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 baseline 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."

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NIDDM, NON-INSULIN-DEPENDENT DIABETES MELLITUS.

References

1. Sosenko JM, Kato M, Soto R, Goldberg RB: Sensory function at diagnosis in early stages of NIDDM in patients detected through screening. *Diabetes Care* 15:847–52, 1992
2. De Neeling JND, Heine RJ, Bertelsmann FW, Bouter LM: Vibratory perception and thermal discrimination in relation to glycemic level in a Caucasian population. *Diabetologia* 35 (Suppl. 1):A15, 1992

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 overestimation 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.

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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-