The diagnostic value of anti-cyclic citrullinated peptide antibodies and rheumatoid factor in patients with rheumatoid arthritis

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Objective: To identify the diagnostic value of anti-cyclic citrullinated peptide (anti-CCP) antibodies and rheumatoid factor (RF) in patients with rheumatoid arthritis (RA).

Methods: Serum levels of anti-CCP antibodies were determined by enzyme-linked immunosorbent assay, and levels of RF were determined by nephelometry in 145 patients with RA and 75 patients with non-RA rheumatic diseases.

Results: Among the 145 patients with RA, 119 patients (82.1%) tested positive for anti-CCP antibodies, and 116 patients (80.0%) tested positive for RF. The sensitivity, specificity, positive predictive value, and negative predictive value of anti-CCP antibodies for diagnosing RA were 82.1%, 88.0%, 93.0%, and 71.7% respectively. Those for RF were 80.0%, 62.7%, 81.1%, and 61.0% respectively. The presence of either anti-CCP antibodies or RF increased sensitivity to 88.3%, and when they both were present, the specificity increased to 94.7%. The positive rates for anti-CCP antibodies in the RF-positive RA, RF-negative RA, and non-RA patients were 93.1%, 37.9%, and 12.0% respectively.

Conclusion: With its high sensitivity and specificity, the anti-CCP antibodies assay is a useful test for diagnosing RA. The use of anti-CCP antibodies and RF in combination further increases the diagnostic value for RA.

Key words: Rheumatoid arthritis, anti-CCP antibodies, rheumatoid factor, diagnostic value

Introduction

The diagnosis of rheumatoid arthritis (RA) is primarily based on clinical manifestations and serologic tests [1]. Conventionally, the serology test routinely used in RA is the determination of serum rheumatoid factor (RF). However, it has little predictive value in the general population, since the overall disease prevalence is relatively low. The more specific autoantibodies for the diagnosis of RA, anti-cyclic citrullinated peptide (anti-CCP) antibodies, were discovered in 1964 [2]. Accumulating evidence shows that anti-CCP antibodies are very useful in the diagnosis of RA [3]. They may be present very early in the disease course [4] and are also considered as a prognostic factor for articular destruction [5].

Several studies have shown that anti-CCP antibodies are moderately sensitive but highly specific for the