Publication of the Month

EliA™ Excellence in Autoimmunity

July 07/07: Prediction of Rheumatoid Arthritis

Making individualized decisions regarding treatment is one of the most important challenges in medicine. In rheumatology practices, the majority of patients who present with recent-onset arthritis have undifferentiated arthritis, which is a form of arthritis that does not fulfil the classification criteria for a more definitive diagnosis. About 40 to 50 % of patients with undifferentiated arthritis experience spontaneous remission, whereas one third of patients will go on to be classified as having rheumatoid arthritis (RA). New treatment protocols have put greater importance on the need for early diagnosis and therapy of RA patients but their costs and side-effects means that they must be restricted to those where RA diagnosis and probable progression can be confirmed.

In the following publication a group from Leiden University, The Netherlands, introduce a prediction model for patients with undifferentiated arthritis:

Van der Helm-van Mil AHM, le Cessi S, van Dongen H, Breedveld FC, Toes REM, Huizinga TWJ
A prediction rule for disease outcome in patients with recent-onset undifferentiated arthritis
Arthritis Rheum 2007; 56: 433-440

In this study 570 patients with undifferentiated arthritis were tested. 177 of them developed RA. A prediction score was calculated for every patient with undifferentiated arthritis based on 9 variables that are commonly assessed during the first visit: age, sex, distribution of involved joints, morning stiffness, number of tender or swollen joints, CRP level, and the presence of RF and anti-CCP antibodies. The range of possible scores is 0–14, with higher scores indicating a greater risk of developing RA. None of the patients who had a prediction score below 3 progressed to RA during the 1-year follow-up period, and all of the patients who had a score above 11 did experience progression to RA. Among the patients with a score between 3 and 11, the frequency of a progression to RA increased with rising scores.

Thus, with this easy-to-use tool, the risk of developing RA can be predicted, thereby allowing individualized decisions regarding the initiation of treatment with disease-modifying antirheumatic drugs.

Previously, in 2002, a related group from Leiden University introduced a clinical model for the prediction of 3 forms of arthritis outcome: self-limiting, persistent nonerosive, and persistent erosive arthritis. (Visser H et al: How to Diagnose Rheumatoid Arthritis Early. Arthritis Rheum 2002; 6: 357-365). This prediction model consists of 7 variables: symptom duration at first visit, morning stiffness for more than one hour, arthritis in more than 3 joints, bilateral compression pain in the MTP joints, RF positivity and anti-CCP positivity and the presence of erosions.

In both models shared epitope testing is not considered. Recently, a Belgian group investigated the predictive value of the human leucocyte antigen-shared epitope:

Vander Cruyssen B, Hoffman IEA, Peene I, Union A, Mielants H, Meheus L, De Keyser F
Prediction models for rheumatoid arthritis during diagnostic investigation: evaluation of combinations of rheumatoid factor, anti-citrullinated protein / peptide antibodies and the human leucocyte antigen-shared epitope
Ann Rheum Dis 2007; 66: 364-369

The authors conclude that the potential additional value of shared epitope testing disappears when anti-citrullinated protein/peptide antibody (ACPA) testing is available. Combined RF and ACPA testing is useful, especially when RF is considered as a continuous parameter reflecting an increasing probability for RA at higher RF titres. This study discusses a LIA ACPA assay which has a comparatively low sensitivity for RA (see Ref.4). It would be interesting to see how the model performs using an established, semi-quantitative high sensitivity, high specificity anti-CCP assay.