Gram-negative microorganisms. The growth of Gram-negative bacteria causes an immune response at the site; inflammatory products enter the peri-implant gingival crevicular fluid⁴ and the spread of inflammation from the marginal gingiva to the peri-implant supporting tissues leads to bone loss and loss of gingival attachment. This process is known as peri-implantitis.⁽⁷⁾ In this study, total of 40 subjects were enrolled. 20 patients with peri implantitis and 20 healthy controls were enrolled. 50% of the patients of the peri implantitis group and 60% of the patients of the control group belonged to the age group of more than 40 years. Mean age of the patients of the peri-implantitis group and the control group was found to be 44.6 years and 36.2 years, respectively.

A study compared the level of interleukins around healthy teeth and healthy implants and showed that the level of cytokines in the implant group was significantly higher than around teeth. Thus, despite the fact that the gingival tissue around teeth and implants was healthy in both groups, a significant difference existed in the level of cytokines around teeth and implants.⁽⁸⁾ Another study in 2006 assessed the level of IL-6 in the crevicular fluid and concluded that the level of IL-6 was significantly higher around implants with peri-implantitis compared to healthy implants. Thus, they introduced IL-6 as an effective marker for detection of peri-implant diseases and emphasized its efficacy in assessing the ability of the immune system to achieve an inflammatory balance.

⁽⁹⁾ Mean IL 6 levels among the patients of the peri implantitis group and the control group was found to be 10.208 pg/ml and 4.324 pg/ml, respectively. IL-6

levels were significantly higher in peri-implantitis group.

CONCLUSION

Increased periodontal inflammation in peri-implantitis cases is due to increase in Interleukin 6 levels.

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