Synovial cellular and molecular signatures stratify clinical response to csDMARD therapy and predict radiographic progression in early rheumatoid arthritis patients

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Patients with a new diagnosis of rheumatoid arthritis frequently struggle because their treating rheumatologist is unable to predict how bad their arthritis may get or indeed whether they are likely to respond to therapy. This is particularly important with a number of treatments that are used for RA as they can be associated with serious side effects and so a risk/benefit assessment of therapy needs to be made. Although there are some bloods tests that can help predict outcome their impact is limited and so researchers have been looking for other tissues that might help including the lining of the joint (synovial tissue), which is inflamed in patients with rheumatoid arthritis. In this study researchers looked at synovial tissue specimens from 144 patients with new onset RA, all of which were obtained with a simple needle sampling of tissue under local anaesthetic, before and after they had started treatment and then followed up how active the arthritis was and how well patients responded to treatment over the following 12 months. In particular the researchers studied X-rays of the joints to determine how much damage had been done to the joint to gauge severity of the arthritis. The researchers then looked at markers within the synovial tissue including the type and number of cells and levels of expression of genes and looked to see if there were any associations with how bad (or good) the arthritis was. The researchers identified clusters of patients with similarities in types and numbers of cells and gene expression and were able to use this to predict how badly joints were damaged. They also found significant associations with how active the arthritis was and how well patients responded to treatment. The exciting aspect of the research is that this may pave the way to an approach called stratified medicine for patients with early RA and if the results are replicated in larger clinical trials could mean that with a tissue biopsy at onset of the disease the most aggressive (and potentially most harmful) treatments are targeted at those patients who are not only most likely to do badly but who will respond to therapy the most. Such an approach will hopefully mean that outcomes for patients with RA are much better.

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