

Correlation of serum tumor necrosis factor-alpha (TNF- α) with autoantibodies and disease activity in rheumatoid arthritis patients: Data from the Malaysian Rheumatoid Arthritis Disease Progression (myRAPID) study (2005-2021)

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ABSTRACT

Introduction: TNF- α is a major inflammatory cytokine involved in the pathogenesis of Rheumatoid Arthritis (RA). In this study, we measured the serum TNF- α level and investigated its correlation with disease activity and autoantibodies in RA patients who had been undergoing treatment with various combination of Disease-Modifying Anti-Rheumatic Drug (DMARD). **Materials and Methods:** A total of 398 RA patients from the Malaysian Epidemiological Investigation of Rheumatoid Arthritis (MyEIRA) case-control study (2005-2009) were recruited for a follow-up assessment after an average of 12 years. Serum levels of anti-cyclic citrullinated peptide 2 (anti-CCP2), rheumatoid factor (RF) isotypes, C-reactive protein (CRP), and TNF- α were measured using commercial ELISA kits. The 28-joint disease activity score (DAS28) were assessed while the relationship between TNF- α level, DAS28-CRP, as well as RF and anti-CCP2 autoantibodies were evaluated. **Results:** A total of 282 (70.85%) patients were positive for anti-CCP2, while 241 (60.55%), 192 (48.24%), and 285 (71.61%) patients were positive for RF IgA, RF IgG, and RF IgM respectively. There were statistically significant positive correlations between serum levels of TNF- α and all four autoantibodies namely anti-CCP2 ($r=0.1259$, $p<0.05$), RF IgA ($r=0.2028$, $p<0.0001$), RF IgG ($r=0.1946$, $p<0.0001$), and RF IgM ($r=0.1484$, $p<0.05$). The serum TNF- α level in RF IgA, IgG and IgM positive patients were significantly higher when compared to RF negative patients. Out of the 398 RA patients, 192 (48.24%) patients have achieved remission while 81 (20.35%), 114 (28.64%), and 11 (2.76%) patients have low, moderate, and high disease activity respectively. There was no significant difference in the serum TNF- α level in the different disease activity category and no significant correlation between serum TNF- α level and DAS28-CRP. **Conclusion:** Our findings showed that the serum TNF- α level significantly correlates with autoantibodies, particularly with RF IgA/IgG/IgM, with higher TNF- α level in seropositive patients, but does not have any correlation with disease activity.