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The Use of Interleukin-22 as a Novel Marker of Disease Activity in Female Patients with Rheumatoid Arthritis

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Abstract

Rheumatoid arthritis (RA) is a systemic autoimmune disease characterized by progressively destructive joint inflammation and destruction of articular cartilage, bone and synovial hyperplasia. Cytokines play a fundamental role in the processes that cause inflammation, articular destruction and extra-articular manifestations associated with RA.The preferential production of interleukin22 (IL22) by T cells suggests that elevated levels of this cytokine exist in chronic, T cell-mediated diseases, such as psoriasis and RA and that IL-22 plays an important role in the pathogenesis of these disorders.

Objective: To study the role of IL-22 in RA.

Methods:IL-22 serum levelswere measuredin55 female patients with RA, 28 of them on medical treatment and the other 27 were newly diagnosed patients and in 18 healthy controls. Patients are assessed for clinical and laboratory variables. Correlations of IL-22 serum levels with disease activity markers as disease activity score for 28 joints (DAS28), serological markers, bone erosions were assessed.

Results: IL-22 levels were increased in patients with RA compared with controls (mean 34.6 pg/ml and 3.2pg/ml, respectively; $P < 0.001$). Levels of IL-22 correlated positively with DAS28 score ($P < 0.001$). C-reactive protein (CRP) correlated positivity with high levels of IL-22 in RA patients (mean 53.8 pg/ml; $P < 0.001$) and rheumatoid factor (RF) correlated positivity with high levels of IL-22 in RA patients (mean 46.1 pg/ml;$P < 0.001$). The presence of bone erosions was associated with high IL-22 levels ($P = 0.008$).

Conclusion:IL-22 is elevated in the serum of patients with RA.Elevated serum IL-22allows discrimination between patients with different clinical and laboratory measures and indicates thepotential of IL-22 as an additional tool for assessment of activity in RA, particularly in patients with RFantibodies. IL-22 is associated with bone destructive disease.

Keywords: Interleukin-22, Rheumatoid arthritis, Disease activity, Disease activity score 28.

Introduction

RA is an autoimmune disease that is mainly characterized by chronicinflammation and destruction of the joints [1]. RA is associated with various immunologicalabnormalities, such as increased numbers of activated T lymphocytes and aberrant expressionof inflammatory cytokines [2,3]. The various pro-inflammatory cytokines secreted by infiltratingmacrophages, T and B cells in the synovial fluids and tissues contribute to joint inflammation [4]and play crucial roles in both joint damage and propagating inflammation in RA [5]. Autoimmunediseases are associated with dysregulated immune responses, and it has been suggested that increasedexpression of immune modulators could facilitate the activation and survival of the inflammatory cellsthat mediate the development of autoimmune diseases [6,7].

IL-22 is a member of the IL-10 cytokine family and isrelated to different T cell subsets. IL-22 is presumed to play arole in pathogen