

# Screening for Diabetic Retinopathy

In this issue, Malone et al. (1) use their analysis of the retinal photographs taken in the Diabetes Control and Complications Trial (DCCT) to try to challenge the well-established dictum that it is not useful to perform early screening (<5 years duration) for diabetic retinopathy in juvenile-onset type 1 diabetes. I share their enthusiasm for preventing vision loss; however, in my judgment, the data do not support their challenge, but rather strongly support the current recommendation.

Screening examinations or any tests performed in medicine should only be done when the results have a reasonable probability of altering the treatment, when the risk-to-benefit ratio of undergoing the test is favorable for the individual patient, and when the cost-to-benefit ratio is competitive with other uses of health care dollars. Early screening for diabetic retinopathy in juvenile-onset type 1 diabetes fails on all three counts.

First, consider that not one of the 1,613 patients screened for the DCCT at <5 years duration of diabetes had proliferative retinopathy with high-risk characteristics that required laser treatment, and only 6 patients (0.4%) had preproliferative retinopathy. Thus, the ophthalmic management was unaltered by early screening. It has already been recommended, based on the DCCT results, that all type 1 diabetic patients attempt tight glycemic control (2). Thus, the diabetes management of such patients would be unaltered.

Malone et al. (1) argue that the finding of a few minor lesions of diabetic retinopathy would help motivate patients to achieve tight control or help clinicians to determine which patients should be selected to receive tight control. In reality, if patients are not motivated by the findings of the DCCT that suggest that tight control substantially reduces the risks of blindness (proliferative retinopathy) (3) and incipient kidney failure (albuminuria), then it is doubtful that seeing a few red dots on a photograph will motivate them. Deciding which patient will receive tight control is much more likely to be based on patient motivation, the commit-

ment of the doctor and their staff, and necessary insurance coverage, as compared with doctors selectively allocating care.

Second, patients would actually suffer if needless examinations were mandated. They would waste time going to somewhat unpleasant and fruitless examinations and perhaps decide to forgo eye examinations in the future, based on repeated negative examinations. If those exams were performed for clinical purposes rather than for research, and if it takes half a day to go to an eye examination, then a cohort the size screened in the DCCT would spend 806 days (2.2 years) of life unproductively.

Third, ophthalmic resources and health care dollars would be wasted rather than employed in examining patients who actually are at risk of having proliferative retinopathy. That would be particularly tragic, as was shown by Klein et al. (4) in population-based studies that revealed that at least 25% of type 1 diabetic patients develop proliferative retinopathy by 15 years duration (up to 71% in a lifetime), that 46% of such patients had not received indicated photocoagulation, and that 11% of patients eligible for laser treatment had not seen an ophthalmologist within 2 years.

The recommendations of the American Diabetes Association, the American College of Physicians, and the American Academy of Ophthalmology (5) are as follows: type 1 diabetic patients with onset at 0–30 years should have the first screening examination at 5 years duration, whereas type 1 diabetic patients with later onset and type 2 diabetic patients should receive a dilated retinal examination by an ophthalmologist at diagnosis. The American Academy of Ophthalmology (6) has published a schedule for subsequent examinations and their content.

Following those recommendations and providing laser photocoagulation when indicated can reduce the risk of blindness by two-thirds (28–12%) (7). Assigning tight glycemic control in the DCCT reduced the risk of developing proliferative retinopathy by 76% in patients followed for 9 years (average 18

years duration) (3) and reduced the risk of incipient renal failure to a similar degree. A cost-benefit analysis of timely ophthalmic care indicates that it is a good expenditure of health care dollars (8).

At diagnosis, juvenile-onset type 1 diabetic patients do not need a dilated retinal examination and certainly do not need a set of retinal photographs, but they do need a realistic explanation of diabetic eye disease and what they can do to substantially reduce what had previously been a 15% risk of blindness (9). They also need an explanation of the phenomenon of hyperglycemic myopia; they must know that if their distance vision becomes blurred in both eyes while their near vision remains clear, then they should measure their glucose and perhaps visit the diabetologist, but they should not panic, and they do not need to see the eye doctor just yet.

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