Prospective MRI score to predict negative EULAR response in patients with rheumatoid arthritis (RA) before therapy-escalation to a biological therapy

Dear Editor

We read with great interest the article by Baker *et al*[1] who showed that early MRI measures independently predict erosive progression on X-ray and MRI after 1 and 2 years in therapy-naive patients with rheumatoid arthritis (RA) from the randomised-controlled GO-BEFORE trial. Due to these findings, we re-evaluated MRI data from the German REMISSION-PLUS Cohort[2 3] at our centre to verify if a MRI score may predict negative response in patients with RA before therapy-escalation to a biological therapy. MRI was performed in 257 patients before therapy-escalation (T0) and after 12 months (T1) and analysed by using the Outcome Measures in Rheumatology (OMERACT) rheumatoid arthritis MRI score (RAMRIS). In addition, clinical and laboratory parameters (Disease Activity Score 28 (DAS-28) and C-reactive protein (CRP)) were collected for each visit. Logistic regression combining clinical and MRI parameters was performed resulting in a combination of the patients' age and the RAMRIS-T0 performing best for prediction of non-response. Bootstrapping with 5000 resamples was performed to estimate the accuracy of the model.

Of the patients included, 29 were escalated to a biological therapy (20 women, median age 57 years (IQR 46–65), 95% anti-tumour necrosis factor (TNF)-alpha therapy). Poor responders (n=5) and responders (n=24) had a mean RAMRIS-T0 score of 14.4 and 52.0, respectively (Wilcoxon test $p<0.01$). High RAMRIS score showed a trend towards a protective effect against non-response (OR 0.90 per RAMRIS point, 95% CI 0.79 to 1.03, $p=0.12$). The strength of the association was stable after adjusting for age, CRP, anti citrullinated peptide antibodies (ACPA)/rheumatoid factor and DAS-28 at baseline. The median area under the curve in the bootstrap analysis was 88.9% with 95% CI 84.0% to 92.8%.

Thus, while Baker *et al* clearly demonstrated that a high inflammatory activity on MRI (ie, RAMRIS) is associated with an unfavourable prognosis (ie, radiographic progression), our observations suggest that this may be overcome by administration of a highly effective therapy, for example, a biologic agent. Indeed, patients with a prognostic unfavourable high RAMRIS were even more likely to respond, making them ideal candidates for these costly drugs.

In summary, both studies emphasise the value of an MRI before therapy initiation or escalation. Hence, further studies are needed to improve our data in established patients with RA before escalating the therapy to biological disease-modifying anti-rheumatic drug (bDMARD).

Philipp Sewerin, Stefan Vordenbaeumen, Ralph Brinks, Benedikt Ostendorf

Department of Policlinic of Rheumatology and Hiller Research Unit Rheumatology University Hospital (UKD), Duesseldorf, Germany

Correspondence to Dr Philipp Sewerin, Department and Hiller Research Unit for Rheumatology, University Hospital Duesseldorf (UKD), Moorenstreet 5, 40225 Duesseldorf, Germany; philipp.sewerin@med.uni-duesseldorf.de

Competing interests None declared.

Provenance and peer review Not commissioned; internally peer reviewed.

To cite Sewerin P, Vordenbaeumen S, Brinks R, *et al*. *Ann Rheum Dis* Published Online First: [*please include* Day Month Year] doi:10.1136/annrheumdis-2017-211257

Received 3 February 2017
Accepted 4 February 2017

Ann Rheum Dis 2017;**0**:1. doi:10.1136/annrheumdis-2017-211257

REFERENCES

1 Baker JF, Ostergaard M, Emery P, *et al*. Early MRI measures independently predict 1-year and 2-year radiographic progression in rheumatoid arthritis: secondary analysis from a large clinical trial. *Ann Rheum Dis* 2014;73:1968–74.
2 Ostendorf B, Scherer A, Kellner H, *et al*. Project REMISSION(PLUS): clinical and radiological remission: new treatment goals in the management of rheumatoid arthritis. *Z Rheumatol* 2008;67:707–10, 712–15.
3 Sewerin P, Klein S, Brinks R, *et al*. REMISSIONPLUS, an Initiative to Integrate Modern Imaging into Rheumatologic Care – Review, Appraisal and Outlook: Evaluation of Low-Field MRI Data. *Akt Rheumatol* 2017;42:1–10 (2017, in press).