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DIABETES Q&A

Questions and Answers About Diabetes and the Eyes

Author:
Kim A. Carmichael, MD—*Series Editor*

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Q. What are the most common eye disorders occurring in persons with diabetes?
A. Cataracts are 2 to 5 times more likely to occur in adults with diabetes, and they are also more likely to occur at an earlier age in this population.[1] The incidence of glaucoma is nearly double in adults with diabetes.[1] Retinopathy occurs in 40% to 45% of all persons diagnosed with diabetes in the United States, although only half of them know that they have this complication.[1]

Q. How common is diabetic retinopathy in persons with diabetes?
A. Diabetic retinopathy is the leading cause of impaired vision and blindness in adults aged 20 to 74 years in developed countries, according to a recent position statement by the American Diabetes Association.[2] A pooled worldwide meta-analysis of 35 studies spanning 28 years indicated a prevalence of 35.4% among all persons with diabetes, with 7.5% having proliferative diabetic retinopathy (PDR).[3]

Q. What are the differences between proliferative and nonproliferative diabetic retinopathy?
A. Retinopathy may progress through mild, moderate, and severe nonproliferative diabetic retinopathy (NPDR) stages and eventually become PDR. In the nonproliferative stages, swelling and leakage of the small retinal vessels may occur, sometimes leading to retinal or macular edema. In PDR, there is a growth of new blood vessels with associated increased risks of

bleeding into the vitreous space, retinal detachment, and sudden visual loss.[1] Diabetic macular edema (DME), which can occur in any of these stages, is the most common cause of vision loss associated with diabetic retinopathy, occurring in approximately 50% of all persons with the condition.[1]

Q. What are the risk factors for progressive eye disease in persons with diabetes?

A. The duration of diabetes, both type 1 and type 2, is a major risk factor for all types of diabetic retinopathy, with a 13% to 16% increased risk per year.[2] Severe NPDR in persons with type 2 diabetes is much more likely to progress to PDR within 10 years of baseline examination.[4] Pregnancy and puberty are also significant risk factors.[2] Contrary to earlier reports, cataract surgery has not been shown to accelerate progression.[5]

Hyperglycemia is also a major risk factor for retinopathy, with a 12% to 73% increased odds ratio per each 1% elevation in hemoglobin A_{1c} level.[2] In type 1 diabetes, intensive management diminished overall progression by 34% to 76%, with a 43% reduction for each percentage point decrease in hemoglobin A_{1c}.[6] Similarly, in type 2 diabetes, each percentage point decrease in hemoglobin A_{1c} has been found to be associated with a 35% reduction in the risk of overall microvascular complications, including retinopathy.[7]

Hypertension is associated with an increased risk of progression of retinopathy, but no additional benefit is associated with reducing the target systolic blood pressure from 140 mm Hg to 120 mm Hg.[8] Dyslipidemia also has been shown to be associated with diabetic retinopathy, with treatment potentially reducing progression by up to one-third.[2]

Q. How is eye disease detected in persons with diabetes?

A. Although cataracts may cause some visual blurring, glaucoma and retinopathy frequently advance significantly before becoming symptomatic.[1] The first step is a comprehensive eye examination, including visual acuity testing, tonometry, dilated visualization of the lens and retina, and optical coherence tomography. If DME or severe retinopathy is suspected, fluorescein angiography may be considered. Prompt specialty referral is recommended for persons with DME, severe NPDR, or PDR.[2]

Q. What can be done to screen for eye disorders in persons with diabetes?

A. A dilated eye examination should occur at the time of diagnosis of type 2 diabetes or within 5 years from the onset of type 1 diabetes.[2,9] Up to 20% of patients with type 2 diabetes have some degree of retinopathy at initial diagnosis.[2] If there is no evidence of retinopathy, consider examination every 1 to 2 years, but more often if there is evidence of progression or sight-threatening disease. Retinal photography is not a substitute for a comprehensive eye examination. Yearly examination is recommended for all persons with diagnosed retinopathy of any stage, and possibly more frequently depending on clinical circumstances.

Eye examination should also be performed before anticipated pregnancy or during the first trimester in the setting of either type 1 or type 2 diabetes.[2,9]

Q. What can be done to help prevent vision loss in persons with diabetes?

A. In addition to improved glycemic control and hypertension control, fenofibrate may be useful as preventive therapy.[1,2] Clinically significant DME may require focal laser photocoagulation and/or intravitreal injections of anti–vascular endothelial growth factor (anti-VEGF) agents or corticosteroids.[1,2] Panretinal laser photocoagulation and intravitreal anti-VEGF therapy may also be indicated for management of PDR.[1,2] Vitrectomy may be needed when there is severe bleeding into the vitreous space.[1] Aspirin therapy does not increase the risk of retinal hemorrhage and thus is not contraindicated in persons with DME or PDR.[2]

Kim A. Carmichael, MD, *is an associate professor of medicine in the Department of Medicine, Division of Endocrinology, Metabolism and Lipid Research, at Washington University School of Medicine in St Louis, Missouri. He discloses that he is on the speakers bureau for Janssen, which may be relevant to the content of this article.*

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