New test could predict arthritis drug failure in patients

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A study of 311 patients by The University of Manchester has found that it may be possible to predict early which rheumatoid arthritis (RA) patients will fail to respond to the biologic drugs given to treat them. These findings could help better manage patients' symptoms.

RA is a chronic disease which affects up to 1.5% of the population. It is a significant health burden for patients, who can experience pain, reduced mobility and premature death unless they receive effective treatment.

Biologics are a relatively new form of treatment for RA. Given by injection, they work by stopping particular chemicals in the blood from activating the immune system and attacking the joints. Biologics are usually given in combination with an anti-rheumatic, such as methotrexate, once the anti-rheumatic alone is no longer effective.

Biologic drugs have dramatically improved the long-term health of people with severe RA, reducing symptoms as well as joint damage and disability. However, in about one in five patients the treatment stops working after a few months – sometimes as a result of anti-drug antibodies being formed – limiting their effectiveness.

In order to detect the antibodies and to measure the drug levels in the bloodstream, previously it was thought that the testing to detect the anti-drug antibodies and measure drug levels in the bloodstream, would only be helpful if performed immediately before the next dose of drug was

due, when the drug levels are at their lowest in the body.

This approach can be difficult to arrange in a clinical setting, as patients take the drugs on different days and at different times.

The new study, funded by the Medical Research Council, Arthritis Research UK and the NIHR Manchester Musculoskeletal Biomedical Research Unit, shows that testing at random times is also effective and makes it easier to use in a clinical setting.

Dr Meghna Jani, lead author of the work from the University's Centre for Musculoskeletal Research, said: "Our study demonstrates detecting low drug levels in rheumatoid arthritis patients on adalimumab, one of the most commonly prescribed biologics, was the strongest factor associated with non-response to treatment over 12 months.

"This test is easy to perform in a hospital setting, and could provide useful information on how to manage a patient whose rheumatoid arthritis is not being controlled by adalimumab."

There were 311 patients included in the study, who provided blood samples for testing at three, six and 12 months after starting two different types of biologic drugs, adalimumab. The research revealed that a total of 25% of patients on adalimumab developed antibodies, but none were found in the patients using etanercept.

The researchers also found that higher doses of methotrexate, a drug often given together with the biologic treatment, was associated with lower levels of drug antibodies, suggesting that patients should be encouraged to continue methotrexate at the highest dose they can tolerate, to reduce the risk of developing anti-drug antibodies.

Professor Anne Barton, a consultant rheumatologist at Central

Manchester University Hospitals NHS Foundation Trust and Director of the Centre for Musculoskeletal Research at The University of Manchester explained: "The next step will be to explore whether it is cost-effective to use these tests routinely in clinical practice, so that we can adjust treatments in those patients with low drug levels and anti-drug antibodies."

More information: Arthritis and Rheumatology, "Clinical utility of random anti-TNF drug level testing and measurement of anti-drug antibodies on long-term treatment response in rheumatoid arthritis", Meghna Jani MBChB MSc MRCP1, Hector Chinoy MBBS PhD MRCP MSc BMedSci2, Richard B Warren BSc MBChB PhD MRCP3, et al
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