Performance of the 2010 ACR/EULAR criteria for rheumatoid arthritis: comparison with 1987 ACR criteria in a very early synovitis cohort

Mohammed Z Cader,1 Andrew Filer,1,2 Jonathan Hazlehurst,1 Paola de Pablo,1,2 Christopher D Buckley,1,2 Karim Raza1,2

ABSTRACT
Objective Early identification of patients with rheumatoid arthritis (RA) is essential to allow the prompt institution of therapy. The 2010 American College of Rheumatology (ACR)/European League Against Rheumatism (EULAR) classification criteria, which replace the 1987 classification criteria, have been developed to facilitate such identification in patients with newly presenting inflammatory arthritis. This study therefore assesses the performance of these new criteria in patients with early synovitis.

Methods Data were analysed from patients with synovitis seen within 3 months of the onset of inflammatory arthritis. Patients were followed for 18 months to determine outcomes, and data on the cumulative fulfilment of 2010 and 1987 criteria and therapy were recorded.

Results 265 patients were included in the study. 60 had alternative diagnoses at baseline. Of the remaining 205 patients, 20% fulfilled both 1987 and 2010 criteria, 3% fulfilled only 1987 criteria and 22% fulfilled only 2010 criteria at baseline. The 2010 criteria, when applied at baseline, detected more patients who eventually required disease-modifying antirheumatic drugs (DMARD) (65 (62%) vs 40 (38%); p < 0.001), especially methotrexate (50 (68%) vs 31 (42%); p < 0.01), within the first 18 months. However, more patients whose disease eventually resolved without ever requiring DMARD were classified at baseline as RA according to the 2010 criteria than with the 1987 criteria (16 (8%) vs 5 (2%); p = 0.01).

Conclusion The 2010 ACR/EULAR criteria allow more rapid identification of patients requiring methotrexate compared with the 1987 ACR criteria when applied at baseline. However, overdiagnosis is an important issue to consider if these criteria are to be used in very early disease.

Rheumatoid arthritis (RA) is a chronic destructive disease. However, increasing evidence suggests that early treatment can modulate its natural history, significantly slowing the rate of disease progression and increasing the likelihood of achieving remission.1–5 The prompt diagnosis and treatment of RA is therefore crucial.6 Traditionally, classification of RA has been based on fulfilment of the 1987 American College of Rheumatology (ACR) criteria.7 These criteria were developed in patients with established RA of several years’ duration and it has been shown that they have poor sensitivity for the diagnosis of RA in patients with early synovitis. The 2010 ACR/European League Against Rheumatism (EULAR) criteria were therefore developed with the purpose of facilitating the early recognition of RA.8

An important aim of the new classification criteria was to identify individuals at high risk of persistent and destructive disease, who might benefit from disease-modifying therapy. Consequently, an important phase in the development of the criteria was the identification of factors, and their relative weights, which were associated with a clinical decision to start methotrexate within the first 12 months. This was carried out through analysis of data from 3115 patients, with no evidence of alternative diagnoses, from nine early arthritis cohorts.9 This was followed by the evaluation of case scenarios to determine the relative contribution of clinical and laboratory factors deemed to be important in influencing the probability of developing RA.10 Finally, the findings of these first two phases were integrated and the optimal cut-off for definite RA was established.11 This development process was therefore reliant upon the ability of experts to identify high-risk patients correctly and start treatment with methotrexate. Nevertheless the approach avoids the inherent circularity of developing new criteria from existing criteria.

The purpose of this study was to compare the performance of the 1987 and 2010 criteria in a very early synovitis cohort, comprising patients who presented within 3 months of the onset of inflammatory arthritis symptoms and who were systematically followed up to determine outcomes. This is an ideal population to study in this context because it includes patients who develop persistent RA, but were seen within a very short time frame after disease onset—the very situation for which the new criteria have been constructed. Importantly, our cohort was not used to develop the 2010 criteria, so is free from the inherent bias this would generate.

Validating criteria for RA is problematical given the absence of a gold standard pathology-based diagnostic test against which clinical criteria can be compared. For this reason, we initially sought to compare the 2010 criteria against the 1987 criteria. This comparison is crucial for several reasons. First, there is an extensive epidemiological and clinical trials literature that has been developed utilising the 1987 classification system. Ascertaining the degree of overlap between the criteria will help establish the extent to which previous research can be generalised to patients classified under the new system. Second, for the 2010 criteria to be useful, they must be capable of identifying RA more rapidly than the 1987 criteria. It is important to note that a positive