

**Diabetic sarcopenia - limited association to diabetic polyneuropathy in individuals with type 2 diabetes**

**Aim:** To investigate the relationship between the severity of diabetic polyneuropathy (DPN) and sarcopenia in individuals with type 2 diabetes (DM2).

**Methods:** 261 Japanese individuals with DM2 were included from a single center (median age 67 years, diabetes duration 10 years). DPN was assessed by nerve conduction studies (NCS) and grouped as stage 0-4 based on the Baba classification (Himeno T et al *J Diabetes Investig.* 2020;11:25-27). Sarcopenia was identified by the presence of low muscle mass index ( $\text{kg}/\text{m}^2$ ) and further confirmed by the presence of low muscle strength and/or low physical performance based on the consensus of the Asian Working Group for Sarcopenia (Chen LK et al *J Am Med Dir Assoc.* 2020;21:300-307.e2).

**Results:** The prevalence of sarcopenia in the study population was 20%. 91% had low-to-mild degrees of DPN (Baba stage 0-2) and 9% had moderate-to-severe DPN (Baba stage 3-4). Frequencies of sarcopenia and slow walking speed were higher in the group with moderate-to-severe DPN as compared to the group with no-to-mild degrees of DPN. However, DPN was not statistically significant correlated to sarcopenia and walking speed, when accounting for age, BMI, and physical activity in multiple logistic regression analyses.

**Conclusions:** Whilst loss of muscle mass and strength in DM2 with severe DPN is well described, the incidence of severe DPN is relatively low in the clinical setting. Therefore, the contribution of severe DPN to sarcopenia in DM2 may only be modest, suggesting additional factors of DM2 should be considered.

**Comments.** Skeletal muscles play a major role in maintenance of locomotion in addition to metabolism and insulin sensitivity. However, the relationship between muscle function and DM2 is complicated and multidirectional. The risk of developing DM2 increases with age-related loss of muscle mass and function. Moreover, individuals with DM2 show accelerated loss of muscle size, quality, and functional capacity as compared to healthy subjects. Yet, assessment of muscular impairments is often overlooked in the clinic and the underlying features of muscular deficits in DM2 are largely unknown. Muscle wasting secondary to DPN is well described and considered the major factor in progressive loss of force production in individuals with DM2. Still, a growing number of studies suggest additional mechanisms affecting muscle function irrespective of DPN (Giha HA et al *Acta Diabetol.* 2022;59:989-1000). The present study aimed to evaluate whether the accelerated degree of sarcopenia observed in DM2 could be explained by the presence and severity of DPN. The study has several limitations including only assessing strength by a handgrip dynamometer and only comprising a small number of individuals with severe DPN (N=24). However, the study does include a fairly large number of subjects and robust NCS measures for DPN diagnosis and classification of severity. In conjunction with above discussion, Mikura et al. present an important study attempting to discriminate between DPN and other factors of importance for muscle impairment in DM2. Interestingly, findings of Mikura et al. suggest that DPN may not be the driving factor for most cases of muscle impairment observed in the clinic. Still, future studies are needed to confirm these results in other populations, and to further describe and evaluate the impact of the proposed additional factors affecting muscle function irrespective of DPN in individuals with DM2.

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**Reference.** Mikura K, Kodama E, Lida T, Imai H, Hashizume M, Kigawa Y, Tadokoro R, Sugisawa C, Endo K, Lizaka T, Otsuka F, Nagasaka S. Association between sarcopenia and the severity of diabetic polyneuropathy assessed by nerve conduction studies in Japanese patients with type 2 diabetes mellitus. *J Diabetes Investig.* 2022 Aug;13(8):1357-1365. doi: 10.1111/jdi.13788.

<https://onlinelibrary.wiley.com/doi/10.1111/jdi.13788>