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Peripheral Neuropathy Common in Youth With Type 2 Diabetes

Miriam E. Tucker | November 27, 2013

Around a quarter of young people with type 2 diabetes also have diabetic peripheral neuropathy, a new pilot study indicates.

The prevalence of diabetic peripheral neuropathy found among the youngsters with type 2 diabetes far exceeded that of young people with type 1 diabetes and approached that of adults with type 2.

"We were surprised that the youth with T2D had such a high prevalence," study principal investigator Eva L. Feldman, MD, PhD, the Russell N. DeJong Professor of Neurology and director of the A. Alfred Taubman Medical Research Institute at the University of Michigan, in Ann Arbor, told *Medscape Medical News*.

However, she added that a similarly high diabetic peripheral neuropathy rate was found among youths with type 2 diabetes in a previous study from Australia (*Diabetes Care.* 2006;29:1300-1306) and that it is likely related to longer duration of diabetes and a more atherogenic lipid profile.

"Diabetic peripheral neuropathy is an early and significant complication of diabetes in [youths with] both types 1 and 2. Because of the significant disability brought on by [this, including] pain, poor quality of life, ulcers, and amputations, it is essential that physicians be aware that diabetic peripheral neuropathy can occur early," Dr. Feldman told *Medscape Medical News*.

The data, from the ongoing population-based SEARCH for Diabetes in Youth study, were published in the December issue of *Diabetes Care* by Mamta Jaiswal, MBBS, PhD, from the department of neurology at the University of Michigan, and colleagues.

In the article, the authors note that the American Diabetes Association (ADA) recommends that children and adolescents with type 2 diabetes be screened for diabetic peripheral neuropathy at diagnosis and that those with type 1 diabetes be screened 5 years after diagnosis.

Diabetic Peripheral Neuropathy and CVD Risks Related

The total pilot study population of 399 youths (diagnosed before age 20 years) included 329 with type 1 diabetes and 70 with type 2. Those with type 1 were significantly younger (15.7 vs 21.6 years), had a shorter diabetes duration (6.2 vs 7.6 years), and were more likely to be non-Hispanic white (79.3% vs 28.5%).

The youth with type 2 had higher body mass index scores, waist circumference, blood pressure, and lipid levels than did those with type 1 diabetes (all $P < .001$). However, HbA_{1c} values did not differ significantly between the 2 groups — 8.8% for the youth with type 1 and 8.5% for those with type 2 — both higher than the ADA-recommended HbA_{1c} of 7.5% or below for this age group, Dr. Jaiswal and colleagues note.

All patients were screened for diabetic peripheral neuropathy using the validated Michigan Neuropathy Screening Instrument (MNSI), which includes a 15-item questionnaire (MNSIQ); they also underwent an examination for foot abnormalities and an assessment of distal vibration perception and ankle reflexes (MNSIE).

Using a cutoff MNSIE score of >2, the prevalence of diabetic peripheral neuropathy was 8.2% among those with type 1 diabetes and 25.7% for those with type 2. In comparison, the prevalence of diabetic peripheral neuropathy among adults with diabetes ranges from 30% to 70%, depending on the criteria used, the authors say.

The youth with diabetic peripheral neuropathy were significantly older, had longer diabetes duration, greater waist circumference, higher blood pressure, and more atherogenic lipid profiles and microalbuminuria compared with those without the condition. However, HbA_{1c} levels did not differ between those with and those without diabetic peripheral neuropathy, at 9.0% vs 8.8%, respectively.

Although the unadjusted odds for diabetic peripheral neuropathy were nearly 4-fold greater for type 2 diabetes compared with type 1 (odds ratio, 3.8), this difference was no longer significant after adjustment for other factors, including diabetes duration, waist circumference, blood pressure, high-density lipoprotein cholesterol level, and microalbuminuria.

Screening Essential

"Early diagnosis of diabetic peripheral neuropathy combined with improved diabetes control, improved control of dyslipidemia and hypertension, and lifestyle interventions can significantly improve diabetic peripheral neuropathy outcomes," Dr. Feldman told *Medscape Medical News*.

"Simple clinical assessments are essential," she said, including testing vibration perception and light touch at the great toe and testing for the presence of ankle reflexes.

Indeed, those elements, which are recommended by the ADA, are incorporated into the noninvasive MNSI screen, the authors note in their article.

Following this pilot study, the investigators are now collecting data on more patients. "With a large sample size of nearly 3000 youth with diabetes, we would be able to better estimate the prevalence by age group, gender, and racial/ethnic distribution and have improved power to more fully define the risk factors for the development and progression of diabetic peripheral neuropathy," Dr. Feldman concluded.

The authors report no relevant financial relationships.

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