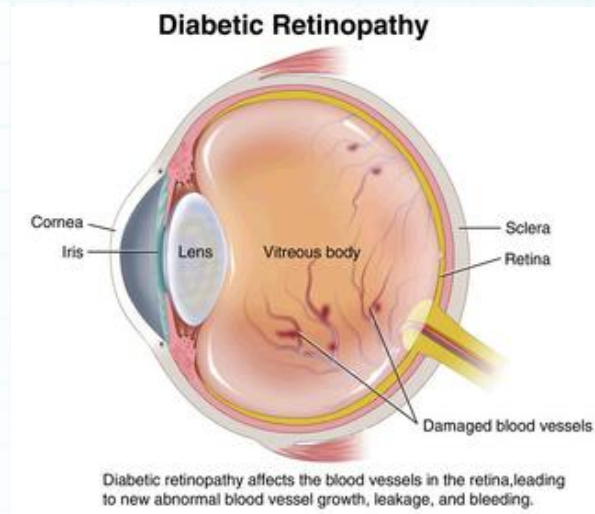


Diabetic Retinopathy



Diabetic retinopathy is a condition occurring in persons with diabetes, which causes progressive damage to the retina, the light sensitive lining at the back of the eye. It is a serious sight-threatening complication of diabetes.

Diabetes is a disease that interferes with the body's ability to use and store sugar, which can cause many health problems. Too much sugar in the blood can cause damage throughout the body, including the eyes. Over time, diabetes affects the circulatory system of the retina.

Diabetic retinopathy is the result of damage to the tiny blood vessels that nourish the retina. They leak blood and other fluids that cause swelling of retinal tissue and clouding of vision. The condition usually affects both eyes. The longer a person has diabetes, the more likely they will develop diabetic retinopathy. If left untreated, diabetic retinopathy can cause blindness.

Symptoms of diabetic retinopathy include:

- Seeing spots or floaters in your field of vision
- Blurred vision
- Having a dark or empty spot in the center of your vision
- Difficulty seeing well at night

In patients with diabetes, prolonged periods of high blood sugar can lead to the accumulation of fluid in the lens inside the eye that controls eye focusing. This changes the curvature of the lens and results in the development of symptoms of blurred vision. The blurring of distance vision as a result of lens swelling will subside once the blood sugar levels are brought under control. Better control of blood sugar levels in patients with diabetes also slows the onset and progression of diabetic retinopathy.

Often there are no visual symptoms in the early stages of diabetic retinopathy. That is why the American Optometric Association recommends that everyone with diabetes have a comprehensive dilated eye examination once a year. Early detection and treatment can limit the potential for significant vision loss from diabetic retinopathy.

Treatment of diabetic retinopathy varies depending on the extent of the disease. It may require laser surgery to seal leaking blood vessels or to discourage new leaky blood vessels from forming. Injections of medications into the eye may be needed to decrease inflammation or

stop the formation of new blood vessels. In more advanced cases, a surgical procedure to remove and replace the gel-like fluid in the back of the eye, called the vitreous, may be needed. A retinal detachment, defined as a separation of the light-receiving lining in the back of the eye, resulting from diabetic retinopathy, may also require surgical repair.

If you are a diabetic, you can help prevent or slow the development of diabetic retinopathy by taking your prescribed medication, sticking to your diet, exercising regularly, controlling high blood pressure and avoiding alcohol and smoking.

Causes of diabetic retinopathy

Non-proliferative diabetic retinopathy (NPDR) is the early state of the disease in which symptoms will be mild or non-existent. In NPDR, the blood vessels in the retina are weakened causing tiny bulges called microaneurysms to protrude from their walls.

Proliferative diabetic retinopathy (PDR) is the more advanced form of the disease. At this stage, new fragile blood vessels can begin to grow in the retina and into the vitreous, the gel-like fluid that fills the back of the eye. The new blood vessel may leak blood into the vitreous, clouding vision.

Diabetic retinopathy is the result of damage caused by diabetes to the small blood vessels located in the retina. Blood vessels damaged from diabetic retinopathy can cause vision loss:

- Fluid can leak into the macula, the area of the retina which is responsible for clear central vision. Although small, the macula is the part of the retina that allows us to see colors and fine detail. The fluid causes the macula to swell, resulting in blurred vision.
- In an attempt to improve blood circulation in the retina, new blood vessels may form on its surface. These fragile, abnormal blood vessels can leak blood into the back of the eye and block vision.

Diabetic retinopathy is classified into two types:

- Non-proliferative diabetic retinopathy (NPDR) is the early state of the disease in which symptoms will be mild or non-existent. In NPDR, the blood vessels in the retina are weakened causing tiny bulges called microaneurysms to protrude from their walls. The microaneurysms may leak fluid into the retina, which may lead to swelling of the macula.
- Proliferative diabetic retinopathy (PDR) is the more advanced form of the disease. At this stage, circulation problems cause the retina to become oxygen deprived. As a result new fragile blood vessels can begin to grow in the retina and into the vitreous, the gel-like fluid that fills the back of the eye. The new blood vessel may leak blood into the vitreous, clouding vision. Other complications of PDR include detachment of the retina due to scar tissue formation and the development of glaucoma. Glaucoma is an eye disease defined as progressive damage to the optic nerve. In cases of proliferative diabetic retinopathy, the cause of this nerve damage is due to extremely high pressure in the eye. If left untreated, proliferative diabetic retinopathy can cause severe vision loss and even blindness.

Risk factors for diabetic retinopathy include:

- Diabetes—people with Type 1 or Type 2 diabetes are at risk for the development of diabetic retinopathy. The longer a person has diabetes, the more likely they are to develop diabetic retinopathy, particularly if the diabetes is poorly controlled.
- Race—Hispanic and African Americans are at greater risk for developing diabetic retinopathy.
- Medical conditions—persons with other medical conditions such as high blood pressure and high cholesterol are at greater risk.
- Pregnancy—pregnant women face a higher risk for developing diabetes and diabetic retinopathy. If gestational diabetes develops, the patient is at much higher risk of developing diabetes as they age.

Diagnosis of diabetic retinopathy

Diabetic retinopathy can be diagnosed through a comprehensive eye examination. Testing, with special emphasis on evaluation of the retina and macula, may include:

- Patient history to determine vision difficulties experienced by the patient, presence of diabetes, and other general health concerns that may be affecting vision
- Visual acuity measurements to determine the extent to which central vision has been affected
- Refraction to determine the need for changes in an eyeglass prescription
- Evaluation of the ocular structures, including the evaluation of the retina through a pupil
- Measurement of the pressure within the eye

Supplemental testing may include:

- Retinal photography or tomography to document current status of the retina
- Fluorescein angiography to evaluate abnormal blood vessel growth

Treatment of diabetic retinopathy

Laser treatment (photocoagulation) is used to stop the leakage of blood and fluid into the retina. A laser beam of light can be used to create small burns in areas of the retina with abnormal blood vessels to try to seal the leaks.

Treatment for diabetic retinopathy depends on the stage of the disease and is directed at trying to slow or stop the progression of the disease.

In the early stages of Non-proliferative Diabetic Retinopathy, treatment other than regular monitoring may not be required. Following your doctor's advice for diet and exercise and keeping blood sugar levels well-controlled can help control the progression of the disease.

If the disease advances, leakage of fluid from blood vessels can lead to macular edema. Laser treatment (photocoagulation) is used to stop the leakage of blood and fluid into the retina. A laser beam of light can be used to create small burns in areas of the retina with abnormal blood vessels to try to seal the leaks.

When blood vessel growth is more widespread throughout the retina, as in proliferative diabetic retinopathy, a pattern of scattered laser burns is created across the retina. This causes abnormal blood vessels to shrink and disappear. With this procedure, some side vision may be lost in order to safeguard central vision.

Some bleeding into the vitreous gel may clear up on its own. However, if significant amounts of blood leak into the vitreous fluid in the eye, it will cloud vision and can prevent laser photocoagulation from being used. A surgical procedure called a vitrectomy may be used to remove the blood-filled vitreous and replace it with a clear fluid to maintain the normal shape and health of the eye.

Persons with diabetic retinopathy can suffer significant vision loss. Special low vision devices such as telescopic and microscopic lenses, hand and stand magnifiers, and video magnification systems can be prescribed to make the most of remaining vision

Reference:

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