

Obesity and disease progression in rheumatoid arthritis

A comparison between European and American RA patients

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Background

- Obese individuals experience elevated levels of circulating proinflammatory cytokines
- Obesity has been associated with an increased risk of developing RA and with impaired quality of life
- The role of obesity in RA disease severity and RA disease progression is not well established

Objectives

- To examine if obesity is associated with more severe RA disease outcomes, in particular with higher levels of disease activity and higher functional disability

Methods

- **Design:** Cohort study
- **Patient population:** We included all RA patients from a European (SCQM-RA) and a North-American (CORRONA) RA registry with available Body Mass Index (BMI)
- **Primary outcome:** The study's primary outcomes were functional disability as measured by HAQ-DI (SCQM-RA) or mHAQ (CORRONA) and RA disease activity as measured by DAS-28 (SCQM-RA) or CDAI (CORRONA)

Methods, continued

- **Exposure Variable** Patients were categorized according to the WHO BMI categories:
 - BMI < 18.5: "underweight"
 - BMI ≥ 18.5, < 25: "normal weight"
 - BMI ≥ 25, < 30: "overweight"
 - BMI ≥ 30, < 35: "obese class I"
 - BMI ≥ 35: "obese class II"
- **Analysis:** Simple descriptive statistics to analyze the study outcomes in the 5 BMI categories and multivariate regressions to examine potential trends after adjustment for potential confounders (age, sex, rheumatoid factor positivity, low dose glucocorticoid use, conventional DMARD use, biologic agent use, education years)

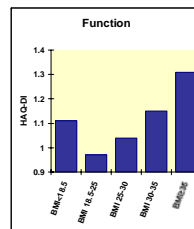
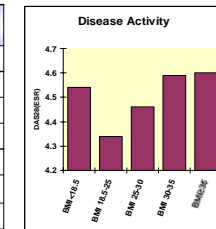
Results

- 3'952 European and 18'640 US RA patients were included
- Obesity (BMI ≥ 30) was more prevalent among US patients (38% in CORRONA compared to 15% in the SCQM)
- Mean BMI was 25.1 (95% CI: 25.0 – 25.4) in the SCQM versus 29.1 (95% CI: 29.0 - 29.2) in CORRONA
- Disease characteristics at inclusion, categorized by BMI categories, in the SCQM and the CORRONA registries (Table 1 and Table 2 below)

Results, continued

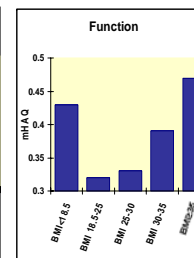
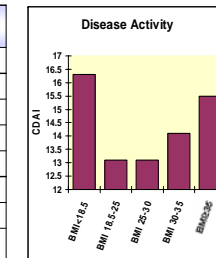
- European patients (SCQM-RA):

	BMI<18.5	BMI 18.5-25	BMI 25-30	BMI 30-35	BMI≥35
N patients	178	1992	1185	447	149
age	50.4	56.3	56.3	57.0	55.4
% Female	94	81	65	73	77
% RF+	71	71	68	67	60
% Steroids	53	51	51	60	57
% DMARDs	74	81	82	83	82
% Biologics	31	29	27	29	32



- US patients (CORRONA):

	BMI<18.5	BMI 18.5-25	BMI 25-30	BMI 30-35	BMI≥35
N patients	284	5524	6012	3550	3270
age	59	58	59	589	56
% Female	89	82	68	73	82
% RF+	77	67	68	68	65
% anti-CCP+	67	63	62	62	58
% Steroid	41	39	37	38	41
% DMARDs	86	90	89	90	91
% Biologics	42	39	37	38	41



- A **significant trend** existed for patients with **higher BMI to have higher disease activity and greater functional disability** in both cohorts, which was maintained after adjusting for potential confounders. This trend had a quadratic shape, with higher levels of disease outcomes at both extremes of BMI.

Conclusions

- Obesity is more prevalent in North-American than in European RA patients
- In both populations, higher BMI scores were associated with somewhat higher disease activity and greater functional disability
- Obesity could have pro-inflammatory effects in RA, however further research is needed to understand the impact of obesity on human immunity and identify the effects of BMI on RA disease outcomes