Contribution of multiplex immunoassays to rheumatoid arthritis management: From biomarker discovery to personalized medicine

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Abstract

Rheumatoid arthritis (RA) is a multifactorial, inflammatory and progressive autoimmune disease that affects approximately 1% of the population worldwide. RA primarily involves the joints and causes local inflammation and cartilage destruction. Immediate and effective therapies are crucial to control inflammation and prevent deterioration, functional disability and unfavourable progression in RA patients. Thus, early diagnosis is critical to prevent joint damage and physical disability, increasing the chance of achieving remission. A large number of biomarkers have been investigated in RA, although only a few have made it through the discovery and validation phases and reached the clinic. The single biomarker approach mostly used in clinical laboratories is not sufficiently accurate due to its low sensitivity and specificity. Multiplex immunoassays could provide a more complete picture of the disease and the pathways involved. In this review, we discuss the latest proposed protein biomarkers and the advantages of using protein panels for the clinical management of RA. Simultaneous analysis of multiple proteins could yield biomarker signatures of RA subtypes to enable patients to benefit from personalized medicine.