

New imaging techniques may help to assess disease activity in RA

New imaging techniques may offer hope for quicker and cheaper and less invasive imaging in people with rheumatoid arthritis, allowing disease activity and progression to be more closely monitored.

INTRODUCTION

Rheumatoid arthritis is a chronic inflammatory disease that affects a person's joints and sometimes their internal organs, causing pain and disability. Rheumatoid arthritis can cause inflammation in the lining of joints (the synovium). This inflammation is known as synovitis.

Imaging techniques allow doctors to see inside the joints to assess any damage and to monitor disease activity and progression (worsening). Common imaging techniques include X-ray, magnetic resonance imaging (MRI) and ultrasound, but these can be expensive and time consuming, and may not always be used.

Optical spectral transmission (shortened to OST) is a new, non-invasive imaging technique that uses light from a special machine to measure synovitis. Other techniques that use light to measure synovitis also require the person to have an infusion of a special dye into their bloodstream, but OST can take the measurement simply by shining light on the skin and recording the way in which it is reflected back. As well as being non-invasive, OST may be quicker and cheaper to use than other imaging techniques.

WHAT DID THE AUTHORS HOPE TO FIND?

The authors wanted to test OST to see whether it could be used to measure disease activity in people with rheumatoid arthritis. They also hoped to find out whether it would give the same results as traditional physical examination and other imaging techniques.

WHO WAS STUDIED?

The authors tested the OST imaging technique in 59 people with known rheumatoid arthritis and 10 people with non-inflammatory arthralgia (joint pain) of unknown cause.

HOW WAS THE STUDY CONDUCTED?

The study was conducted in patients from two clinics in the Netherlands. Each patient had an OST performed on their wrists and hand joints. To compare against, each patient also had a physical examination by a doctor, and a traditional ultrasound. Some people who were in remission (showing no symptoms of their rheumatoid arthritis) also had an MRI for comparison.

WHAT WERE THE MAIN FINDINGS OF THE STUDY?

The authors found that OST shows similar results to physical examination, ultrasound and MRI. OST works better in the small hand joints than larger joints in the wrists.

ARE THESE FINDINGS NEW?

Yes, this was a pilot study of OST in people with rheumatoid arthritis.

HOW RELIABLE ARE THE FINDINGS?

This study does have some limitations. One possible limitation is the use of people with arthralgia as a control group, because this condition can turn into inflammatory arthritis, and so they may have already had some inflammation present in their joints. Additionally, all the OST measurements were taken by just one person, so it was not possible to work out whether there is a difference between how different people might read and interpret the outputs. Finally, the way the authors designed the statistical analysis may have affected the results. However, they tried to reduce the effects of this by using a fairly large number of patients, and altering how the results were validated. As such, the authors are confident that the results are reliable.

WHAT DO THE AUTHORS PLAN ON DOING WITH THIS INFORMATION?

The authors are planning more studies to investigate the use of OST in people with rheumatoid arthritis. They hope to be able to automate the system so that it does not rely on a person to read the results, and also to work out how sensitive the method will be to small changes.

WHAT DOES THIS MEAN FOR ME?

If you have rheumatoid arthritis, you may have received an ultrasound, MRI or X-ray to check on the progress of your disease. In the future, newer imaging techniques may be used that are quicker and cheaper. However, although OST was able to detect inflammation in people with rheumatoid arthritis, the method is still in early development, and will need to be tested in larger groups before it becomes widely available.

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