Prevalence of Lower Extremity Disease Associated with Normal Glucose Levels, Impaired Fasting Glucose, and Diabetes Among U.S. Adults Aged 40 or Older


Scientific Literature Review

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Podiatric Relevance: In treating the foot and ankle, podiatric surgeons deal with the complications of diabetes on a daily basis. Two of the common and problematic complications are peripheral arterial disease (PAD) and peripheral neuropathy (PN). The complications resulting from these two conditions contribute to the morbidity associated with the diabetic foot and ankle. In hopes of preventing major morbidity associated with lower extremity disease (LED) in diabetics, this study aims to compare the prevalence of (LED) among U.S. adults aged 40 or older with previously diagnosed diabetes, undiagnosed diabetes, impaired fasting glucose, and normal glucose levels.

Methods: The 1999-2004 NHANES (National Health and Nutrition Examinations Surveys) was utilized to analyze a representative sample of 3607 US Adults. This population had fasting glucose examination performed and underwent a lower extremity disease examination. The PAD status was defined as ABI < 0.9 in either leg and PN as having at least one insensate area out of six standard points using a constant 5.07g Semmes-Weinstein monofilament. Subjects were considered to have LED if PAD, PN, a self reported history of non-healing ulceration or observed foot lesion/amputation was present. Subjects were stratified into 4 groups based on results of fasting glucose examination and interview: normal glucose level (<100mg/dl), impaired fasting glucose (100-125mg/dl), undiagnosed DM (≥126mg/dl) with no previous history of DM, and previously diagnosed DM.

Results: The prevalence of PN was lowest among persons with normal glucose (10.5%) and impaired fasting glucose (11.9%) and highest among those with undiagnosed (16.6%) and diagnosed diabetes (19.4%). PAD prevalence was also lowest among persons with normal glucose (3.9%), similar among those with impaired fasting glucose (5.4%), and significantly higher among those with undiagnosed (9.2%) and diagnosed diabetes (7.5%). Any LED was present in about 27% of persons with both undiagnosed diabetes and diagnosed diabetes.

Conclusions: This study confirms the importance of early evaluation and identification of the signs/symptoms of diabetes. Diabetic patients are routinely evaluated for LED. However, LED was nearly identical in the undiagnosed and diagnosed diabetes groups, both of which had significantly higher values than the normal and impaired glucose level groups. Newly diagnosed diabetics should be evaluated routinely for LED, and all patients evaluated by the podiatric physician with LED should be evaluated for diabetes, as this study shows many may be undiagnosed diabetics. With the diabetic patient population on the rise we as podiatric surgeons must be leaders in prevention of the morbidity associated with diabetic LED.