MedicalXpress

# Diabetics with foot complications have impaired cognitive function

December 7 2015

In a first-time study, Ben-Gurion University of the Negev (BGU) researchers revealed a new finding in people with diabetes who suffer from "diabetic foot." Patients with this condition also have significantly impaired cognitive function.

"This study shows a clear correlation between diabetes and cognitive deterioration," says Rachel Natovich, a recent BGU Ph.D. graduate. "Diabetes is a multi-system condition that affects the brain, and the risk of a diabetic developing dementia is twice that of a 'normal' person. Diabetic foot is a symptom that the diabetes is causing deterioration of the entire cardiovascular system."

Diabetic foot is one of the most severe but also preventable long-term complications of diabetes mellitus. The symptoms appear as non-healing foot ulcers and necrosis and, if untreated, can lead to multiple amputations. The lifetime risk of a person with diabetes developing a foot ulcer could be as high as 25 percent.

"There is no research focusing on the cognitive functioning of these patients, despite the fact that the micro and macro vascular changes underlying the diabetic foot are systemic, occurring in many different organs, including the brain," says Dr. Natovich, who conducted the study. "Presently, research regarding diabetic foot focuses mainly on epidemiology, prevention and ulcer treatment."

According to the research, those with diabetic foot remember less, have

decreased concentration, difficulty with learning, decreased inhibition, slower cognitive and psychomotor responses, and decreased verbal fluency. This implies that diabetic patients with diabetic foot complication suffer cognitive difficulties above and beyond those known in the general diabetic population. The cognitive abilities of the two groups were similar prior to developing the condition. However, the current cognitive status of diabetic foot patients in the study is significantly impaired.

"This new information is an important contribution to the healthcare of patients due to their increased risk for medical complications and the unique challenge that they present to healthcare providers," Natovich says. "Successful adherence to medical recommendations requires considerable cognitive abilities like intact concentration, memory and executive functions."

Natovich proposes practical changes to the treatment strategy, including:

- Patients with diabetic foot must be routinely monitored for cognitive changes. Early detection of cognitive decline will enable initiating proper intervention.
- Due to difficulties with memory, attention and executive functions, the family and healthcare provider must take a more active role in patient care.
- Patients with diabetic foot could benefit from participation in group treatment aimed at improving diabetic control, nutrition and physical activity.
- Diabetic patients should receive psycho-education regarding possible cognitive complications of the disease and the importance of proper disease control for preservation of cognitive abilities.

Natovich completed her Ph.D. under Prof. Talma Kushnir of BGU's

Department of Public Health, Faculty of Health Sciences, and Dr. Ilana Harman-Bahm from Soroka University Medical Center. Dr. Natovich was awarded several prizes for this research, including the Diabetic Foot Best Presentation Award from the American Diabetes Association (ADA). She presented her findings at the ADA Conference earlier this year.

Provided by American Associates, Ben-Gurion University of the Negev