Can a person's genes predict their response to methotrexate?

Most people with rheumatoid arthritis take methotrexate as a first treatment. For some people, methotrexate successfully controls the disease; however for many, the disease continues to progress. These individuals will have to move on to other treatments. Our aim was to better predict which people with rheumatoid arthritis will benefit from methotrexate, so that there is no need to use a "trial-and-error" approach to treatment. This particular study focused on studying the genes of people with rheumatoid arthritis to see whether those who respond better to methotrexate have different genetic make-up. We combined information on people from MATURA with those collected by another group of researchers. A total of 1424 people with early rheumatoid arthritis, all receiving methotrexate alone as their first treatment, were included. We examined overall disease activity, as well as more specific measures in each person, such as the number of swollen joints and how much these improved after about six months of treatment. Human beings have millions of genetic variants, and each variant was compared to the degree of improvement in disease. Although there was no overwhelming evidence for any particular variant predicting benefit, there were some potentially interesting findings in relevant genes, including a gene that has been suggested to predict response to methotrexate in childhood arthritis. We plan to follow up these findings with further analyses involving more data. By combining genetic information with other biological and clinical measures, we hope to provide evidence that will lead to a more successful initial treatment for people with rheumatoid arthritis, tailored to their individual needs.

Genome-wide Association Study of Response to Methotrexate in Early Rheumatoid Arthritis Patients

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