THU0074 BODY MASS INDEX IN EARLY RHEUMATOID ARTHRITIS IN UNDERWEIGHT PATIENTS IS ASSOCIATED WITH MORE PROGRESSION OF EROSIONS OVER 15 YEARS AND IN OBESE PATIENTS WITH LESS PROGRESSION OF JOINT SPACE NARROWING

S. Ajeganova[1], K. Forslind[2], B. Svensson[2], I. Hafström[1]. [1]*Department of Medicine Huddinge, Karolinska Instiutet, Stockholm;* [2]*Department of Clinical Sciences, Lund University, Lund, Sweden*

Background: Previous short-term follow-up studies and subanalyses of clinical trials in rheumatoid arthritis (RA) have suggested that low body mass index (BMI) is associated with more radiographic joint progression and high BMI with less. The effect of BMI on progression of erosion score (ES) and joint space narrowing (JSN) could be different in underweight and obese patients.
Objectives: To investigate the association between BMI in early RA with radiographic damage during 15 years; to examine if known predictors of a worse radiographic outcome could explain differential radiographic outcome in low and high BMI groups.
Methods: Four hundred and seventy-three patients from the BARFOT study included from 1992 to 1999 who performed their 15-year assessment were studied. The patients were assessed at inclusion and after 1, 2, 5, 8 and 15 years. The groups were defined by BMI (kg/m^2) at inclusion: BMI $\leq$20, (n=27), BMI 20$<$25 (n=210), BMI 25$<$30 (n=179), and BMI$\geq$30 (n=57). X-rays of hands and feet were scored by the Sharp-van der Heijde scoring method (SHS). Linear mixed models with SHS, ESR, CRP, SJC and TJC as outcome, and BMI at inclusion as predictor was used, adjusted for age, sex, initial treatment, ACPA and smoking.
Results: At baseline, total score of SHS, ES and JSN did not differ between BMI groups. There were more women and smokers in BMI$\leq$20 group and older patients in BMI$\geq$30 group. The baseline disease characteristics were similar in the BMI groups.
For the patients with BMI$\leq$20 at inclusion, BMI was associated with a higher predicted SHS progression during follow-up, effect size 5.11 (95% CI 1.72 to 15.15) p=0.005, while for the patients with BMI$\geq$30 at inclusion, BMI was associated with lower SHS, effect size 0.92 (0.86 to 0.99) p=0.028. The directions of association between BMI at inclusion and ES and JSN were similar to that for the total SHS. The effect size of the association with erosion progression was however significant only in the BMI$\leq$20 group, 1.15 (2.72 to 6.42) p=0.025 (in the BMI$\geq$30 group 0.95 (0.90–1.00) p=0.074). On the other hand, association between BMI and JSN progression was significant only in the BMI$\geq$30 group, 0.93 (0.87 to 0.99) p=0.033 (in the BMI$\leq$20 group 2.53 (0.83–7.67) p=0.096).
There were no associations between BMI and radiographic damage in BMI 20$<$25 and BMI 25$<$30 groups.
We found no significant association between BMI and ESR, CRP, SJC, TJC over time in the BMI$\leq$20 group. In the BMI$\geq$30 group, BMI was associated with a higher predicted CRP during follow-up, effect size 1.06 (1.01 to 1.12) p=0.028, but not with ESR and SJC. Compared to the patients with BMI 20–25, patients with BMI$\geq$30 had higher TJC over 15 years, 3.17 (1.06 to 9.27) p=0.038.
Conclusions: Underweight at onset of RA is associated with more radiographic damage up to 15 years and obesity with less joint damage, independent of sex, ACPA and smoking status. The effect of BMI is not explained by measures of disease activity.
Disclosure of Interest: None declared
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THU0075 THE RELATIONSHIP BETWEEN DISEASE ACTIVITY AND DISABILITY IS MEDIATED BY PAIN AND FATIGUE IN EARLY RHEUMATOID ARTHRITIS

S. Twigg[1,2], E.M.A. Hensor[1], P. Emery[1], A.W. Morgan[1], A. Tennant[3] on behalf of Yorkshire Early Arthritis Register. [1]*Leeds Institute Rheumatic and Musculoskeletal Medicine, University of Leeds;* [2]*National Institute for Health Research- Leeds Musculoskeletal Biomedical Research Unit, Leeds Teaching Hospitals NHS Trust, Leeds, United Kingdom;* [3]*Swiss Paraplegic Research, Nottwil, Switzerland*

Background: Disability in early rheumatoid arthritis (RA) is correlated with disease activity. However, the relationship between these two clinical outcomes is relatively under-investigated. Understanding how disability is driven by disease activity will allow targeted interventions to improve function in early RA, alongside the suppression of inflammation.
Objectives: To identify mediators in the relationship between disease activity and disability in early RA.
Methods: Cases with new consultant-made diagnoses of RA were recruited to Yorkshire Early Arthritis Register within 24 months of symptom onset. At the baseline assessment, clinical variables were collected including the 3 variable disease activity score from counts of 28 tender and swollen joints and C-reactive protein (DAS28), Health Assessment Questionnaire (HAQ) and visual analogue scores (VAS) of pain and fatigue. Structural equation models (SEM) were constructed to evaluate the relationship between DAS28, HAQ, pain, symptom duration (SD), age and fatigue.
Results: Of 721 cases included, 482 were female and 239 male. Median age was 58 for both genders and median HAQ was 1.25 and 1.00 for women and men, respectively. A path model within a SEM framework (Figure 1) was a good fit to the data (Chi square 7.528, df=6, p=0.2748; CFI 0.997; RMSEA 0.027). However, the model could not be applied simultaneously to both genders; although estimates of regression coefficients did not vary between males and females (metric invariance), model intercepts were different. In earlier models, age was not a significant predictor and regressions of fatigue on DAS28 were not significant: the effect of DAS28 upon fatigue was fully mediated by pain. Standardised coefficients of direct and indirect effects of DAS28 on HAQ are shown in Table 1, together with Sobel tests for significance of mediator variables. The greatest effect upon HAQ was the direct effect from DAS28, but some of the effect of DAS28 on HAQ was partially mediated by pain. Furthermore, the effect of pain upon HAQ was also partially mediated through fatigue. According to the Sobel test, pain and fatigue were significant mediators in both females and males.

Table 1 Total, Direct and Indirect effects upon HAQ

Standardised effect upon HAQ	Females			Males		
	Estimate	SE	p	Estimate	SE	p
DAS28 total	0.412	0.040	<0.001	0.508	0.053	<0.001
DAS28 indirect	0.139	0.024	<0.001	0.163	0.033	<0.001
DAS28- direct	0.282	0.046	<0.001	0.344	0.060	<0.001
DAS28 via pain and fatigue	0.038	0.010	<0.001	0.032	0.014	0.025
DAS28 via pain	0.101	0.024	<0.001	0.131	0.033	<0.001
Sobel test statistic (fatigue via pain)	3.280	0.002	0.001	2.279	0.002	0.022
Sobel test statistic (Pain)	3.920	0.085	<0.001	3.253	0.122	0.001

SE, standard error.

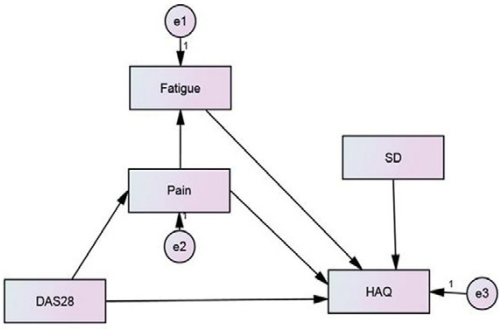

Figure 1. Path diagram to show the relationship between disease activity and disability mediated by pain and fatigue.
SD, symptom duration; e1-3, error terms (representing the unexplained variance in outcomes)

Conclusions: DAS28 dominates the impact upon HAQ in early RA; pain is shown to be an important mediator of the effects of DAS28 on HAQ, while fatigue is important as a mediator of the effect of pain on HAQ. This adds to previous evidence that pain is a driver of fatigue in RA (1) and suggests that interventions to manage pain could be important adjuncts to supression of inflammation in early RA, in order to optimise function.
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THU0076 DISEASE-MODIFYING TREATMENT REGIMENS HAVE BEEN INSUFFICIENT TO REDUCE THE INCIDENCE OF SYSTEMIC AA AMYLOIDOSIS ASSOCIATED WITH RHEUMATOID ARTHRITIS IN CONTRAST TO A SIGNIFICANT REDUCTION IN THOSE WITH JUVENILE IDIOPATHIC ARTHRITIS

T.A.-B. Youngstein[1], T. Lane[1], J. Gilbertson[1], J. Pinney[1], T. Rezk[1], R. Manwani[1], C.C. Quarta[1], A. Wechalekar[1], S. Mahmood[1], S. Sachchithanantham[2], M. Fontana[1], C. Whelan[1], J.D. Gillmore[3], P.N. Hawkins[1], H.J. Lachmann[1]. [1]*National Amyloidosis Centre, UCL Division of Medicine;* [2]*National Amyloidosis Centre, UCL Division of Medicine, London;* [3]*National Amyloidosis Centre, National Amyloidosis Centre, UCL Division of Medicine, London, London, United Kingdom*

Background: The UK National Amyloidosis Centre has the largest known cohort of individuals with AA amyloidosis, with 660 cases since 1990. A third present in end stage renal failure (33%), with a median survival of 133 months from diagnosis[1]. Over 27 years the rate of new cases has remained remarkably constant with a median of 24 diagnoses per annum (IQR 18.5–30.5) but responsible for a decreasing proportion of new cases of systemic amyloidosis from 35% in the first 5 years to 6% in the last 5 years of the cohort.
Objectives: We sought to determine to what extent advances in treatment of the inflammatory arthritides have influenced the aetiology of AA Amyloidosis over time.
Methods: Retrospective analysis of the UK National Amyloidosis Centre AA