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CENTER

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Diabetic Retinopathy

Diabetic Retinopathy (reh-tin-AH-puh-thee) is an eye condition that affects the retina in some people who have diabetes for many years. The retina, which is the light sensitive nerve tissue that lines the back of the eye, is vital for vision.

There are two forms to this condition: background retinopathy (the milder form) and proliferative retinopathy. Background retinopathy generally progresses slowly, over years and eventually causes some visual disturbances; sometimes it develops into the more serious proliferative state. The exact cause of the background retinopathy or why it progresses to proliferative retinopathy is not fully known. However, it is related to the length of time you have had diabetes, and it is more common in insulin-dependent diabetes than in cases where the diabetes can be controlled with an appropriate diet and oral medications. But it still can occur in any diabetic.

Since there are usually no early warning symptoms, patients that have diabetes need to have a complete eye examination regularly, at least once a year.

What happens in Background Retinopathy?

The earliest changes are subtle and only slightly different from normal. Some of the retinal blood vessels gradually enlarge; some become irregular in size and develop some tiny weak spots (micro aneurysms), which is the hallmark of this condition. They begin to leak exudates (fluid, fat, and protein) and blood.

At first, vision may be normal or slightly affected, depending on where the leaks are located. The condition varies over time, sometimes getting better for a while and then worse, but tending to slowly worsen. As it advances, some of the smaller retinal blood vessels gradually become obstructed, resulting in patchy loss of retinal nourishment. In some patients this leads to the development of proliferative retinopathy.

What happens in Proliferative Retinopathy?

New, abnormal blood vessels begin to grow (proliferate) over the surface of the retina and optic nerve, the “telephone wire” that transmits images from the eye to the brain. (Doctors feel that they form in an attempt to nourish the patches of “starving” retina.) Unfortunately, these blood vessels are unusually fragile, and frequently break and bleed.

If the vessels bleed into the vitreous (into the center of the eyeball), vision can become clouded from the blood. At first the blood is rapidly absorbed, so vision tends to be clear in a few weeks. But eventually, with re-bleeding, vision may not be clear so rapidly, or even at all.

As more new vessels grow, the risk for more bleeding increases. Scars form and may tug on or even tear the retina, which can lead to a retinal detachment. All of these developments have potential for leading to blindness.

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Symptoms

In its early stages, background retinopathy does not cause any symptoms. Later it can produce blurring of vision (from retinal leakage and swelling) that glasses cannot help. The early stages of proliferative retinopathy may also produce no visual symptoms; but later, bleeding can cause a sudden appearance of floaters, blurring, or even total loss of vision. Neither type, on its own, is likely to cause pain, but the proliferative form is sometimes associated with other eye problems that can cause pain.

Examinations

As part of the history taking, you will be asked some important question, such as how long have you had diabetes? How are you controlling it? And how well is it being controlled?

A complete vision examination will be done with your pupils dilated (enlarged by eye drops). An ophthalmoscope will be used to study the inside of your eye. The pressure inside your eyes will be checked with a painless test call tonometry.

To help evaluate the progression of the condition, retinal photographs may be taken and a fluorescein angiogram may be done. Here, a dye is injected into your arm vein, which helps to identify the retinal abnormalities in the photographs. It is very safe with a low allergic risk and it is easy on the kidneys.

Treatment

For background retinopathy or even minimal proliferative retinopathy, you may not need any treatment other than keeping your diabetes under good control. Keeping your blood pressure under control and not smoking are also important.

If the condition is more serious and is threatening your vision, laser treatment may be recommended. Laser beams may be used for "focal treatment" to stop discrete retinal leakages, or PRP (pan-retinal photocoagulation) to create hundreds of tiny burns in the retina that reduce retinal swelling and congestion and the number of dangerous, abnormally proliferating blood vessels. More than one series of laser treatments may be needed, but all can be done on an outpatient basis and are usually painless. Recently it has been shown that Avastin ® injections help a lot. We often combine the injections with the laser treatments.

Laser treatment may not help severe cases and sometimes laser cannot be used at all, such as when the bleeding is too dense to let the laser beam shine through to the retina. Then a major eye operation called a vitrectomy may be suggested, to attempt removal of the scars and cloudy or bloody tissue. If this procedure is successful in clearing up the cloud material inside the eyeball, laser treatment may then become possible. Vision improvement does not always follow a vitrectomy, but when it does, it can be dramatic. Vitrectomy has a high risk of serious complications, including more bleeding, retinal tears and detachment, so it is used only for the most advanced cases of diabetic retinopathy that are otherwise untreatable.

Diabetic retinopathy is one of the major causes of defective vision and blindness in our country today. Although it is not totally preventable, its course may be made far less severe by diagnosing any eye problems early and then keeping a close watch for progression so that early treatment can be instituted when necessary. If you have diabetes, make sure you have a thorough eye exam at least once a year (more frequently in advance cases).

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