

# THE CONTRIBUTION OF ANAEROBIC BACTERIA AND TNF- $\alpha$ ASSOCIATED WITH PERIODONTITIS AND PERICORONITIS IN THE PATHOGENESIS OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

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## Abstract

**Background:** During the past decade, several studies reported that dental plaque and poor oral health have been associated with nosocomial pneumonia and chronic obstructive pulmonary disease (COPD).

**Objective:** The aim of the study is to explore the possible cause and effect relationship between oral anaerobic infections in periodontitis and pericoronitis and COPD. It is meant to evaluate the therapeutic procedures performed in treating periodontal and pericoronal infections on the level of TNF- $\alpha$  both in gingival crevicular fluid (GCF) and serum.

**Patients and methods:** Subgingival plaque samples were collected from 15 COPD patients with periodontitis (group 1), pericoronal deposits samples were collected from 15 COPD patients with pericoronitis (group 2) and Bronchoalveolar lavage (BAL) specimens were collected from all patients before oral infection treatment for microbiological examination. Using enzyme linked immunosorbent assay (ELISA) and reversed transcription polymerase chain reaction (RT-PCR) techniques were performed to evaluate TNF- $\alpha$  levels in GCF and serum of the above mentioned groups, before and after oral infection treatment.

**Results:** Obligate anaerobes represented 72% and 78.9% of the total isolates in subgingival plaque and BAL specimens of (group 1), and represented 70% and 72.7% of the total isolates in pericoronal and BAL specimens of (group 2) before treatment. TNF- $\alpha$  level in GCF and serum of group 1 by ELISA was (4.2 $\times$ 10<sup>3</sup> pg/ml, 6 $\times$ 10<sup>3</sup> pg/ml respectively) before treatment and (2.2 pg/ml, 3.1 pg/ml respectively) after treatment. While in group 2 it was (5 $\times$ 10<sup>3</sup> pg/ml, 7.3 $\times$ 10<sup>3</sup> pg/ml respectively) before treatment and (2.3 pg/ml, 4 pg/ml respectively) after treatment. There was significant correlation between TNF- $\alpha$  in GCF before and after treatment by ELISA since  $p < 0.001$  and between serum TNF- $\alpha$  before and after treatment since  $p < 0.001$  in group 1 and in group 2 separately. Also there was significant correlation between ELISA and PCR as regards to TNF- $\alpha$  in GCF after treatment and TNF- $\alpha$  in serum after treatment in group 1 and in group 2 separately since  $p < 0.001$ .

**Conclusion:** Pathogens responsible for periodontitis and pericoronitis could act as potentially risk factors in the pathogenesis of COPD. Anaerobic bacteria and level of TNF- $\alpha$  at sites affected by periodontitis and pericoronitis as well as the serum of COPD patients might provide a potential pathogenate mechanism and hence one therapeutic target and could facilitate the screening, diagnosis and treatment of those diseases.

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