RESPONSE TO COMMENT ON ALMURDHI ET AL.

Reduced Lower-Limb Muscle Strength and Volume in Patients With Type 2 Diabetes in Relation to Neuropathy, Intramuscular Fat, and Vitamin D Levels. Diabetes Care 2016;39:441–447

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We thank Treiber et al. (1) for sharing their data in relation to a greater prevalence of painful neuropathy and slower walking speeds in their patients taking a statin. They suggest that some of the differences observed in our study (2) could be explained by treatment with statins. We have used our data to assess if statins may contribute to lower-limb weakness or muscle atrophy and neuropathy.

We have compared our study parameters between patients with type 2 diabetes mellitus (T2DM) on a statin (n = 16) to those who were not on a statin (n = 4). The interpretation of our data is limited and cautious because of the small number of patients not on a statin and also the lack of matching for age, weight, and BMI. Nevertheless, muscle strength of the lower limb in the knee extensors (P = 0.47) and ankle plantar flexors (P = 0.28) did not differ significantly. Muscle volumes for the knee extensors (P = 0.04) and flexors (P = 0.09) were lower, with no difference in the ankle plantar (P = 0.21) and dorsiflexor (P = 0.24) muscle volumes of T2DM patients on a statin compared with patients not on a statin.

Patients with diabetes on a statin were older, and it is well known that muscle mass declines as a result of aging due to a reduction in skeletal muscle fiber number, size, and length (3). Although it has been suggested that a reduction in muscle size can result in reduced motor neuron unit activation and decreased muscle force and power generation (3), this was not observed in our study (2). Another possible explanation is that the older individuals on a statin have a reduction in physical activity, which particularly affects the antigravity muscles such as the knee extensors. Reduced muscle size, reduced muscle activation capacity, and aging are of course highly correlated with reduced muscle strength (4), but in our study (2) there was no difference between those patients taking a statin compared with those not taking a statin.

The loss of muscle mass is also associated with diabetic neuropathy, and in our study (2) vibration perception threshold (P = 0.0001) and Neuropathy Disability Score (P = 0.09) were significantly higher, indicative of neuropathy in patients with diabetes on a statin compared with patients not on a statin, similar to the findings of Treiber et al. (1). Of course, whether or not a T2DM patient is on a statin will always be confounded by age, cardiovascular risk, and the presence of other microvascular complications (5). Furthermore, contrary to the studies cited by Treiber et al. (1), a recent large study has shown that treatment with statins may prevent the development of diabetic neuropathy (6). And, of course, whether or not patients are taking a statin depends on whether they can tolerate it, particularly in relation to vitamin D deficiency (7). A large prospective study is required to establish the potential relationship between statin use, muscle volume and strength, and walking ability and falls in diabetes.

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