

Effect of Photodynamic Therapy as Adjunctive Periodontal Therapy on TNF- α Level in Gingival Crevicular Fluid

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Abstract

Background and Aim: The presence of bacterial biofilms containing periopathogenic bacteria species on tooth surface is the main cause of gingivitis and periodontitis, and mechanical removal of the biofilm as a base of periodontal therapies is not enough in most cases. Today, the role of inflammatory mediators has been demonstrated in innate and acquired immunity in periodontitis. Thus, the aim of this study was to compare the effects of photodynamic therapy as adjunctive treatment of inflammatory mediators levels in gingival crevicular fluid and clinical periodontal status.

Materials and Methods: In this clinical trial study, a sample size of 12 patients, aging from 30 to 60 years old with chronic generalized periodontitis and at least with 4 sites with pocket depths of 4-6 mm were selected. In each patient, two quadrants were selected as studies quadrants. Then, the clinical parameters (BOP, PD, CAL) were recorded in all studied quadrant teeth, and the GCF samples were collected for measurement of inflammatory mediators. After performing phase I periodontal treatment in both two groups, a quadrant was selected as the control; another quadrant was treated by PDT following 6 weeks after the treatment, these parameters were recorded again, and after analysis of GCF samples with an ELISAReader device, the information was recorded. Data analysis and comparison was done using statistical tests of Mc Nemar, Fisher's exact, Independent & paired t-test.

Result: The research was conducted on a total of 24 quadrants. The initial level of TNF- α and periodontal clinical parameters were similar. ($P < 0.4$) TNF- α level changes in the control group and experimental group was 0.68 ± 0.22 and 1.74 ± 1 respectively, which rate of decrease in the experimental group was 2.5 times than control group. ($P < 0.002$) TNF- α level and other indicators of periodontal parameters was reduced in both groups. ($P < 0.01$) And that's the extent of periodontal index changes in the experimental group was better than control, but this difference was not statistically significant. ($P < 0.2$)

Conclusion: It seems that the use of Photodynamic as a treatment periodontal therapy on the level of TNF- α and other periodontal parameters can be effective.

Keywords: Photodynamic therapy, Inflammatory factor, Periodontal Therapy