

Sarcopenia and Vascular Risk in a Healthy Elderly UK Population (BRAVES study)

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Word Count: 300 words

Introduction

Sarcopenia, the loss of skeletal muscle mass and strength that occurs with advancing age [1] is correlated with functional decline and disability but little is known about its relationship with cardiovascular risk. Bioimpedance analysis (BIA) is a validated technique for measuring muscle mass, convenient for use in large cohort studies. Arterial stiffness (compliance) is an independent predictor of cardiovascular events.

Methods

The BRAVES study was designed to compare cardiovascular risk between two healthy elderly cohorts in the UK and in Italy. We used data from the UK cohort to investigate the relationship between sarcopenia and vascular compliance.

Participants were eligible if aged 65-85 years, lived within the Brighton area and had weight loss of no more than 5% in the last month. All underwent physical exam, BIA assessment of skeletal mass index (SMI) and two measures of arterial compliance. Pulse wave velocity (PWV) was measured between carotid-femoral and carotid-radial arteries and the augmentation index (Aix) derived from carotid and radial arteries. A bivariate correlation was performed.

Results

Ninety patients (64 female; 26 male) had mean age 73, mean FFM 46.84kg (range 34.7-74.7) and mean SMI 6.77 (range 4.84-10.09). There was a negative relationship between SMI and Radial Aix ($R=0.542$, $p=0.000$) as well as Carotid Aix ($R=-0.391$, $p=0.002$) but not PWV. Using multiple regression to control for the effects of age and gender, SMI was independently related to radial Aix ($p=.013$).

Conclusions

Skeletal muscle mass index is strongly negatively correlated with augmentation index, a measure of vascular stiffness. This finding suggests that elderly patients with higher muscle mass have a more compliant aorta and hence lower cardiovascular risk. Whether sarcopenia acts as a marker for CV risk or plays an active role in cardiovascular disease progression is not yet established and deserves further investigation.

1. Cruz-Jentoft, A.J., et al., *Sarcopenia: European consensus on definition and diagnosis: Report of the European Working Group on Sarcopenia in Older People*. *Age Ageing*, 2010. **39**(4): p. 412-23.