Muscle density in rheumatoid arthritis: associations with disease features and functional outcomes.

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Abstract

OBJECTIVE: To explore the associations between measures of body composition derived from computed tomography (CT) of the thigh and functional outcomes in patients with rheumatoid arthritis (RA).

METHODS: Patients with RA underwent bilateral midfemoral quantitative CT for measurement of thigh fat area (TFA), thigh muscle area (TMA), and thigh muscle density (TMD). The associations of thigh-composition measures with disability and physical performance, as measured with the Health Assessment Questionnaire (HAQ), the Valued Life Activities (VLAs), and the Short Physical Performance Battery (SPPB) instruments, were explored in the total cohort and in the cohort subgrouped by sex, controlling for pertinent demographic, lifestyle, and RA disease and treatment covariates.

RESULTS: A total of 152 RA patients were studied. Among the potential determinants of TMD, older age, longer duration of sedentary activity, longer duration of RA, higher tender joint count, higher serum interleukin-6 levels, use of glucocorticoids, and nonuse of hydroxychloroquine were all significantly associated with lower TMD in multivariable models. RA characteristics accounted for 63% of the explainable variability in TMD. When comodeled, higher TFA and lower TMD, but not lower TMA, were significantly and independently associated with higher HAQ scores, lower Short Form 36 health survey physical functioning...
scores, lower composite SPPB scores, and a greater proportion of affected obligatory VLAs.

**CONCLUSION:** Thigh CT-derived measures of body composition, particularly fat area and muscle density, were strongly associated with disability and physical performance in RA patients, with RA disease features as potential determinants. Efforts to reduce fat and improve muscle quality may reduce disability in this population with impaired physical functioning.