

## **Relationship between exposure to tumour necrosis factor inhibitor therapy and incidence and severity of myocardial infarction in patients with rheumatoid arthritis (lay summary)**

### What was already known?

Patients with rheumatoid arthritis (RA) are at higher risk of heart attacks (myocardial infarction; MI) compared to the general population, which is partly explained by the inflammation i.e. joint pain, swelling and stiffness in RA. There are many proteins involved in the inflammatory process and tumour necrosis factor is an example of such a protein. Biologic drugs inhibiting this protein (TNF inhibitors; TNFi) have been shown to reduce joint inflammation. From previous research, it is not known whether TNF inhibitors also alter the risk of future heart attacks especially if TNF inhibitors are used over the medium term (3-5 years). We aimed to study (a) the risk of MI, (b) the degree of severity of the MI and also (c) the risk of death from MI, in patients with RA who were treated with the addition of TNFi to synthetic disease modifying therapy (sDMARD) compared to those treated with sDMARD only.

### What was discovered?

The British Society for Rheumatology Biologics Register for Rheumatoid Arthritis (BSRBR-RA) is a national prospective observational study, established in 2001 to monitor the long term safety of TNFi and other biologic therapies. Alongside the BSRBR-RA, a comparator group of patients with RA treated with sDMARD only was also recruited. We linked with the Myocardial Ischaemia National Audit Project (MINAP) for further information on MI severity and the Health and Social Care information Centre (HSCIC) for reporting of deaths.

For this study, a total of 14258 patients were studied: 3058 patients receiving sDMARD only and 11200 patients receiving TNFi drugs. The majority of the participants were female and the average age was between 55-59 years.

Over 3-5 years of follow-up, the risk of MI was reduced by almost 40% in patients who received TNFi compared to those who received sDMARD only. We did not find any difference in the severity of MI or deaths post-MI. The median duration of treatment with TNFi was 4 years.

### Why is this important/what is the benefit to the patients?

We found that patients treated with TNFi therapy over the medium term had a reduced risk of MI compared to those who received sDMARD only. It is possible that this effect is related to suppressing the inflammation in general or specifically targeting the TNF protein or both. It is reassuring to note that in those patients who experienced an MI, there was no difference in the severity of MI or the risk of death from MI irrespective of whether they were treated with TNFi therapy or sDMARD only.