Frailty, Prefrailty Increase Diabetes Risk

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Frail and prefrail older adults are at increased risk of developing incident type 2 diabetes mellitus compared with individuals with no frailty, according to a longitudinal study in Padova, Italy.

Led by Dr. Nicola Veronese, of the University of Padova, researchers examined 3,099 individuals 65 and older from the Progretto Veneto Anziani, an observational cohort study on the Italian population published recently in JAMDA (*J Med Dir Assoc* 2016;17:902–7).

Of the 1,754 participants included in this analysis, 174 (9.92%) were frail (3 or more Fried criteria), and 830 (47.32%) were prefrail (1 or 2 Fried criteria) at baseline. Frail participants had multiple risk factors for diabetes, including significantly more obesity, larger waist circumference, higher glycosylated hemoglobin (HBA1c) levels, and higher fasting plasma glucose levels. They also had a higher rate of cardiovascular disease.

During the 4.4-year follow-up, 265 individuals (15.10%) developed type 2 diabetes. Logistic regression analysis found that individuals with frailty and prefrailty were 1.87 and 1.60 times, respectively, more likely to develop type 2 diabetes. Even after adjusting for other risk factors, there was still a significant association between frailty and prefrailty, and the risk of developing diabetes. Also, each individual Fried criterion was significantly associated with an increased risk of developing type 2 diabetes.

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Increased physical activity may help prevent type 2 diabetes in frail and prefrail elderly.

"Our data demonstrate that frailty is associated with an 87% increased risk of [type 2 diabetes], whereas prefrailty is associated with a 60% increased risk. Individuals with undiagnosed and early forms of [type 2 diabetes] seem to have greater declines in lean mass and physical performance items than those with several years of disease, suggesting that the alterations typical of diabetic patients might precede disease onset. Our results suggest the importance of promoting physical activity and maintaining adequate physical performance measures, might be crucial in preventing [type 2 diabetes] in those with frailty," the researchers wrote.

Possible explanations include higher oxidative stress levels, higher levels of circulating proinflammatory cytokines, increased deoxyribonucleic acid, and shorter telomere length — all of which are involved in the pathogenesis of diabetes, the researchers said.

"The literature about the importance of physical activity for preventing metabolic and cardiovascular diseases in the elderly is still relatively limited, particularly among those older than 75 years," they wrote. "At the same time, we recognize that the criteria proposed by Fried et al are related to physical frailty and less to other aspects closely related to frailty, for example, cognitive deficits. Therefore, it would be of interest to see future studies reporting the association between frailty (defined with other tools) and the onset of diabetes and other metabolic diseases."

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