Methods: The study consisted of 35 RA cases in MCSA and 104 MCSA participants without RA matched 1:3 for age, sex, education, cognitive status (≥ 50 years old) at baseline and the availability of at least one magnetic resonance imaging (MRI). The primary outcome measures were well established dementia-related neuroimaging biomarkers, including global beta-amyloid ($A\beta$) using PIB-positron-emission tomography (PET; $n=47$); neurodegeneration (hypometabolism via FDG-PET ($n=45$), hippocampal volume ($n=139$), and cortical thickness via structural MRI [$n=138$], and cerebrovascular pathology via FLAIR-MRI (white matter hyperintensity [WMH; $n=49$] burden, subcortical, and cortical infarctions ($n=55$)). Elevated ^{11}C -PiB-PET was defined as standardized uptake value ratio ≥ 1.48 in an Alzheimer's disease (AD)-related region of interest and reduced AD signature cortical thickness as ≤ 2.68 mm (neurodegeneration; N+). Kruskal-Wallis rank sum and Pearson's chi-squared tests were used to compare the neuroimaging measures between participants with and without RA.

Results: Participants with vs. without-RA did not differ in age, sex, years of education, major comorbidities, $A\beta$ burden, hippocampal volume, and neurodegeneration measures (Table 1). Although the sample size was small, we observed that RA participants (vs. without-RA) had greater mean WMH volume (relative to the total intracranial volume (TIV) (mean (SD) %: 1.12 (0.57) % vs 0.76 (0.69) % of TIV, $p=0.011$), were more likely to have cortical infarctions (4 vs.1; $p=0.013$) and had a higher mean number of cortical infarctions (mean (SD): 0.24 (0.44) vs. 0.05 (0.32), $p=0.017$).

Conclusion: Our preliminary data suggest significant differences in cerebrovascular biomarker measures by RA status. Further studies would add valuable information to our understanding and insight into the development of interventions for the prevention of cerebrovascular pathology in RA patients.

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Table 1. Participants' baseline characteristics.

	With RA	Without RA	Total	p value*
Age, mean (SD)	76.3 (7.9)	75.9 (7.9)	139	0.82
Male	13 (37%)	37 (36%)	139	0.87
Education (years), mean (SD)	14.5 (2.5)	14.3 (2.4)	139	0.75
Apolipoprotein E $\epsilon 4$ carrier	6 (17%)	28 (27%)	139	0.24
Cognitively unimpaired	27 (77%)	83 (80%)	110	0.94
Mild cognitive impairment	7 (20%)	18 (17%)	25	
Dementia	1 (3%)	3 (3%)	4	
Reduced AD signature cortical thickness	20 (57%)	60 (58%)	138	0.91
Elevated β -amyloid	4 (33%)	11 (31%)	47	0.90
FDG PET SUVR	1.52 (0.16)	1.59 (0.18)	45	0.46
White matter hyperintensity volume % of TIV	1.12 (0.57)	0.76 (0.69)	49	0.011
With cortical infarctions	4 (24%)	1 (3%)	55	0.013

N (%) unless otherwise stated; * Kruskal-Wallis rank sum or Pearson's Chi-squared test. SD=standard deviation; AD= Alzheimer's disease; SUVR=standardized uptake value ratio; TIV=Total intracranial volume.

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POS0312

HOW DOES THE PRESENCE OF DEPRESSION IMPACT ON DISEASE ACTIVITY SCORES IN PATIENTS WITH RHEUMATOID ARTHRITIS?

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Background: Depression is present in up to half of patients with Rheumatoid Arthritis (RA). The association between this mood disorder and disease activity scores, including DAS28, SDAI and CDAI, has previously been described by various authors.

Objectives: The aim of our study was assessed the effect of depression on the components of different disease activity scores.

Methods: We performed a cross-sectional study of consecutive adults with RA, according to ACR/EULAR 2010 criteria. Sociodemographic data, comorbidities and current treatment were recorded. Disease activity was evaluated using DAS28-ESR, DAS28-CRP, SDAI and CDAI. Depression was assessed using PHQ-9 questionnaire. The PHQ-9 values were categorized in 4 groups as follows: 5 to 9, 10 to 14, 15 to 19, 20 or greater, represents mild, moderate, moderate/severe, and severe depression, respectively. A cutoff value of 10 or greater was set to define major depression. *Statistical analysis:* Student's T, ANOVA and Chi² tests. Multiple logistic regression.

Results: Two hundred fifty eight patients were included, with a median (*m*) disease duration of 9 years (IQR 3.6-16.7). The *m* PHQ-9 score was 6 (IQR 2-12.3) and the prevalence of major depression was 33.7%. Patients with major depression had more tender and swollen joint count (TJC and SJC) (mean 4.9±4.3 vs 2.3±3.7, $p<0.0001$ and 2.9±3.3 vs 1.7±3.4, $p=0.009$), more pain (VAS [cm] mean 5.6±2.7 vs 3.3±2.6, $p<0.0001$), higher patient and physician global assessment (PGA and PhGA) (VAS [cm] mean 5.4±2.9 vs 3.1±2.5, $p<0.0001$ and 4.4±2.7 vs 2.4±2.4, $p<0.0001$) and CRP (mean 1.7±3.3 vs 0.7±1.1 mg/dl, $p=0.01$). ESR values were higher in the group with major depression, but the difference did not reach significance. Disease activity was higher in the depression group by all scores: DAS28-ESR (mean 4.3±1.4 vs 3.3±1.3, $p<0.0001$), DAS28-CRP (mean 3.9±1.4 vs 2.8±1.7, $p<0.0001$), SDAI (mean 19.2±12.7 vs 10.3±10.1, $p<0.0001$) and CDAI (mean 17.6±10.9 vs 9.6±9.9, $p<0.0001$). While 41 (15.9%) patients had high disease activity according to DAS28-ESR, only 34 (13.2%) had SDAI>26. In the multivariate analysis, evaluating the association of major depression with the different components of DAS28-ESR, DAS28-CRP, SDAI and CDAI, we observed that the presence of this mood disorder remained significantly associated with higher PGA in all the scores. In addition, a significant association was seen with higher TJC in both DAS28 scores.

Conclusion: Patients with major depression had higher disease activity. It's presence has a significantly association with the subjective items of the disease activity scores, particularly PGA. CRP value was the only objective component associated with depression.

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POS0313

INCIDENCE AND PREVALENCE OF POLYAUTOIMMUNITY IN SEROPOSITIVE COMPARED WITH SERONEGATIVE PATIENTS WITH RHEUMATOID ARTHRITIS: A NATIONWIDE COHORT STUDY

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Background: Rheumatoid arthritis (RA) is categorized as seropositive or seronegative referring to the presence or absence of IgM rheumatoid factor (IgM-RF) and/or anti-citrullinated protein antibodies (ACPA).

Patients with an autoimmune disease are more likely to develop additional autoimmune conditions than individuals without pre-existing autoimmune disease.

Objectives: The aims of this study were to examine patterns of polyautoimmunity in seropositive compared with seronegative patients with recent-onset RA.

Methods: The study was register-based and used the nationwide DANBIO register (identification of recent-onset (<1 year) seropositive, ICD-10 M05, and seronegative, M06, RA patients) linked to the Danish National Patient Registry and the Danish National Prescription Registry to obtain information on additional autoimmune diseases (see Table 1 for autoimmune conditions). Using age and sex adjusted logistic regression analysis, the odds ratio (OR) of prevalent polyautoimmunity in seropositive compared with seronegative patients at the time of RA diagnosis was calculated.

To estimate the hazard ratio (HR) for developing yet another autoimmune disease in the 5 years after RA diagnosis, adjusted cause-specific Cox regression models were performed. Several sensitivity analyses were carried out including alternative exposure and outcome definitions.

Results: In total, 12,517 patients with recent-onset RA were included. The groups were similar in terms of disease characteristics and DMARD treatment, but seropositive patients were younger and included more women, see Table 1. Patients with seropositive RA had an OR of 0.79 (95% CI 0.71-0.89) for baseline presence of polyautoimmunity compared with seronegative patients, whereas the 5-year HR was 0.86 (95% CI 0.71-1.05) for incident polyautoimmunity. The results remained similar in all sensitivity analyses.

Conclusion: Patients with seropositive RA had a slightly lower prevalence and incidence of polyautoimmunity compared to seropositive patients. The results were somewhat surprising, yet very robust, and thus raises the question if seronegative RA is in fact "more autoimmune" despite the absence of (identified) autoantibodies.

Table 1. Characteristics, prevalence, and incidence of polyautoimmunity in incident RA patients.

	Seropositive	Seronegative
N	7983	4534
Age in years	59.4 (48.6 to 69.1)	63.0 (51.5 to 72.3)
Women	5476 (69 %)	2856 (63 %)
HAQ-DI	0.857	0.875
	(0.375 to 1.375)	(0.375 to 1.375)
DAS28-CRP	4.3 (3.3 to 5.2)	4.6 (3.6 to 5.5)
CRP, mg/mL	10 (4 to 23)	10 (3 to 26)
VAS physician, 0-100mm	27 (15 to 45)	30 (16 to 47)
Treated with methotrexate	86 %	84 %
-other csDMARD, %	24 %	24 %
-Biological DMARD, %	5 %	6 %
Smoking status:	13 / 11 / 17 / 59 %	9 / 9 / 23 / 59 %
Current / previous / never / unknown, %		
Prevalence of polyautoimmunity /	549 (10.6 %)	349 (12.8 %)
diabetes mellitus type 1 / autoimmune	1.4 % / 6.7 %	1.4 % / 7.8 %
thyroid disease / inflammatory bowel disease		
Age and sex adjusted odds ratio	0.79 (0.71 to 0.89)	1 (ref.)
Incident cases of polyautoimmunity	373 (4.7 %)	242 (5.3 %)
Adjusted hazard ratio	0.86 (0.71 to 1.05)	1 (ref.)

Continuous variables shown as median with interquartile ranges. Autoimmune conditions included: autoimmune thyroid disease (redeemed prescriptions of ATC=H03A); diabetes mellitus type 1 (ICD-10 diagnosis E10 combined with redeemed prescriptions of insulin, ATC=A10A); pernicious anaemia (D51.0); autoimmune haemolytic anaemia (D59.1); idiopathic thrombocytopenic purpura (D69.3); Autoimmune adrenalitis (E27.1B); multiple sclerosis (G35); neuromyelitis optica (G36.0); Guillain-Barré syndrome (G61.0); myasthenia gravis (G70); inflammatory bowel disease (K50-1); primary biliary cirrhosis (K74.3); primary sclerosing cholangitis (K83.0); autoimmune hepatitis (K75.4); celiac disease (K90.0); pemphigus vulgaris (L10.0); bullous pemphigoid (L12.0); dermatitis herpetiformis (L13.0); alopecia areata (L63); vitiligo (L80); lichen sclerosis (L90.0); chronic interstitial cystitis (N30.1).

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POS0314

PROSPECTIVE EVALUATION OF A DEDICATED, SERIAL OCCUPATIONAL THERAPY EXERCISE PROGRAM ON HAND FUNCTION IN RHEUMATOID ARTHRITIS (RA)

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Background: Rheumatoid arthritis (RA) frequently affects the joints of the hands causing severe pain and significant functional impairment affecting all activities of daily living. At early stages, functional impairment is primarily caused by reversible joint and tendon sheath effusions while at later stages synovial thickening, muscular atrophy and irreversible damage to cartilage, bone, tendons and ligaments cause a reduced range of motion and deformities. Occupational therapy aims to maintain and improve joint mobility and function. However, there is limited data on the effectiveness of serial exercise programs specifically aiming at maintaining and improving hand function in RA.

Objectives: To prospectively evaluate the effects of a dedicated exercise program on hand function, grip strength, joint mobility and pain compared with conventional outpatient physiotherapy not specifically targeting hand function.

Methods: A total of 51 RA patients receiving outpatient physiotherapy once a week were enrolled and randomized to either continue their usual therapy (control group) or to participate in a dedicated hand function training (HFT) twice a week in addition to their usual therapy (HFT group). The HFT program was supervised by an occupational therapist who conducted once weekly HFT sessions and instructed the participants to perform an additional self-administered HFT session at home once a week. Study duration was six months with an option to continue HFT for additional 6 months. Study participants were evaluated at baseline and every 3 months.

The primary outcomes hand function and grip strength were assessed using standardized questionnaires (Cochin hand function scale (CHFS), Australian/Canadian Osteoarthritis Hand Index (AUSCAN), Michigan Hand Outcomes Questionnaire (MHOQ)) and dynamometer/pinch gauge readings for different types of grip (cylindrical grasp, spherical grasp, hook grasp, tip to tip pinch and key pinch), respectively. The secondary outcomes joint mobility and pain were assessed using a digital goniometer and visual analogue scales (VAS), respectively. Statistical analysis used the Wilcoxon test for evaluating changes of parameters over time within the groups and the Kruskal Wallis test for group comparisons and Bonferroni-Holm correction.

Results: 41 of the 51 patients (HFT group: n = 20, mean age 60.3 ± 8.4 years; control group: n = 21, mean age 60.5 ± 11.5 years) completed the 6-month study period, 14 patients extended their HFT to 12 months. Within the 6-month study period there were no significant improvements of the primary outcome parameters and of pain within the groups vs. baseline and no significant differences between the groups. Only the CHFS improved significantly in the HFT group as of month 9. A significant improvement of the range of motion vs. baseline was achieved by HFT as early as 3 months after baseline which persisted up to month 12. As some improvement was also seen in the control group, there was no significant difference between the groups. Hand mobility improved particularly in the subgroup of patients >60 years of age. There was no influence by pain intensity at baseline (VAS ≤50 mm vs. VAS >50 mm).

Conclusion: Serial dedicated HFT for 6 months resulted in improved joint mobility but did not improve global hand function, grip strength and pain in RA patients. A longer treatment duration (≥12 months), a higher treatment frequency (>2 times/week) and a larger cohort of patients may be required.

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Scleroderma, myositis and related syndromes

POS0315

LONG-TERM SAFETY AND EFFICACY OF LENABASUM DURING 3 YEARS IN AN OPEN-LABEL EXTENSION (OLE) OF A PHASE 2 STUDY OF LENABASUM IN REFRACTORY SKIN DISEASE IN DERMATOMYOSITIS (DM)

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Background: Lenabasum is a synthetic, non-immunosuppressive, selective cannabinoid receptor type 2 agonist that activates resolution of inflammation. Lenabasum had acceptable safety and tolerability and improved efficacy outcomes in the initial 16-week double-blinded, randomized, placebo-controlled Part A of Phase 2 trial JBT101-DM-001 (NCT02466243) in DM subjects with refractory skin involvement. In that study, lenabasum or placebo was added to stable background treatment, with immunosuppressive therapies allowed.

Objectives: To assess long-term safety and efficacy in DM subjects in this study.

Methods: Subjects who completed Part A of the Phase 2 study (n = 22) were eligible to receive oral lenabasum 20mg BID in an open-label extension (OLE) that assessed safety and efficacy at 4 weeks, then every 8 weeks.