

From the ¹Endocrinology Sections, Saad Specialist Hospital, Al Khobar, Saudi Arabia; and the ²Department of Endocrinology, Cleveland Clinic Foundation, Cleveland, Ohio.

Address correspondence to Wiam I. Hussein, MD, FACE, FACP, Section Head, Diabetes and Endocrinology, Saad Specialist Hospital, Al Khobar, Saudi Arabia. E-mail: husseinw@pol.net.

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Poor Glucose Control in the Year Before Admission as a Powerful Predictor of Amputation in Hospitalized Patients With Diabetic Foot Ulceration

Although there is a strong association between lower-extremity amputation (LEA) and HbA_{1c} (A1C) in diabetic patients (1,2), little information is available on glucose control in the period preceding and following LEA (3). Our objective was to evaluate the predictors of LEA and to examine the role of blood glucose control during the year before and the year after admission. A total of 122 diabetic patients (82 men and 40 women aged 69.7 ± 10.9 years, disease duration 19.7 ± 10.4 years) consecutively admitted for diabetic foot ulcers to the Medicine Department of United Hospitals of Bergamo between January 2003 and December 2004 were enrolled in our observational study and assigned to one of three groups.

The prevalence of long-term diabetes complications was similar in each group; >75% had peripheral polyneuropathy, nephropathy, retinopathy, and ischemic cardiomyopathy, and >90% had peripheral vascular disease. Glycemic control was evaluated before and after admission using the mean of three A1C levels mea-

sured in the year preceding admission and in the year following discharge. Patients were reevaluated 1 year after admission and assigned to one of three groups: group A, major amputation (n = 28); group B, minor amputation (n = 44); and group C, no amputation (n = 50). Major amputation was defined as amputation above the ankle, and minor amputation was defined as amputation below the ankle.

Data are shown as means ± SD. Categorical variables were compared by χ^2 test, continuous variables by ANOVA.

In the year before admission, mean A1C levels were significantly higher in groups A (9.7 ± 1.5%) and B (9.1 ± 1.9%) than in the group C (7.9 ± 1.3%, P < 0.001 vs. A and P < 0.05 vs. B). Similarly at admission, A1C levels were higher in groups A (10.1%) and B (9.4 ± 1.8%) than in the group C (8.1 ± 1.5%, P < 0.001). A1C levels decreased in all groups after 1 year of follow-up: 8.4 ± 1% in group A, 7.9 ± 1.3% in group B, and 7.5 ± 1.2% in group C (P < 0.05 vs. A).

At admission, patients in groups A and B had a higher ulceration grade according to Wagner's classification (3.9 ± 0.4 and 3.7 ± 0.4, respectively) than those in group C (2.7 ± 1.1, P < 0.001). The prevalence of patients with LDL cholesterol levels <100 mg/dl was significantly lower in groups A (38%) and B (40%) than in group C (65%; P < 0.01 vs. A and P < 0.05 vs. B). More patients in group C (75%, P < 0.05) were on aspirin therapy than in groups A (61%) and B (59%). The frequency of optimal blood pressure control (\leq 130/80 mmHg) was ~50% in all groups. Patients in group A (21%, P < 0.001 vs. B and C) received less follow-up with a specialist in a diabetes clinic than patients in the groups B (50%) and C (56%).

Although hypertension and cholesterol levels were inadequately treated, and aspirin therapy underused in a large number of these patients, multivariate logistic regression analysis revealed that only A1C level and ulceration grade were independently associated with LEA.

In conclusion, poor metabolic control and inadequate treatment of modifiable risk factors are powerful predictors of LEA in patients hospitalized for diabetic foot ulcers. We suggest that all diabetic patients with poor metabolic control and risk factors associated with cardiovascular disease receive early referral for education

and aggressive treatment with a diabetes clinic.

GIUSEPPE LEPORE, MD¹

MARIA L. MAGLIO, MD²

CARLO CUNI, MD³

ALESSANDRO R. DODESINI, MD¹

ITALO NOSARI, MD¹

BRUNO MINETTI, MD²

ROBERTO TREVISAN, MD, PHD¹

From the ¹Diabetes Unit, Ospedali Riuniti, Bergamo, Italy; the ²Medicine Unit, Ospedali Riuniti, Bergamo, Italy; and the ³Orthopaedic Surgery Unit, Ospedali Riuniti, Bergamo, Italy.

Address correspondence to Dr. Giuseppe Lepore, Diabetes Unit, A.O. Ospedali Riuniti, Largo Barozzi, 1, 24128 Bergamo, Italy. E-mail: glepore@ospedaliuniti.bergamo.it.

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Type 1 Diabetes and Autism Association Seems to Be Linked to the Incidence of Diabetes

We read with interest the article of Freeman et al. (1) reporting a higher prevalence of autism spectrum disorder in pediatric patients with type 1 diabetes in Toronto than in the general population (0.9% [95% CI 0.3–1.5 vs. 0.34–0.67]).

The finding was, however, not confirmed by Harijutsalo and Tuomilehto (2), who reported a prevalence of autism spectrum disorders in type 1 diabetic patients similar to that in the population aged <18 years in northern Finland