

Elevated Blood Pressure

Davis EyeCare can diagnose hypertensive retinopathy using an ophthalmoscope, an instrument that projects light to examine the back of the eyeball, will look for signs of retinopathy that include:

- Narrowing of blood vessels
- Fluid oozing from the blood vessels
- Spots on the retina known as cotton wool spots and exudates
- Swelling of the macula (the central area of the retina) and optic nerve bleeding in the back of the eye
- Subconjunctival Hemorrhage (Bleeding in the white of the eye)

The best way to treat hypertensive retinopathy is to adequately control your blood pressure.

Visual Fields will document if any damage has occurred in your sight from elevated blood pressure. This test measures your field of vision to discover if you have any areas damaged resulting in blind spots.

Optical Coherence Tomography examines the nerve fibers of your retina to discover if any damage has occurred from elevated blood pressure.

To prevent hypertensive retinopathy, keep your blood pressure under control by changing your diet, exercising more, and taking your blood pressure medications as prescribed. In addition, make an appointment every six months at Davis EyeCare for your follow-up care.



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Ocular Manifestations of Hypertension

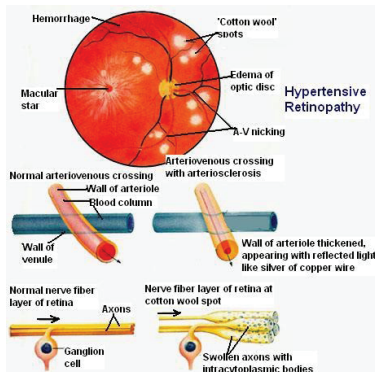


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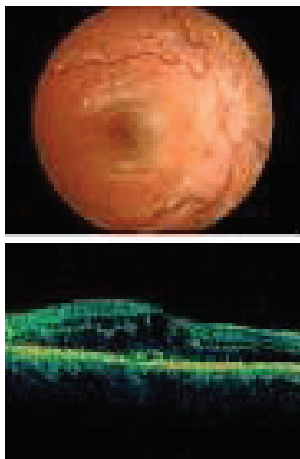
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Ocular Manifestations of Systemic Hypertension

High blood pressure or hypertension can cause damage to many organs and areas of the body including the eye especially if the pressure is poorly controlled. Hypertension damages blood vessels by



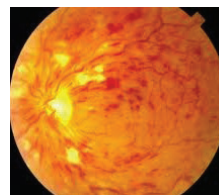
thickening their wall and impacting the amount of blood that can flow through them. For organs or tissues such as the eye that contain small blood vessels, this can severely decrease or sometimes stop the blood flow completely. This lack of blood flow causes damage in the eye. When the eye doctor examines the retina of a patient with high blood pressure, the doctor can often see the changes in the retina and blood vessels. The blood vessels can look narrower than usual or have little pockets of blood on them, microaneurysms; there may also be bleeding in the retina as well as white spots of swollen retinal nerve fibers, known as cotton-wool spots. There may also be swelling of the optic nerve.



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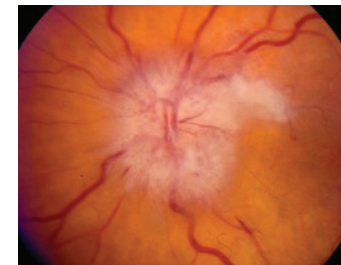
Hypertension can cause leakage of a damaged blood vessel in the blood vessel layer below the retina, the choroid. The accumulated fluid can cause visual problems and may lead to decreased vision and changes in the overlying retina. These changes may be more difficult for the eye doctor to see during a normal eye exam. **Optical Coherence Tomography** is the only method to view this damage caused by vessels below the retina.

A **retinal vein occlusion** is when a vein in the retina becomes blocked. If the main branch of the vein is blocked, it is called a central retinal vein occlusion; if a branch or smaller portion of the vessel is affected, it is called a branch retinal vein occlusion. The patient would notice a decrease in vision in a central retinal vein occlusion but may not notice anything in a branch retinal vein occlusion. The signs for the eye doctor are bleeding, edema and cotton-wool spots in the area of the retina that is affected by the vein closure; central retinal vein occlusions involve most of the retina and result is significant and usually irreversible vision loss. Patients with hypertension are five times as likely to develop a branch retinal vein occlusion than those people without hypertension.



The arteries supplying blood to the retina can be blocked just as the veins although the mechanism for the blockages is different. During a blockage, usually with an embolus of the main artery or **central retinal artery occlusion**, the patient would notice a

sudden and painless loss of vision. With a smaller branch (branch retinal artery occlusion) blockage, there may only be a change in the visual field.



People with hypertension are at a higher risk to develop **ischemic optic neuropathy** where the blood vessels supplying the optic nerve are compromised. The patient will notice visual loss; the eye doctor may see a pale nerve or nerve swelling in the back of the eye. There is no universally accepted treatment for this condition and the vision may or may not improve over time.

The conjunctiva contains nerves and many small blood vessels. These blood vessels are usually barely visible but become larger and more visible if the eye is inflamed. These blood vessels are somewhat fragile, and their walls may break easily, resulting in a subconjunctival hemorrhage (bleeding under the conjunctiva). A subconjunctival hemorrhage appears as a bright red or dark red patch on the sclera.



Most subconjunctival hemorrhages are spontaneous without an obvious cause for this bleeding from the conjunctival vessels. On occasion this might be the first sign of hypertension.