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### Glucose Control and Development of Diabetic Eye Disease

A recent study further supports our understanding that stable plasma glucose protects against diabetic retinopathy. According to a cohort study by Alcaniz Hospital in Spain (J Diab Comp 17(2)78-81, 2003), fasting plasma glucose (FPG) variability was found to be a significant risk factor for retinopathy in type II diabetic patients. In this study, 130 type II diabetic patients without retinopathy were recruited from June 1994 to June 1998. The fundus was reexamined between November 2000 and June 2001 (mean follow-up period was 5.2 years). The effects of FPG and mean hemoglobin A1c were correlated to cumulative incidence of retinopathy by stratified and multivariate models. The cumulative incidence of retinopathy was 36.2 percent and increased along all of the quartiles of FPG variability. A statistically significant association existed between FPG variability and the onset of retinopathy in type II diabetic patients after adjustment for confounders, time sequence, dosage response gradient and biological plausibility.

This study is consistent with prior cumulative evidence that duration and control of diabetes are related to prevalence of diabetic retinopathy. The Diabetes Control and Complications Trial (DCCT)(Ophth 102:647-661,1995) demonstrated that tight glucose control in type I diabetics reduced the microvascular complications of neuropathy, nephropathy and retinopathy. Specifically, intensive glycemic control resulted in less progression to severe nonproliferative and proliferative retinopathy, the incidence of diabetic macular edema, and the need for retinal laser treatment. While the DCCT's results apply exclusively to type I patients, the Wisconsin Epidemiological Studies of Diabetic Retinopathy (Ophth 91:1464-1474,1984) included both type I and II diabetics and demonstrated that improved blood sugar control was associated with a lower rate of retinopathy in both groups. Diabetic patients can be reassured that their commitment to blood sugar control and compliance with medical follow-up is crucial to guard against retinopathy and other microvascular disease complications.

In conclusion, the risk for diabetic vascular damage increases with disease duration and decreases with improved glycemic control in both type I and II diabetics. At least some degree of retinopathy is present in 99% of type I diabetics and in 60% of type II diabetics after 20 years, and 50% of diabetics develop at least some degree of retinopathy by 7 years. Early detection is the best protection against visual loss from diabetes. For this reason, patients with diabetes should have eye examinations at least once a year. Those patients with documented retinal changes may need to be followed more often depending on their severity.

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We dedicate ourselves to enhancing the quality of life for every individual whose life we touch, by helping each to see his or her best, and by preserving our patients' vision and eye health throughout life.

- Worldwide diabetic guidelines recommend annual screenings with a dilated eye exam from an eye-care specialist.
- Estimations of the rate of annual eye exams vary by country and study, but the rate of screening is generally fairly low (40 to 60%).

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