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Background: Several studies show increased risk of dementia among individuals with rheumatoid arthritis (RA), while others show no association. One reason for this discrepancy might be differential association by serostatus. No prior studies have investigated the association between RA and dementia by serostatus.
Objectives: We aimed to evaluate the risk of incident dementia among individuals with RA, stratified by serostatus.
Methods: This population-based cohort study included all cases of incident RA within Olmsted County, Minnesota with index date of RA onset between 1 January 1999 and 31 December 2013. We matched RA cases to non-RA comparators 1:1 on age and sex. All RA cases met 1987 ACR criteria for RA. We defined seropositivity as positive rheumatoid factor or anti-cyclic citrullinated peptide antibodies. We defined incident dementia as having two ICD-9/10 codes for dementia at least 30 days apart, with the date of the second code representing the time of dementia onset. We **e**xcluded individuals with dementia prior to index date. We estimated the cumulative incidence of dementia adjusting for the competing risk of death. For the main analysis, cox proportional hazard models estimated adjusted hazard ratios (aHR) with 95% confidence intervals (CI) for incident dementia, adjusting for age, sex, index year, body mass index, and smoking status (never, former, current). These models compared the incidence of dementia for RA versus non-RA, seropositive and seronegative RA versus their matches, and seropositive versus seronegative RA. To validate these results, we also performed sensitivity analyses using groups matched via inverse probability weighting on age, sex, index year, obesity, smoking status, and race.
Results: We identified 597 RA cases (mean age 56, 70% female), and 594 non-RA comparators. Of the RA cases, 388 (65%) were seropositive, and 209 (35%) were seronegative. The ten-year cumulative incidence of dementia in patients with RA was 3.3 (95%CI 2.0,5.5) per 100,000 compared to 2.4 (95%CI 1.3,4.2) in non-RA comparators, for aHR of 1.26 (95%CI 0.7,2.3). When stratifying by serostatus, the ten-year incidence of dementia for seropositive RA cases was 3.6 (95%CI 2.0,6.5), corresponding to aHR of 1.45 (95%CI 0.73,2.9) compared to matched non-RA cases. In contrast, the incidence of dementia in seronegative RA cases was 2.6 (95%CI 1.0,7.0), for an aHR of 1.0 (95%CI 0.29,3.5). Overall, the incidence of dementia in seropositive RA cases was significantly higher than seronegative cases (aHR 3.2, 95%CI 1.2,8.5). Indeed, sensitivity analysis using inverse probability weighting confirmed that among participants aged 50 and older, dementia incidence was higher for seropositive than seronegative RA (aHR 2.9, 95%CI1.1,7.8) (Figure 1).
Conclusion: Individuals with seropositive RA have an increased risk for incident dementia than those with seronegative RA. Future studies should replicate these findings and investigate the mechanism for this association.

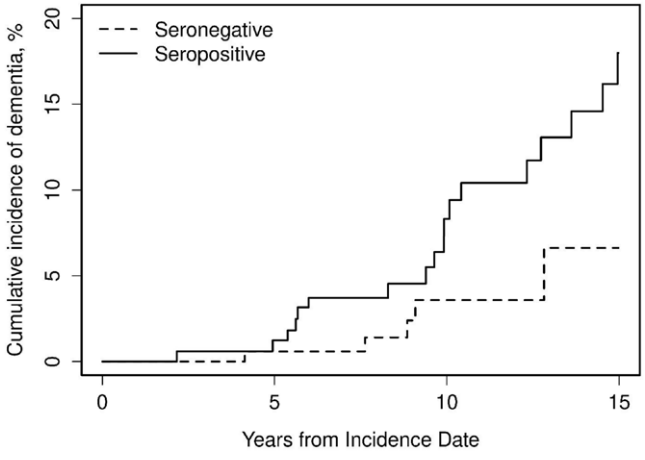

Figure 1. Cumulative incidence of dementia for individuals with seropositive versus seronegative RA aged 50 and older, balanced by inverse probability weighting

Acknowledgements: This work was funded by grants from the National Institutes of Health, NIAMS (R01 AR46849) and NIA (R01 AG068192, R01 AG034676).
Disclosure of Interests: Vanessa Kronzer: None declared, Tina Gunderson: None declared, Cynthia S. Crowson: None declared, John M Davis III Grant/research support from: Pfizer, Maria Vassilaki Shareholder of: equity ownership in Abbott Laboratories, Johnson and Johnson, Medronic and Amgen;, Grant/research support from: Roche and Biogen, Michelle Mielke Consultant of: Biogen and Brain Protection Company, Elena Myasoedova: None declared
DOI: 10.1136/annrheumdis-2021-eular.2172

POS0310 EXPOSURE TO MAJOR PSYCHOLOGICAL TRAUMA OR STRESS IN THE PRECEDING ONE YEAR SIGNIFICANTLY CONTRIBUTES TO POOR DISEASE CONTROL IN PATIENTS WITH RHEUMATOID ARTHRITIS: SINGLE CENTRE RESULTS FROM THE PRIME REGISTRY COHORT

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Background: Stress response is considered to involve the activation of both the hypothalamus-pituitary-adrenal axis and the autonomic nervous system, along with its communication with the immune system. Because many rheumatic diseases are characterized by immune-mediated joint inflammation, stressful events might contribute to the aetiology, maintenance and exacerbation of rheumatic diseases.
Objectives: We aimed to examine whether real-life major stressful events lead to poor disease control among patients with Rheumatoid arthritis (RA). We addressed this question using real-world data from the PRIME registry.
Methods: This was a cross-sectional study conducted using data collected at the time of patient enrolment in the PRIME registry. The PRIME Registry is a large, independent, prospective, observational cohort initiated in October 2019 that comprises patients diagnosed with RA, SLE, PsA or AS by a rheumatologist, and is being actively followed up. IRB approval and informed consent was obtained. We assessed the registry data for RA patients. The clinical variables studied were gender, age, smoking habits, body mass index, education status, marital status, disease duration, comorbidities (using Charlson Comorbidity Index). Education status was stratified by whether participants completed secondary (high) school education. Evaluation of disease activity and severity was made as per internationally agreed definitions, such as: swollen joint counts (SJC), tender joint counts (TJC), deformed joint counts, and DAS-28. Major psychological trauma or stress was defined if the patient has experienced any of the following in the past year: a) major personal injury or illness; b) death/major illness of a close relative; c) marital separation/divorce; d) loss of job; e) major financial loss; f) mass casualty incident loss.
Results: The data of consecutive 507 RA patients (mean age 42.3±12.6 years, 73.6% female, disease duration of 80±22 months) was reviewed. Thirty-six percent of the cohort reported to have major psychological stress and trauma in the preceding one year. No statistical association of age, gender, and marital status was noted, but statistical association of low education status (p=0.042), longer disease duration (p=0.044), higher DAS-28 values (p<0.001) and other markers of RA disease activity (SJC, TJC, ESR, patient global health) was found. On multiple logistic regression analysis, a significant association of major psychological stress and trauma in the preceding one year was noted with active disease (DAS-28; OR 1.67, CI 1.17-2.4, p=0.005). Following variables were included in the full regression model, disease duration, gender, age, marital status, education status, and DAS-28 value (also used models with SJC, TJC, deformed joint counts, ESR, patient global health, but the results remained unchanged).
Conclusion: Major psychological stress and trauma in the preceding one year is associated with high disease activity among patients with RA. Therapies that focus on stress management may be important adjuncts to traditional pharmacotherapy in the treatment of inflammatory rheumatic diseases.
Disclosure of Interests: Muhammad Haroon Speakers bureau: Roche, Novartis, Grant/research support from: Abbvie, Pfizer, Sadia Asif: None declared, Shabnam Batool: None declared, Farzana Hashmi: None declared, Saadat Ullah: None declared, Arfa Ashraf: None declared, Hafiza Javeria Shaheen: None declared
DOI: 10.1136/annrheumdis-2021-eular.2101

POS0311 NEUROIMAGING BIOMARKERS IN INDIVIDUALS WITH AND WITHOUT RHEUMATOID ARTHRITIS: RESULTS FROM THE MAYO CLINIC STUDY OF AGING

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Background: Age-related increase in the burden of systemic inflammation is an established key player and potential treatment target in Alzheimer's disease (AD) and other age-related dementias. (Dregan, Chowienczyk et al. 2015) Although rheumatoid arthritis (RA) is an autoimmune hyper-inflammatory disease, studies on RA and dementia or vascular neuroimaging biomarkers are lacking.
Objectives: To examine the associations between RA and dementia/vascular neuroimaging biomarkers in the Mayo Clinic Study of Aging (MCSA).