

## Tocilizumab may increase the amount of cholesterol in the blood, but not the most damaging type of cholesterol

Some medicines used to treat inflammatory diseases such as rheumatoid arthritis may alter the balance of lipids and cholesterol in the blood.

### INTRODUCTION

Rheumatoid arthritis is a chronic inflammatory disease that affects a person's joints, causing pain and disability. People with rheumatoid arthritis have an increased risk of suffering from cardiovascular diseases such as heart attacks, heart failure or stroke. This is because the inflammation involved in rheumatoid arthritis can have an effect on other systems in the body, as well as the joints.

Recently, some biologic medicines that are used to treat rheumatoid arthritis have been associated with raised cholesterol levels – including tocilizumab, the drug investigated in this study. Tocilizumab is one of a group of drugs called biologics, and it works by blocking a molecule called interleukin-6 which is involved in inflammation.

Cholesterol can contribute to the development of cardiovascular problems, and so drugs that increase cholesterol levels may need to be avoided in patients who already have a naturally increased risk.

### WHAT DID THE AUTHORS HOPE TO FIND?

The authors wanted to see whether there was a link between tocilizumab – a medicine that some patients take for rheumatoid arthritis – and the cholesterol and lipid levels in their blood. They hoped to help doctors to understand what changes occur in the blood of people who receive treatment with tocilizumab for their rheumatoid arthritis, since this may affect the likelihood of developing cardiovascular problems.

### WHO WAS STUDIED?

The study included 132 patients with rheumatoid arthritis. All the patients were over the age of 18, had suffered from severe rheumatoid arthritis for at least 6 months, and had not seen an improvement with other drugs such as methotrexate. Patients who had already received a biologic drug were not able to enter into the study.

### HOW WAS THE STUDY CONDUCTED?

This was a randomised, placebo-controlled trial, which means that patients were assigned by chance to one of two treatment groups to receive either tocilizumab (the active medicine) or a placebo (a dummy that has no active medicine in it). Using chance in this way means that the groups will be similar and will allow the variable or treatment under investigation to be compared objectively. During the treatment neither patients nor their doctors knew which group they were in. Both groups also received a drug called methotrexate.

For the next 6 months, regular blood tests were used to measure the lipid levels. The authors also used ultrasound to measure how well the blood vessels were working.

### WHAT WERE THE MAIN FINDINGS OF THE STUDY?

The study found that tocilizumab does increase the amount of cholesterol in the blood. But importantly, these rises were not in the most damaging types of cholesterol, such as small low-density lipoprotein cholesterol or LDL-C, which may be more associated with the development of cardiovascular problems than larger high-density lipoprotein cholesterol, or HDL-C. They also found that there was an increase seen in a group of proteins that are normally associated with the protection of blood vessels and reduced vascular risk, and there was a 30% decrease in lipoprotein(a) which has previously been found to be associated with vascular events. It will be important to work out what these findings mean for patients in the long term.

There were no clear results from the ultrasound part of the study.

The authors also found that tocilizumab improved the signs and symptoms of rheumatoid arthritis over 24 weeks in the study and was better than placebo; these results were consistent with what has previously been reported.

### ARE THESE FINDINGS NEW?

Yes – this is the first time anyone has looked at the blood of patients receiving tocilizumab to work out how it affects these markers.

### HOW RELIABLE ARE THE FINDINGS?

There are some limitations which may affect how reliable the findings are. The study was conducted in a small number of patients over a short time, which may mean that it is not reflective of the long periods that rheumatoid arthritis patients take their medicines for. There were some technical problems with the ultrasound measurements which meant that not all of the results could be used. Also, the authors measured only lipids in the blood and did not link these to whether patients went on to develop cardiovascular problems – this may be an area that needs further study.

Although the findings are reliable in terms of understanding how tocilizumab changes the levels of certain markers in the blood, it is not possible to draw predictions on the safety of tocilizumab from this.

### WHAT DO THE AUTHORS PLAN ON DOING WITH THIS INFORMATION?

These results will be shared with other doctors and academics to inform them of the findings. There is a follow-up study planned which will look more closely at what causes the changes to happen.

### WHAT DOES THIS MEAN FOR ME?

Patients with rheumatoid arthritis who are taking tocilizumab should have their cholesterol levels and blood pressure checked as agreed in their care plan, and should report any symptoms that they are concerned about to their doctor. It is important that patients do not stop taking their medicine without talking to their doctor first. More studies will be needed to confirm these findings and to make clear links between the effects and cardiovascular risks and for recommendations to be made to doctors.

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