High BMI associated with less MRI-detected erosive progression

**Objectives:** To increase our understanding of the favorable association between obesity and radiographic progression, we performed a large MRI-study and aimed to 1) validate the association between BMI and MRI-detected osteitis/synovitis, 2) study whether this is a subgroup-effect in ACPA-positive/ACPNA-negative RA or a general effect in early arthritides (also in non-RA diagnoses) and 3) study whether increased BMI associates with MRI-detected erosive progression, since MRI-detected erosive progression may follow osteitis but precedes radiographic progression.

**Methods:** We studied 1,029 patients (454 RA, 575 other arthritides), consecutively included in the Leiden Early Arthritis Clinic. At baseline, clinical parameters (including BMI) were measured and patients underwent hand-and-foot MRI that were RAMRIS-scored. 149 RA-patients underwent follow-up MRIs. Associations between baseline BMI and MRI-detected osteitis/synovitis, and baseline BMI and MRI-detected erosive progression were assessed using linear-regression analysis and Poisson mixed-models.

**Results:** In RA, higher BMI associated with less osteitis (β = 0.95; 95% CI = 0.93-0.97) but not with synovitis, validating the previously found association with osteitis. The association of BMI with less osteitis was present in ACPA-positive and negative RA (Figure 1A and 1B), and ACPA-negative RA (β = 0.94; 95% CI = 0.92-0.96), ACPA-negative RA (β = 0.93; 95% CI = 0.91-0.95) and other arthritides (β = 0.98; 95% CI = 0.96-0.996). During 2-years follow-up overweight and obese RA-patients had less MRI-detected erosive progression than normal-weight RA-patients (IRR = 0.898, p-value = 0.02 and IRR = 0.898, p-value = 0.03 respectively). This indicates that the MRI-detected erosive progression was 0.988 times lower per month or 23% lower over 2 years (IRR for one month 0.989, thus 0.989^24 = 0.77 over 2 years), in both overweight and obese patients, compared to normal weight patients (Figure 1A). Comparable results were found in both ACPA-positive and negative RA (Figure 1B and 1C).

**Conclusion:** High BMI associated with less osteitis at disease-onset; this was present in all early arthritis patients and not confined to ACPA-positive RA. Moreover, overweight/obesity in RA associated with less severe MRI-detected erosive progression over time. These findings substantiate the previously reported observation of less severe radiographic progression in obese RA-patients and bring us a step forward in unraveling the contradictory association between high BMI and less erosive disease, which is essential in a time where overweight and obesity keep increasing.

**REFERENCES:** NIL.

**Acknowledgements:** NIL.

**Disclosure of Interests:** None declared.

---

**Keywords:** Rheumatoid arthritis, Imaging, Comorbidities

**Figure 1.** High BMI associates with more MRI-detected erosive progression

**REFERENCES:** NIL.

**Acknowledgements:** NIL.

**Disclosure of Interests:** None Declared.

**DOI:** 10.1136/annrheumdis-2023-eular.900

---

**Keywords:** Sarcopenia, Rheumatoid arthritis, Randomized control trial

**Objectives:** Current study is a subgroup analysis of the GLORIA trial.[1] We report changes in body weight of the whole study population, and relate these to changes in disease activity, and changes in body composition in a subgroup of patients.

**Methods:** The GLORIA trial, a pragmatic, placebo-controlled, double-blind, randomised controlled trial investigated the balance of benefit and harm of 2 years of prednisolone 5mg/day added to standard care in 451 patients with active RA aged 65+. [1] In current study 449 patients were included, and body weight and disease activity score of 28 joints (DAS28) were measured at baseline and after 2 years with dual-energy X-ray absorptiometry. Data were analysed with longitudinal mixed models, and log-ratio analysis to evaluate the mutual changes in body composition, given as the proportions total lean mass, total fat mass, and total bone mass.

**Results:** Body weight changed by mean (95% CI) 0.9 (0.3;1.6) kg on prednisolone after 2 years, versus −0.4 (~1.1;0.2) kg on placebo, with a difference between treatment groups of 1.3 (0.5;2.2) kg (p<0.01). In multivariable regression analysis, the effect of AUC DAS28 0–2 years was not significantly associated with weight change (p=0.18). The change in body composition after 2 years was different in overweight and obese RA-patients compared to normal weight patients (IRR = 0.96; 95%CI = 0.94-0.98) but not with synovitis, validating the previously found association with BMI.

**REFERENCES:** NIL.

**Acknowledgements:** NIL.