

Sensory Threshold Testing

We read with much interest the recent study by Sosenko et al. (1). Studies that screen for both NIDDM and polyneuropathy in subjects without a history of glucose intolerance are rare and therefore welcome. In general, their cross-sectional data agree very well with our findings in a general Caucasian population. We also found that vibration threshold is related to glycemic level, controlling for age, height, and sex. In our study, this relationship persisted when we excluded diabetic subjects from analysis, suggesting that even in the range of normal and impaired glucose tolerance, a relationship between glycemia and peripheral nerve function can be detected (2). The longitudinal data of Sosenko et al. (1) are of considerable interest as well. However, in our opinion, two methodological aspects need to be addressed.

Firstly, the investigators were not blinded with respect to the subject's glucose tolerance status at the follow-up sensory threshold testing. Even with the standard algorithm used, the measurements may involve a certain amount of subjective judgment on the part of the investigator. Therefore, an overestimation of thresholds of diabetic subjects cannot be excluded.

Secondly, the authors report that in the newly detected NIDDM subjects all sensory thresholds show a small, but statistically significant increase from baseline to follow-up. However, given the fact that some other time-dependent influences, such as aging, may be operating, this finding should be interpreted very cautiously. As this potential source of bias was controlled for in the study design by including a matched sample of normal control subjects, the obvious statistical approach would have been to calculate each subject's change from base-

line and to compare the mean changes between the NIDDM and control groups. In our view, only such an analysis could justify the conclusion that in the early course of NIDDM "there appears to be a deterioration in sensory function as diabetes progresses."

J. NICO D. DE NEELING, MS
LEX M. BOUTER, PHD
ROBERT J. HEINE, MD, PHD

FROM THE INSTITUTE FOR RESEARCH IN EXTRAMURAL MEDICINE, AMSTERDAM, THE NETHERLANDS.

ADDRESS CORRESPONDENCE TO J. NICO D. DE NEELING, MS, INSTITUTE FOR RESEARCH IN EXTRAMURAL MEDICINE, VAN DER BOECHORSTSTRAAT 7, 1081 BT AMSTERDAM, THE NETHERLANDS.

NIDDM, NON-INSULIN-DEPENDENT DIABETES MELLITUS.

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Response to Dr. De Neeling and Associates

We appreciate the interest of de Neeling and associates in our recent paper. There were two criticisms in their letter that we wish to address.

The first was concern over the fact that the investigators were not masked to glucose tolerance status for the follow-up visits. We feel that it is unlikely that the results were biased on this basis. The testing methodology used would appear to preclude a relative over-

estimation of the progression of threshold changes in the diabetic subjects or a relative underestimation of the progression of threshold changes in the nondiabetic subjects.

The second criticism was over the statement that there is an apparent deterioration of sensory function as diabetes progresses. It was not our intent to overstate the findings. This should be evident from the wording of the sentence in question and a full reading of the discussion section. However, de Neeling and associates suggest an analysis that could provide useful information. Thus, we have compared changes in thresholds from baseline between the matched diabetic and nondiabetic subjects. The *P* values for the differences are: vibration at hallux, *P* = 0.417; vibration at index finger, *P* = 0.047; warm threshold at hallux, *P* = 0.125; cool threshold at hallux, *P* = 0.015. These data are generally consistent with our original conclusion.

JAY M. SOSENKO, MD
RAMON SOTO, MD
MARTA KATO, MD
RONALD B. GOLDBERG, MD

FROM THE PRIMARY CARE INTERNAL MEDICINE, DEPARTMENT OF MEDICINE, DIVISION OF GENERAL MEDICINE, UNIVERSITY OF MIAMI, MIAMI, FLORIDA.

ADDRESS CORRESPONDENCE TO JAY M. SOSENKO, MD, PRIMARY CARE INTERNAL MEDICINE, DEPT. OF MEDICINE, DIVISION OF GENERAL MEDICINE, UNIVERSITY OF MIAMI, P.O. Box 016960 (R-103), MIAMI, FLORIDA 33101.

Diabetes in the East African Islands of Zanzibar

I read with much interest about the problem of diabetes in Bulgaria (*Diabetes Care* 15:930-31, 1992). The let-

ter gave me a lot more information about diabetes in that country than what I knew.

I have written below, a short account about diabetes in the Islands of Zanzibar, Tanzania, in East Africa. Because little is known about diabetes in these Islands, it is my hope that the account will provide important information and raise interest in researchers. Our intention to develop a population-based diabetes registry under the auspices of DIAMOND would enable us to determine much more about the disease in this developing African country.

The East African islands of Zanzibar comprise 2 major islands—Unguja, the sister island of Pemba—and 20 other smaller islands with a total population of ~657,800 inhabitants. Diabetes is fast becoming a disease of major public-health importance accounting for ~4% of all hospital disease-specific deaths in these islands (1). Limited data on the occurrence of diabetes in Zanzibar suggest that the disease may be increasing in frequency, particularly NIDDM (2,3). Although obesity does not appear to be strongly associated with NIDDM as in Western countries, a higher proportion of new onset cases are town residents (4), which suggests that urbanization is an etiological factor, as shown elsewhere (5). The estimated crude age 0–19 annual incidence of IDDM of ~2.1/100,000 (4) is higher than might have been expected in a nonwhite African population and may result from admixture with Arab populations, which have traded and settled in these islands for centuries.

Diabetes health care in the Zanzibar islands is generally poor. Although care is provided free of charge at two clinics (one on each island), the prohibitive cost of public transportation makes frequent visits improbable by patients living in the peripheries. The clinics lack sufficiently trained health workers and are only able to run basic investigations such as blood glucose estimation and urinalysis, tests that are frequently un-

available. Despite its problems, the existing primary health-care system is favorable to the development of diabetes research and population-based registries in a manner similar to that prescribed for island populations in the Caribbean (6). The health-care system, confined boundaries, and limited population migration make Zanzibar an ideal place for diabetes research, particularly with respect to IDDM. Because so little is known about the epidemiology of IDDM in black sub-Saharan Africa, these islands could benefit from international collaboration and research (7).

DAZ, founded in 1986, is a non-governmental organization that caters to diabetic individuals and their families. It has played a major role in promoting diabetes education and in improving diabetes health care in the Islands. In 1988, a 5-yr cooperative project was initiated between DAZ and the Finnish Diabetes Association (8). The project's goal was to improve diabetes health care by training health workers and providing assistance with drugs, equipment, and transportation. These efforts have been important in addressing some of the major problems confronting diabetes care in Zanzibar, including underdiagnosis, ignorance about the cause of diabetes, and poor management. Room for much improvement remains however. This entails decentralization and incorporation of diabetes care into the existing primary health-care system, vigorous health education to increase public awareness of diabetes, and development of a standardized management protocol. The importance of international cooperation and collaboration cannot be overemphasized.

MOHAMMED H. MAKAME, MD, MPH

FROM THE DIABETES RESEARCH CENTER OF CHILDREN'S HOSPITAL, PITTSBURGH, PENNSYLVANIA.

ADDRESS CORRESPONDENCE TO MOHAMMED MAKAME, MD, MPH, DIABETES RESEARCH CENTER OF CHILDREN'S HOSPITAL, 3460 FIFTH AVENUE, PITTSBURGH, PA 15213.

NIDDM, NON-INSULIN-DEPENDENT DIABETES

MELLITUS; IDDM, INSULIN-DEPENDENT DIABETES MELLITUS; DAZ, DIABETES ASSOCIATION OF ZANZIBAR.

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Micral-Test

A new semiquantitative test for urinary albumin

Microalbuminuria is an acknowledged prognostic marker for development of diabetic nephropathy (1). To facilitate the estimation of low urinary albumin levels (≤ 20 mg/L) in nonlaboratory environments, numerous semiquantitative immunochemical tests have been marketed recently (2). We have evaluated the performance of one