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## Eye color and IDDM

It has been shown that a relatively large proportion of IDDM patients in southern Germany have a low-pigment eye color (blue or green) compared with nondiabetic control subjects (66 vs. 38%, $P < 0.01$) (1). Although no studies exist concerning the exact percentage, it is commonly accepted that dark eye colors prevail among Greeks.

The eye color of 42 randomly selected IDDM patients and 135 nondiabetic control subjects was evaluated in daylight by the same observer. Study subjects were all Greek in origin. They did not differ concerning mean age and sex (30.1 ± 11.2 vs. 32 ± 11.5 yr of age, $P = 0.44$; M/F 22/20 vs. 65/70, $P = 0.63$). Classification was done empirically into high-pigment eye color (brown or black iris) and low-pigment eye color (blue or green iris). The prevalence of low-pigment eye color was not significantly different among IDDM patients and control subjects (33.33 vs. 23.7%, $P = 0.21$).

In conclusion, we believe that the described finding of an increased frequency of low-pigment eye color in IDDM patients is not a unanimous observation. The discrepancy between the German study and this one is perhaps attributable to ethnic differences of the studied samples.

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## Comments on "Prevalence of Carotid Atherosclerosis in Diabetic Patients" by Kawamori et al.

Kawamori et al. (1) give impressive data of their ultrasound measurements of the carotid artery wall. The results concerning the great majority of their patients (275 NIDDM patients) are evident. The number of the investigated IDDM patients, however, is very small, and we cannot agree with the statements concerning young diabetic patients.

The authors investigated 20 IDDM patients 21–66 yr of age (the NIDDM patients were >30 yr of age). Unfortunately, they do not mention how many patients were included in the group 20–29 yr of age. The number must be far lower than 20, because it is only a part of the group of 20 IDDM patients. In spite of the small number of patients the authors state that the IMT was significantly greater in diabetic than in nondiabetic subjects of this age-group. They conclude, that "young diabetic subjects were found to have advanced atherosclerosis of the carotid arteries." First, an increased IMT is believed to be a sign of early, not advanced atherosclerosis (2–4). Second, our experience would lead us to reject the major conclusion made by the authors.

For the past 2 yr, we have performed a prospective ultrasound study of the carotid artery wall (measuring IMT) in IDDM patients ≤40 yr of age. Initial results were presented at the 28th Annual Meeting of the EASD in Prague 1992 (5), including the data of 125 patients. We found alterations of the carotid artery wall (increased IMT and/or plaques) in 21% of our patients with diabetes duration >2 yr. Patients with an increased IMT more often showed nephropathy than patients with normal wall thickness, the difference was highly significant. Moreover, patients with additional plaques showed hypertension and hypercholesterolemia significantly more often than patients with normal carotid artery wall.

Our investigations suggest that the risk of early atherosclerotic lesions of the carotid artery wall in young IDDM patients is increased in the presence of some accompanying diseases, especially nephropathy. IDDM patients without late complications or accompanying dis-

eases have no greater IMT of the carotid arteries than nondiabetic subjects of the same age-group (in our study, ≤40 yr of age). So IDDM alone does not seem to be a risk factor for developing premature atherosclerosis. Meanwhile, we studied >160 patients, continuing to confirm our previous results.

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NIDDM, NON-INSULIN-DEPENDENT DIABETES MELLITUS; IDDM, INSULIN-DEPENDENT DIABETES MELLITUS; IMT, INTIMA-MEDIA THICKNESS; EASD, EUROPEAN ASSOCIATION FOR THE STUDY OF DIABETES.

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## Response to Frost

We reported advanced atherosclerosis observed in 20 IDDM patients (1). We had been energetically examining carotid arteries of young IDDM patients. And, at the 14th International Diabetes Federation Congress held in Washington, DC, in 1991, we demonstrated the significantly thicker carotid arterial wall in diabetic children compared with age-matched healthy, nondiabetic children (2). Furthermore, we presented the results in 66 diabetic patients 7–29 yr of age at "The International Symposium on Epidemiology and Etiology of IDDM in the Young" held in Paris, France, in March 1991. The measured IMTs of the carotid arterial wall were 0.49 ± 0.09 (means ± SD) and 0.73 ± 0.27 mm in IDDM patients 7–19 and 20–29 yr of age, respectively. The values were significantly larger than those of age-matched normal subjects (0.42 ± 0.05 vs. 0.52 ± 0.07 mm in subjects 14–19 and 20–29 yr of age, respectively). Those 66 patients, except 1, had no clinically determined nephropathy, neuropathy, or retinopathy. Now, the number of the measured IDDM patients increased to about 200 patients, and the results strongly indicated that young IDDM patients had advanced atherosclerosis in their carotid arteries, which precedes the onset of microangiopathies.

As far as the middle-aged NIDDM patients are concerned, we also examined the relationship between IMT and degrees of diabetic microangiopathy and macroangiopathy. Our preliminary results showed high correlations of nephropathy and neuropathy with IMT. Previous reports showed high incidence of nephropathy and neuropathy in diabetic patients with long duration of diabetes (>10 yr). Our data showed high incidence of these complications in diabetic patients with even shorter duration (0–10 yr).

These data showed that in diabetic patients, IMT correlates with the degrees of diabetic microangiopathy. However, young IDDM patients without any diabetic microangiopathies, hypertension, dyslipidemia, or obesity, but with hyperglycemia showed early atherosclerosis in their carotid arteries.

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IDDM, INSULIN-DEPENDENT DIABETES MELLITUS; NIDDM, NON-INSULIN-DEPENDENT DIABETES MELLITUS; IMT, INTIMAL-MEDICAL THICKNESS.

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