Can biomarkers differentiate psoriatic arthritis from osteoarthritis?

We read with deep interest the article by Chandran V *et al*,[1] which was aimed at identifying soluble biomarkers that differentiate psoriatic arthritis (PsA) from osteoarthritis (OA). Their results showed that cartilage oligomeric matrix protein,monocyte chemoattractant protein-1 and nerve growth factor were found to be independently associated with PsA versus OA in a multivariate analysis, and they obtained the conclusion that a panel of four biomarkers may distinguish PsA from OA. We really appreciate the work that has been done by the authors. However, there are some worthwhile issues that need to be explored.

First, the conclusion 'A panel of four biomarkers may distinguish PsA from OA' might be not appropriate. The potential meaning of 'differentiate PsA from OA' is that detection of these biomarkers helps to diagnose and distinguish PsA from OA when the clinical manifestations of the two diseases are difficult to identify at the ealier stage. However, the clinical features of PsA and OA are significantly different. PsA most occurs in the elderly aged 30–50 years, and about 75% of patients have a personal history of psoriasis before arthritis, in about 15% of patients, psoriasis appears with arthritis at the same time and in only 10% of patients, psoriasis appears after arthritis.[2] While OA is more common in the elderly, generally, there is no psoriasis or dermatitis, and the X-ray results of PsA and OA also indicate an obvious difference. In this study, the authors included patients who were diagnosed with PsA and OA in previous years. The discovery set PsA (77 cases with PsA) with an illness time that lasted for 6 years, and the validation set PsA (73 cases with PsA) with an illness time that lasted for 12.9 years (shown in table 1 in the paper[1]). However, the OA patient samples were obtained at the time of knee or hip joint replacement surgery; therefore, most of the patients with OA might be at the serious stage of the disease and, to our knowledge, the levels of serum biomarkers were generally related to the severity of the disease.[3] At the current serious stage of the disease in this study, differentiation of PsA from OA is easy to achieve mainly according to the clinical manifestations and imaging but not according to the biomarkers; the levels of biomarkers shown in table 2 (in the paper[1])may have no ability to differentiate PsA from OA at the initial stage but may only reflect that the late stage of OA had a significant difference between biomarkers compared with that of PsA. Furthermore, the authors used a logistic regression with age and sex to fit for each biomarker and assessed the discriminative ability by way of receiver operating characteristic on the multivariate models. However, because the levels of serum biomarkers were generally associated with clinical scores and changes,[3] even the expression level of the same biomarker may have a significant difference in different Kellgren-Lawrence or Outerbridge stages of OA. The authors mainly used a logistic regression with age and sex but not with severity of the disease to fit for each biomarker; therefore, the results only indicated the serum biomarkers between patients with confirmed OA and PsA or at the same conditions of age and sex patients have difference, but it was not easy to conclude that four biomarkers may distinguish PsA from OA regardless of the severity of the disease, especially in the ealier stages of diseases.

Second, in this study, the authors selected 15 serum biomarkers to research, however, the total serum biomarkers for PsA and OA were more than 15 biomarkers in this study,[3 4] and the authors did not explain the selection criteria and reasons why other biomarkers, such as type II collagen, matrix metalloproteinases, a disintegrin and metalloproteinase with thrombospondin motifs, tissue inhibitors of metalloproteinases, interferon-γ, interleukin (IL)-12, IL-17, IL-18 and IL-23, were not included, especially the levels of IL-17 correlated with PsA disease activity.[2]

We respect the significant contributions of the authors and look forward to the follow-up results of this study.

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