

### **What is diabetic retinopathy?**

Diabetic retinopathy is an eye problem caused by the high blood sugar levels that characterize diabetes. It affects the retina, which is light-sensitive tissue at the back of the eye. It is the leading cause of blindness among the working-age population.

Diabetic retinopathy is caused by changes in the blood vessels of the eye. When blood vessels in the retina are damaged, they may leak fluid or blood causing retina to swell which is called macular edema. Blood that gets into the vitreous substance can produce "cobwebs" in the vision or block out light completely. In diabetic patients, the retinal blood vessels also grow fragile, brush-like branches and cause to form scar tissue at the end.

### **Why is it important?**

Diabetic retinopathy lacks safe and effective treatments, leading patients to progressive loss of their vision and independence. Nearly half of the patients who develop severe diabetic retinopathy and do not get treatment may go legally blind within 5 years of diagnosis.

### **What are the symptoms of diabetic retinopathy?**

The early stages of diabetic retinopathy may not be noticed. But gradual blurring of vision may occur if macular edema is present. Sometimes serious diabetic retinopathy can be presented very late

### **How is diabetic retinopathy diagnosed?**

Diabetic retinopathy is best diagnosed with a dilated eye exam. During the exam, an ophthalmologist looks for the existence of any abnormal and new blood vessels, bleeding, swelling of the retina, damage to the nerve tissue or retinal detachment.

As part of the eye exam, an ophthalmologist may do a retinal photography test injecting a dye into patient's arm which is called fundus fluorescein angiography (FFA). Photographs are taken to document pathology of vessels and any fluid leakage as the dye circulates through the eye.

The doctor may also request an optical coherence tomography (OCT) exam. This imaging test provides cross-sectional images of the retina that show the thickness of the retina and whether fluid has leaked into retinal tissue. Later, OCT exams can be used to monitor treatment effectiveness

### **How is diabetic retinopathy treated?**

Treatment for diabetic retinopathy depends on the type of diabetic retinopathy, its severity and how well it may respond to specific treatments.

The macula is the small area in the center of the retina that allows us to see fine details clearly. If retinopathy has caused macular edema, laser surgery may prevent further loss of vision. But before laser surgery, intravitreal injection of steroid or anti-VEGF drug is recommended in certain patients. Administration of both intravitreal injection and laser photocoagulation enhance resolution of macular edema and preserve vision. The laser is focused on the damaged retina near the macula to decrease the fluid leakage.

If abnormal blood vessels have grown on the retina (proliferative diabetic retinopathy), laser surgery can be effective in shrinking those vessels and preventing them from growing in the future. Multiple laser treatments over time are sometimes necessary. Laser surgery does not cure diabetic retinopathy and does not always prevent further loss of vision.

If there is advanced damage to the eye because of retinopathy, a surgery called vitrectomy may help.

### **What should a patient with diabetes do? How do they prevent diabetic retinopathy?**

Early detection of diabetic retinopathy is the best protection against loss of vision. People with diabetes should schedule examinations with an ophthalmologist at least once a year.

Patients must maintain blood sugar levels, avoid smoking and watch your blood pressure. Tight control of blood-glucose levels can greatly reduce all the long-term complications associated with diabetes, which affect the eyes, kidney, heart, and nerves. Attention to medications and diet are also essential.

We recommend that all patients with diabetes undergo regular eye examinations to check for retina disease. Pregnant women with diabetes should schedule an appointment in the first trimester, as retinopathy can progress very quickly during pregnancy.

Regular follow-up to monitor the progression of the patient's disease are essential to delivering personalized treatment to patients.