

Vitamin D and diabetic peripheral neuropathy in old people with T2D in China

Aim: to evaluate the association between vitamin D deficiency and the development of diabetic peripheral neuropathy (DPN) in older subjects with type 2 diabetes (T2D) in China.

Methods: Between 2020 and 2023, subjects with T2D and age >60 years were enrolled in this cross-sectional study. After a propensity score matching, 175 subjects with DPN and 55 subjects without DPN were enrolled. A comprehensive screening for DPN was conducted based on ankle reflexes, vibration perception, pressure perception, pin-prick pain perception, and temperature sensitivity. Nerve conduction was also evaluated. Further, vitamin D was measured and vitamin D deficiency (VDD) was defined for values <20 ng/mL.

Results: Subjects with DPN showed higher levels of BMI, more common hypertension and smoking habit. Vitamin D levels were also decreased in subjects with DPN and the association remained significant after adjustment for BMI, hypertension and smoking habit.

Further, median nerve motor latency, common peroneal nerve motor latency, median nerve sensory latency, the minimum latency of the F-wave and median nerve motor evoked potential latency were negatively correlated with vitamin D while median nerve motor velocity, median nerve sensory amplitude and median nerve sensory velocity were positively correlated with vitamin D. No correlation was found with electrochemical skin conductance, measure of small fiber function. When subjects enrolled were divided based on vitamin D levels, those in the VDD group showed a longer median sensory nerve latency, a longer F-min and a longer M-latency.

Conclusions: Vitamin D deficiency was associated with DPN in elderly subjects with T2D. Further, the evidence collected by the authors seems to suggest that VDD may have a detrimental effect on the large fibers.

Comments. The authors of this study focused their attention on old subjects affected by T2D, even if the age chosen (>60 years) could be debatable. This study has confirmed once more the possible role of vitamin D deficiency in the development of neuropathy. Further, taking advantage of the nerve conduction analyses performed, the authors were able to find an association between the VDD and the impairment in nerve latency, suggesting an impact of vitamin D on large nerve fibers.

As covered in a previous Publication News, increasing evidence from both cross-sectional and prospective studies suggests an involvement of vitamin D in diabetic neuropathy (Alam U et al *Diabetes Metab Res Rev.* 2021;37:e3361; Chen X et al *Diabetes Care.* 2023;46:270-277). Controlled clinical trials are also needed to provide conclusive evidence of the usefulness of supplementation with vitamin D on neuropathy, using measurable markers of nerve damage.

It is well known the role of vitamin D in bone metabolism and muscle mass, hence in the elderly population the supplementation of vitamin D could be paramount to avoid falls and fractures acting both on bone and muscle but also on neuropathy.

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Reference. Fei S, Fan J, Cao J, Chen H, Wang X, Pan Q. Vitamin D deficiency increases the risk of diabetic peripheral neuropathy in elderly type 2 diabetes mellitus patients by predominantly increasing large-fiber lesions. *Diabetes Res Clin Pract.* 2024 Mar;209:111585. doi: 10.1016/j.diabres.2024.111585. Epub 2024 Feb 15. PMID: 38364910.

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