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Serum level of TNF- α and IL-17 in patients having chronic periodontitis associated rheumatoid arthritis

A Thesis

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By:

Dr. Munir Nasr Hamed
B.D.S.

Supervised by:

Assist. Prof. Dr. Basima Gh. Ali
B.D.S., M.Sc.

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Abstract

Background: chronic periodontitis and rheumatoid arthritis are considered widely prevalent diseases and are associated with tissue destruction due to chronic inflammation. There is growing evidence that the two diseases share many pathological characteristics.

Aims of the study: first to determine the periodontal health status in patients having chronic periodontitis with rheumatoid arthritis and compare them with those having chronic periodontitis without Rheumatoid arthritis second to determine the serum levels of interleukin -17(IL-17), tumor necrosis factor- alpha (TNF- α) in both groups and compare with the control group (healthy periodontium and systemically healthy) and third to correlate these immunological markers with the clinical periodontal parameters including plaque index , gingival index , bleeding on probing , probing pocket depth, clinical attachment level and the number of missing teeth.

Materials and methods: Eighty (80) subjects (males and females) with an age range (30-45) years were selected in this study. They were divided into 3 main groups, the first group, chronic periodontitis with rheumatoid arthritis group include thirty subject and thirty subject of chronic periodontitis systemically healthy is a second group, the third group include twenty subjects as control group(healthy periodontium and systemically healthy). The subject with normal weight and height range according to BMI (body mass index) that it value is (18.5-25),

The clinical periodontal parameters used were plaque index, gingival index, bleeding on probing, pocket depth, clinical attachment level and number of missing teeth. All were measured for each subject, in all groups.

Blood samples were collected from all individuals and examined to determined serum level of interleukin -17 and tumor necrosis factor- α used enzyme-linked immune-sorbent assay.

Results:

Patients with chronic periodontitis and rheumatoid arthritis had higher mean of dental plaque, gingival inflammation and bleeding on probing together with greater probing depth, attachment loss and higher number of missing teeth compared to those who had chronic periodontitis only and control subjects.

A highly significant differences between studied group regarding serum level of IL-17 and TNF- α , as well as, it revealed that mean serum levels of IL-17 were statistically higher in chronic periodontitis with rheumatoid arthritis group than chronic periodontitis group and control groups represent as (607.9 ± 79.9 , 421.4 ± 5.9 , 15.9 ± 2.7) similarly serum level of TNF- α (402.2 ± 41.2 , 319.4 ± 526 , 85.3 ± 4.9) respectively . Regarding correlation, the present study revealed that there's a strong positive correlation between serum levels of IL-17 and TNF- α with all clinical periodontal parameters in patients have chronic periodontal disease with rheumatoid arthritis .

Also this study reveal significant correlation between the two immunological markers (TNF- α and IL-17) within chronic periodontitis with rheumatoid arthritis group and in chronic periodontitis group.

Conclusion:

It was concluded higher potentiality to chronic periodontitis involvement among rheumatoid arthritis patients that correlated positively with increase the level of serum levels of IL-17 and TNF- α accordingly with high score of clinical periodontal parameters that had been recorded. That mean TNF- α and IL-17 may play an important role in increase the severity of periodontitis as well as rheumatoid arthritis.