development. Using data of 110 RA patients treated with infliximab (IFX), we previously reported that ANA development along with ANA levels at base line were associated with poor outcomes of IFX.¹ However, no replication studies have been reported. In addition, whether the findings are true to general biological disease-modifying anti-rheumatic drugs (bDMARDs) is uncertain.

Objectives: To replicate an association between poor response and development of ANA during IFX treatment in patients with RA. To analyse whether the association is found in other bDMARDs.

Methods: We analysed a data of Japanese RA patients treated with (n=721) or without (bDMARDs-naïve; n=1050) bDMARDs (IFX, etanercept ETN, adalimumab ADA, golimumab GLM, certolizumab pegol CZP, tocilizumab TCZ, abatacept ABT) as a first line bDMARD from a single comprehensive RA cohort. All of the participants were not included in our previous study. We conducted multiple logistic linear regression analysis to assess effects of ANA development on treatment outcomes. We further analysed correlates of ANA development. ANAs were determined by indirect immunofluorescence with HEp-2 cells, and ANA development was defined as more than two times increase from baseline values.

Results: We found that ANA development at 3 months after starting bDMARDs was significantly associated with cessation of bDMARDs due to insufficient response within a year (OR 3.70, $p=0.037$). We further found that RA patients who did not develop ANA at 3 months but developed ANA within a year showed a significant association with treatment failure between 12 and 24 months (OR 7.11, $p=0.044$). ANA levels at baseline showed significant association with or tendency of insufficient response in both situations (OR 1.21 and 1.69, respectively), independently on ANA development. We still found associations of ANA development after conditioning on IFX usage, indicating that the associations are not limited to IFX. Female was associated with ANA development (OR 1.85) and high levels of ANA at baseline (OR 2.41, $p=0.006$), which is consistent with previous data in healthy population.² bDMARDs use (OR 2.09, $p=0.056$) was also a risk for ANA development. Among bDMARDs, anti-TNF agents, especially IFX, were risk factors of ANA development (OR 6.34, $p<0.0001$).

Conclusions: ANA development during treatment is associated with poor response to bDMARDs, which is not limited to IFX. Female and IFX usage are risk factors for ANA development.

REFERENCES:

- [1] Yukawa N, et al. *Arthritis Research & Therapy* 2011;13:R213.
- [2] Kuramoto N, et al. *Sci Rep* 2017;7:6911.

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OP0115 IMPROVED RESPONSE TO ETANERCEPT IS ASSOCIATED WITH SERUM VITAMIN D LEVELS IN RHEUMATOID ARTHRITIS

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Background: Although treatment of rheumatoid arthritis (RA) has significantly improved during the past decades, many patients do not adequately respond or become resistant to current treatments. It is currently unknown why some patients respond well and others do not, and how the response rate could be improved.

Vitamin D has strong immunomodulatory properties and it has been shown RA patients have a lower serum 25(OH)D level than healthy individuals. Moreover, vitamin D levels are correlated with disease severity.^{1,2} Interestingly, *in vitro* studies have shown that vitamin D augments the suppressive effects of etanercept in a simplified model for synovial inflammation.³ This suggests that vitamin D could improve the therapeutic response to etanercept in RA patients.

Objectives: To investigate if etanercept response is related to serum vitamin D (25(OH)D) levels in RA patients.

Methods: For this study, data were used from the tREACH trial, a multicenter stratified single blinded randomised clinical trial. RA patients, according to the 2010 classification criteria, who started with etanercept within the first 12 months of the study were included in the analysis. Serum vitamin D (25(OH)D) levels were

determined at the start of treatment (Tstart) and 3 months later using the LIAISON 25 OH Vitamin D TOTAL assay. Correlation coefficients between vitamin D levels and the disease activity score (DAS) were calculated. Treatment response was determined with the EULAR response criteria, and difference in response rates was assessed using Chi-Square tests.

Results: 91 patients started etanercept in the first 12 months of the study, of which 24 did not have serum for 25(OH)D measurements at both start of treatment and three months later. Therefore, a total of 67 patients was included in this study, of which 82% was female. At baseline, 45 (67%) and 48 (73%) were positive for rheumatoid factor and anti-citrullinated protein antibodies, respectively. DAS after etanercept treatment was weakly inversely correlated with serum 25(OH)D after treatment ($r=-0.29$, $p=0.02$) and the change in 25(OH)D during treatment ($r=-0.25$, $p=0.04$). After correcting for DAS and serum 25(OH)D at the start of treatment the aforementioned correlations were still found. Importantly, EULAR response rate was significantly lower in patients who were vitamin D-deficient at the start of treatment (34.6% vs 59.4%) and in patients with decreasing 25(OH)D levels during treatment (39.2% vs 57.7%) (figure 1).

Conclusions: RA patients with a serum 25(OH)D level below 50 nmol/L at the start of etanercept treatment or a decreasing level during treatment have a lower EULAR response rate. Therefore, increasing serum 25(OH)D level in vitamin D deficient patients may be important to achieve optimal effects of TNF α blocking therapy.

REFERENCES:

- [1] Lee YH, Bae SC. *Clin Exp Rheumatol* 2016;34(5):827–33.
- [2] Lin J, Liu J, Davies ML, et al. *PLoS One* 2016;11(1):e0146351.
- [3] van Hamburg JP, Asmawidjaja PS, Davelaar N, et al. *Ann Rheum Dis* 2012;71(4):606–12.

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OP0116 IMPACT OF TNF INHIBITORS ON NEED FOR JOINT REPLACEMENT IN PATIENTS WITH RHEUMATOID ARTHRITIS: A MATCHED COHORT ANALYSIS OF UK BIOLOGICS REGISTRY DATA

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Background: Previous ecological data from the UK and Denmark suggest a decline in the incidence of joint replacements for RA patients following the introduction of tumour necrosis factor inhibitors (TNFi). However, patient-level data on the comparative effectiveness of TNFi compared to conventional synthetic DMARD (csDMARD) use on the need for total hip (THR) or knee (TKR) replacement are lacking.

Objectives: To estimate the impact of TNFi use on subsequent need for THR or TKR (primary outcomes) or other joint replacement (OJR) (secondary outcome) in RA.

Methods: A propensity score (PS) matched cohort was analysed using the British Society for Rheumatology Biologics Registry (2001 – 2016) for Rheumatoid Arthritis (BSRBR/RA) data. Exclusion criteria were: previous THR or TKR (all analyses) or OJR (secondary analysis), less than 6 months follow-up, prevalent biological DMARD use, or first biological DMARD use that was not a TNFi. Patients were followed from date of registration up to the earliest of date of outcome, death, loss-to-follow-up or change of TNFi exposure status (stopping, switching or starting).