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Sub antimicrobial-dose doxycycline and cytokine/chemokine levels in gingival crevicular fluid

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The present randomized, double-blind, placebo-controlled, parallel arm study examined the impact of adjunctive sub antimicrobial-dose doxycycline (SDD) on the local inflammatory response through cytokine and chemokine levels in gingival crevicular fluid (GCF) samples from patients with chronic periodontitis (CP).

Forty six CP patients received scaling and root planing (SRP) with or without adjunctive SDD. GCF samples were collected and clinical parameters including probing depth (PD), clinical attachment level, gingival index (GI) and plaque index were recorded every three months for 12 months. GCF tumor necrosis factor α (TNF-α), interleukin 6 (IL-6), interleukin 4 (IL-4), interleukin 10 (IL-10), interleukin 13 (IL-13), interleukin 17 (IL-17), macrophage inhibitory protein 1α, (MIP-1α), macrophage inhibitory protein 1β (MIP-1β), monocyte chemoattractant protein 1 (MCP-1), regulated on activated normal T-cell expressed and secreted protein (RANTES) levels were determined by xMAP multiplex immunoassay.

Significant improvements were observed in all clinical parameters in both groups over 12 months ($p<0.0125$) while SDD group showed significantly better reduction in GI, pocket depth, and gain in clinical attachment compared to the placebo group ($p<0.05$). Decrease in IL-6 in SDD group was significantly higher compared to the placebo at 6 and 9 months in deep pockets ($p<0.05$) while TNF-α was significantly reduced in moderately deep pockets ($p<0.05$). SDD resulted in a stable IL-4 and IL-10 response while reducing the MCP-1 levels at 3 months ($p<0.05$).

These results show that SDD, as an adjunct to non-surgical periodontal therapy, stabilizes the inflammatory response by promoting the suppression of pro-inflammatory cytokines and increasing the anti-inflammatory cytokines. The chemokine activity would account for the regulation of the inflammatory response to SDD therapy.

Biography

Gulnur Emingil has completed her Ph.D at Ege University, school of dentistry, department of periodontology and currently working as a full time professor at the department of periodontology. She is involved in clinical teaching as well as research activities related to the role of different aspects of the host innate and adaptive immune responses in the pathogenesis of periodontal disease. Emingil is the recipient of several awards, member of national and international societies, and has published more than 70 papers in peer-reviewed scientific journals, and reviewed articles in high ranking journals.

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