

LETTER

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# High body mass index in rheumatoid arthritis: why we should promote physical activity

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See related research by Albrecht et al., <http://arthritis-research.biomedcentral.com/articles/10.1186/s13075-016-1043-9>

We were interested in the recent publication of Albrecht et al. on body mass index (BMI) distribution in rheumatoid arthritis (RA) [1]. According to this analysis of three large cohorts, the majority of patients with RA are overweight [1]. Low remission rates and common metabolic syndrome indicate that the increasing BMI in RA should be treated, but weight loss may not be the solution as it has been linked to increased mortality [2]. Working on nutritional status in RA, we had the opportunity to compare the body composition analysis (DEXA) and physical activity levels recorded over 3 days with Actimeters (SenseWear Arm Bands, Body Media, Stanford, CA, USA) in overweight versus normal-weight patients. We feel that our results may help orientate management despite the obesity paradox in RA.

As depicted in Table 1, the main characteristics of the patients (age and gender) and their disease (duration, DAS28-ESR, and use of corticosteroids) were similar in the overweight and normal subjects. The rates of rheumatoid cachexia and osteopenia were dramatically reduced in overweight patients. Over the whole group, BMI were positively related to bone mass ( $r = +0.29$ ,  $p < 0.05$ ) and the rachis T scores ( $r = +0.36$ ,  $p < 0.01$ ). The overweight patients had lower levels of physical activity, and BMI was negatively related to these levels: metabolic equivalent tasks (METs) ( $r = -0.60$ ,  $p < 0.001$ ) and daily duration of physical activity ( $r = -0.41$ ,  $p < 0.005$ ).

The body composition analysis of our overweight patients shows that some of their nutritional characteristics should be preserved by therapeutic intervention: less rheumatoid cachexia, that is known to reduce life expectancy, and less osteopenia, whereas the risk of fractures is doubled in RA [3]. The reduced levels of physical activity in overweight RA patients has been reported using questionnaires [4], but to our knowledge this has not yet been

demonstrated with more objective actimetry measurements as we have performed. Improving these low levels of activity should be beneficial for the metabolic syndrome

**Table 1** Characteristics of patients with rheumatoid arthritis and who were overweight or obese ( $N = 27$ ) as compared to patients of normal weight ( $N = 29$ )

	Normal weight	Overweight or obese	<i>p</i>
Gender (% men)	20%	21%	NS
Age (years)	56 ± 12	58 ± 9	NS
Duration of rheumatoid arthritis (years)	6.9 ± 8.3	7.2 ± 6.6	NS
DAS28-ESR	3.7 ± 1.7	4.1 ± 2.0	NS
Treated by corticosteroids (%)	65%	53%	NS
Nutritional status			
Body mass index (kg/m <sup>2</sup> )	22.1 ± 2.2	30.5 ± 6.9	<0.0001
Fat (%)	32.1 ± 10.2	38.0 ± 8.2	<0.05
Fat-free mass index (kg/m <sup>2</sup> )	15.2 ± 1.7	18.6 ± 2.7	<0.001
Metabolic syndrome (%)	10.3%	39.3%	<0.05
Rheumatoid cachexia (%)	34.5%	3.7%	<0.01
Bone status			
Bone mass (g)	1978 ± 365	2223 ± 398	<0.05
Rachis T score	-1.1 ± 1.3	0.0 ± 1.4	<0.005
Osteopenic, rachis (%)	66%	24%	<0.005
Femoral neck, T score	-1.3 ± 1.2	-0.6 ± 1.2	<0.05
Osteopenic, femoral (%)	74%	40%	<0.05
Actimetry			
Metabolic equivalent tasks	1.52 ± 0.32	1.24 ± 0.25	<0.005
Duration of physical activity (min/day)	109 ± 99	59 ± 71	<0.05

DAS28-ESR Disease Activity Score in 28 joints-erythrocyte sedimentation rate, NS not significant

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of overweight patients. Exercise is also considered beneficial for osteoporosis and for rheumatoid cachexia. The main limitation of interventions on physical activity is their modest results in terms of weight loss [5], while mortality may be increased by frank and unintentional weight loss in RA [2].

#### Abbreviations

BMI: Body mass index; MET: Metabolic equivalent task; RA: Rheumatoid arthritis

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#### Availability of data and materials

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#### Authors' contributions

MH and VR collected the data and wrote the paper. AP, TS, and NMC collected data and participated in the conception of the study. EP and BC participated in the analysis of the data. All authors read and approved the final manuscript.

#### Competing interests

The authors declare that they have no competing interests.

#### Consent for publication

Not applicable.

#### Ethics approval and consent to participate

All the subjects provided written informed consent to participate to the study. The study was approved by the Comité de Protection des Personnes Sud-Ouest et Outre Mer III.

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