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PAPER OF THE MONTH • MAY 2024



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JAMA Cardiology

Osteosarcopenia and Mortality in Older Adults Undergoing Transcatheter Aortic Valve Replacement

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Osteosarcopenia is an emerging geriatric syndrome characterized by age-related deterioration in muscle and bone. Despite the established relevance of frailty and sarcopenia among older adults undergoing transcatheter aortic valve replacement (TAVR), osteosarcopenia has yet to be investigated in this setting.

In this study, our objective was to determine the association between osteosarcopenia and adverse outcomes following TAVR.

We did a post hoc analysis of the Frailty in Aortic Valve Replacement (FRAILTY-AVR) prospective multicenter cohort study and McGill extension that enrolled patients aged 70 years or older undergoing TAVR from 2012 through 2022. Exposure to osteosarcopenia was measured on computed tomography (CT) scans prior to TAVR.

Of the 605 patients (271 [45%] female) in this study, 91 patients (15%) met the criteria for osteosarcopenia and had higher rates of frailty, fractures, and malnutrition at baseline. One-year mortality was highest in patients with osteosarcopenia (29 patients [32%]) followed by those with low psoas muscle area (PMA) alone (18 patients [14%]), low vertebral bone density (VBD) alone (16 patients [11%]), and normal bone and muscle status (21 patients [9%]) ($P < .001$). Osteosarcopenia, but not low VBD or PMA alone, was independently associated with 1-year mortality (odds ratio [OR], 3.18; 95% CI, 1.54-6.57) and 1-year worsening disability (OR, 2.11; 95% CI, 1.19-3.74). The association persisted in sensitivity analyses adjusting for the Essential Frailty Toolset, Clinical Frailty Scale, and geriatric conditions such as malnutrition and disability.

Overall, our findings suggest that osteosarcopenia detected using clinical CT scans could be used to identify frail patients with a 3-fold increase in 1-year mortality following TAVR. This opportunistic method for osteosarcopenia assessment could be used to improve risk prediction, support decision-making, and trigger rehabilitation interventions in older adults.