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ASSOCIATION OF TYPE 2 DIABETES MELLITUS WITH DYNAPENIA AND SARCOPENIA IN MIDDLE-AGE AND OLDER BRAZILIAN ADULTS - THE BRAZILIAN LONGITUDINAL STUDY OF ADULT HEALTH (ELSA-BRASIL)

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BACKGROUND

Sarcopenia is characterized by loss of skeletal muscle mass, strength, and function; and increases the risk of mortality and hospitalization in the elderly¹⁻³. Type 2 diabetes (T2D) patients seem to exhibit a greater risk of sarcopenia³⁻⁵. However, most studies have investigated such a relationship in the elderly, and few have used the new definition (2018) of sarcopenia proposed by the European Working Group on Sarcopenia in Older People (EWGSOP2). The purpose of the present study was to investigate the association of T2D with dynapenia (low muscle strength) and sarcopenia in middle-aged and older Brazilian adults.

MATERIALS AND METHODS

This is a cross-sectional analysis of the ELSA-Brasil second data examination (2012–2014). The EWGSOP2 criteria were used to categorize the response variable as isolated dynapenia (handgrip strength < 27 kg for men and < 16 kg for women); and sarcopenia, defined by the simultaneous presence of dynapenia and low appendicular muscle mass (< 7.0 kg/m² for men and < 5.5 kg/m² for women)¹. Type 2 diabetes status was classified using blood glucose measurements and/or self-reported information on T2D medical diagnosis and treatment. The T2D duration was calculated based on the participant's age at the time of T2D diagnosis. Multinomial regressions were used to investigate the association between T2D (no/yes) and T2D duration (absence of T2D-reference; < 5 years; ≥ 5 and < 10 years; ≥ 10 years) and dynapenia/sarcopenia. Multiple models were built as follow: model 0 (univariate), model 1 (adjusted for body mass index), model 2 (model 1 plus sex, age, race, education), model 3 (model 2 plus excessive alcohol consumption, leisure-time physical activity and smoking), and model 4 (cardiovascular disease [CVD] and chronic kidney disease [CKD]; and glycohemoglobin -T2D no/yes model).

RESULTS

The study included 12,183 participants (18.23% were diabetic), mean age of 55.52 (SD 8.94) years. The prevalence of sarcopenia was higher with increasing age and among those less educated, who practiced less intense physical activity, and with CVD and CKD. After all adjustments, the presence of T2D was associated with dynapenia (odds ratio [OR]: 1.45, 95%CI: 1.09–1.95) and sarcopenia (OR: 2.13, 95%CI: 1.19–3.79). T2D duration ≥ 5 and < 10 years was associated with sarcopenia (OR: 2.63, 95%CI: 1.08–6.40), while T2D duration above 10 years was associated with dynapenia (OR: 1.87, 95%CI: 1.22–2.87) and sarcopenia (OR: 2.85, 95%CI: 1.37–5.94).

CONCLUSION

Both presence and longer than 5 years duration of T2D were associated with dynapenia and sarcopenia, emphasizing the importance of frequent monitoring of musculoskeletal functions in individuals with T2D to detect possible early changes.

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