



British and Éire Association of Medical Retina Specialists

Diabetic Retinopathy is a common eye condition that occurs as a complication of diabetes, particularly when blood sugar (glucose) levels are poorly controlled over a long period. It affects the retina, the light-sensitive tissue at the back of the eye, which is responsible for sending visual signals to the brain. Diabetic retinopathy can lead to blindness if left untreated.

How Diabetic Retinopathy Develops

Diabetic retinopathy occurs when high blood sugar levels cause damage to the small blood vessels in the retina. These damaged blood vessels can either leak fluid or bleed into the retina, leading to vision problems. Over time, new, abnormal blood vessels may form (a process called neovascularization), which are fragile and prone to leaking or bleeding.

There are two main stages of diabetic retinopathy:

1. Non-Proliferative Diabetic Retinopathy (NPDR)

- Early stage: This stage is sometimes called "background retinopathy."
- In this phase, the blood vessels in the retina become weakened and may swell or leak fluid.
- Small blood vessels may also develop microaneurysms (tiny bulges in the blood vessel walls) that can leak fluid, leading to retinal oedema (swelling).
- At this stage, vision may not be significantly affected, but there may be some changes that can be detected during an eye exam.

Symptoms of NPDR:

- Blurry vision (due to fluid leakage or swelling)
- Difficulty seeing at night
- Some distortion or floaters (due to leakage or minor bleeding)

2. Proliferative Diabetic Retinopathy (PDR)

- Advanced stage: This is a more severe form of diabetic retinopathy and occurs when the retina is deprived of oxygen due to damage to the blood vessels.
- In response, the retina starts growing new, abnormal blood vessels (neovascularization) in an attempt to supply oxygen. However, these new vessels are fragile and can leak blood into the vitreous (the gel-like substance inside the eye), leading to significant vision problems.
- PDR can lead to retinal detachment, glaucoma, and permanent vision loss if left untreated.

Symptoms of PDR:

- Severe vision loss (from bleeding or retinal detachment)
- Sudden appearance of floaters or shadows

- Flashes of light (caused by traction on the retina)

Risk Factors for Diabetic Retinopathy

Several factors increase the risk of developing diabetic retinopathy, including:

- Poor blood sugar control: The longer blood glucose levels remain high, the more likely it is to develop diabetic retinopathy.
- Duration of diabetes: The longer someone has had diabetes (especially type 1 or type 2 diabetes), the higher the risk of retinopathy.
- High blood pressure: High blood pressure can increase the risk of damage to the retinal blood vessels.
- High cholesterol: Increased cholesterol levels can contribute to the progression of diabetic retinopathy.
- Pregnancy: Pregnant women with diabetes are at a higher risk of diabetic retinopathy.
- Kidney disease: Diabetics with kidney disease are at higher risk.
- Age: Older adults with diabetes are more likely to develop diabetic retinopathy.
- Genetics: Family history of diabetic retinopathy can increase the risk.

Symptoms of Diabetic Retinopathy

In the early stages, diabetic retinopathy may have no symptoms, but as the disease progresses, it can cause:

- Blurry vision
- Fluctuating vision (sometimes better, sometimes worse)
- Floaters (small dark spots or strings in your vision)
- Dark or empty areas in your central vision
- Difficulty seeing at night
- Sudden loss of vision (in severe cases)

Diagnosis

- Comprehensive eye exam: Regular eye exams are essential for detecting diabetic retinopathy early. The doctor will dilate the pupils to inspect the retina and assess the health of the blood vessels.
- Fundus photography: Special images of the retina are taken to document the extent of damage.
- Fluorescein angiography: A special dye is injected into the bloodstream, and a camera captures images of blood vessels in the retina to identify areas of leakage.
- Optical coherence tomography (OCT): This imaging test can measure the thickness of the retina and identify any swelling or fluid buildup.

Stages of Diabetic Retinopathy

1. Mild NPDR: Small areas of microaneurysms (tiny bulges in the blood vessels).
2. Moderate NPDR: More blood vessels become blocked, leading to swelling.
3. Severe NPDR: A larger number of blood vessels are blocked, leading to significant vision changes.
4. Proliferative Diabetic Retinopathy (PDR): Abnormal new blood vessels form, and significant vision loss may occur.

Treatment Options

The goal of treatment is to prevent or slow the progression of diabetic retinopathy and preserve vision. Treatment depends on the stage and severity of the disease.

For Non-Proliferative Diabetic Retinopathy (NPDR):

- Tight control of blood sugar levels: Managing blood glucose levels is crucial to prevent further damage.
- Blood pressure and cholesterol control: Managing high blood pressure and cholesterol can reduce the risk of complications.
- Laser therapy: In some cases, laser treatment may be used to prevent leakage and swelling in the retina.

For Proliferative Diabetic Retinopathy (PDR):

- Anti-VEGF injections: Medications like Lucentis (ranibizumab), Eylea (aflibercept), and Avastin (bevacizumab) are injected into the eye to block the growth of abnormal blood vessels.
- Laser treatment: Pan-retinal photocoagulation (PRP) is a laser treatment that can help shrink abnormal blood vessels in the retina.
- Vitrectomy: A surgical procedure may be needed to remove blood from the vitreous or repair a detached retina.
- Steroid injections: In some cases, steroids may be used to reduce inflammation and swelling.

Prevention and Management

- Regular eye exams: Annual eye exams with a dilated retina exam are essential for people with diabetes, even if they have no vision problems.
- Good blood sugar control: Keeping blood glucose levels within the target range is key to preventing diabetic retinopathy.
- Manage blood pressure and cholesterol: Keeping these in check can help reduce the risk of retinopathy.
- Healthy lifestyle: Eating a balanced diet, staying active, and maintaining a healthy weight are essential to managing diabetes and preventing complications.
- Smoking cessation: Smoking increases the risk of diabetic complications, including retinopathy.

Conclusion

Diabetic retinopathy is a serious condition, but with proper management of blood sugar, blood pressure, and regular eye exams, the risk of vision loss can be minimized. Early detection and treatment are key to preventing significant damage to the retina and maintaining good vision. If you have diabetes, it's important to take steps to manage your condition and see an eye care professional regularly for comprehensive exams.