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Diabetes and Your Eyes

Diabetes is rapidly becoming an epidemic, and we are now facing growing concern about the effects of this chronic and incurable condition upon the eyes.

Diabetes results when glucose (blood sugar) builds up in the circulatory system. Glucose, the basic 'fuel' for the body's cells, is supposed to enter those cells under the regulation of the hormone insulin. If the body does not produce insulin, type 1 diabetes results. Or, if the insulin quantity is low or the body's cells do not properly respond to it, type 2 diabetes results. (Formerly, type 1 and type 2 diabetes were referred to as juvenile onset and adult onset, respectively.)

When the glucose level in the bloodstream rises, there are two main effects on the eyes. One, the increased bloodstream glucose level triggers changes in the glucose concentration inside the eye. This altered glucose level can produce swelling and contracture of the lens inside the eye. That will produce short-term changes in the eye focus. A person might call for a certain eyeglass prescription in the morning, which might completely change by the afternoon. Or, a substantial and unexpected change might occur over a few weeks or months.

A second diabetic eye effect is reduced vessel health inside the eye. The tiny capillaries which circulate glucose and other needed substances to cells inside the eye can be damaged by the blood sugar abnormalities. An early sign of impending trouble is development of microaneurysms, small bulges on vessels inside the eye. Later changes can include small hemorrhages of various shapes. Or, vessel leakage can produce localized deposits of blood plasma, fats, or cholesterol..

With time, the vessels can close off, producing nutrient loss to the tissues which depend upon them. This condition is called ischemia. That can lead to edema (tissue swelling) and impaired function of critical retinal or nervous tissue.

If diabetic eye damage is allowed to continue, the body can respond by growing additional, incompetent vessels in places where they don't belong. These vessels are called neovascular and are very prone to breakage and subsequent leakage of whole blood or components of blood. Or, scarring inside the eye can occur. This type of new vessel growth is called proliferative diabetic retinopathy.

Additional eye complications and damage can occur from proliferative diabetic retinopathy. These can include larger scale bleeding, traction on the retina, retinal detachments, and further swelling of eye structures. In addition, other areas of the eye such as the iris and related areas may develop new vessels.

Treatment of these types of conditions can include laser treatments to seal leaky vessels or to reduce the chemical stimulus, which trigger new vessel growth. And/or, many retina doctors are using injections of medicines such as Avastin or Lucentis, which discourage new vessel growth. The idea of an injection into the eye sounds revolting to many; however, the tiny needle and skillful way in which these injections are delivered makes the procedure rather well tolerated. Management of these kinds of diabetic eye conditions generally requires ongoing re-evaluations and re-treatments, since the condition cannot be cured, only controlled.

Prevention is our best ally. Controlling body mass index and blood sugar, hopefully via the classic methods of proper diet and exercise, is number one. Other good health habits, such as blood pressure control and lipid management are also important. Also, good health habits are especially relevant to those of ethnic groups at extra risk for diabetes in the first place: African Americans, Latinos, and Native Americans.