CENTRAL SEROUS DETACHMENT OF THE RETINA

Leakage of the small blood vessels in the retina (the back lining of the eye) leads to fluid collecting and to swelling between the cells. The macula, the area needed for sharp vision, swells more than the rest of the retina, due to the arrangement of the cells. This condition usually occurs at any age after 20, and is more common in males. Most often only one eye is affected. Symptoms include blurred or distorted vision, seeing straight lines as wavy and changes in color vision.

Typically, the leak closes on its own and the fluid becomes re-absorbed within three months. Vision improves as the fluid is re-absorbed. Laser treatment may be considered if fluid remains after three months, or if there is increased swelling. Laser treatment is also considered if the condition recurs.

CYSTOID MACULAR EDEMA

Cystoid Macular Edema (CME) is fluid which leaks from the blood vessels and accumulates between the cells in the macula, the central area of the retina. This can occur following any type of ocular surgery and occurs more frequently following surgical complications. Diabetes, vascular disease, inflammation of the eye and some medications can also cause CME. Blurred vision results from the swelling. The amount of vision loss varies from being hardly noticable to severe. Definitive diagnosis of CME can be made by observing injected dye as it circulates through the retinal blood vessels (flourescein angiography) .

CME that develops following surgery may be treated with eyedrops, but may also resolve spontaneously within 6 months. Oral or injectable medications may also be used to resolve the edema.

DIABETIC RETINOPATHY

Diabetes is the leading cause of blindness in adults under the age of 65. It is a complex disorder involving small blood vessels. These blood vessels provide nutrients to all the structures in the body, including the eyes. In diabetes, the blood vessels begin to leak fluid and blood. This causes damage to the surrounding structures and interferes with the transport of needed nutrients. Research findings show that complications can be delayed with proper care and monitoring of the disease.

Diabetes can effect many structures in the eye, causing double vision from the muscle palsies, fluctuations in vision from sugar level changes and decreased vision from cataracts. The most serious vision problems arise from hemorrhages in the retina, from swelling of the retina and from blood vessel growth under the retina. Laser therapy is used, when possible, to treat the retina.

Retinal disease in diabetes is divided into two forms: (1) Non-proliferative and (2) Proliferative. Non-proliferative retinopathy is present when there are hemorrhages, small dilations of the vessel walls and leakage of fluid into the surrounding retina. Proliferative retinopathy has the added problem of new blood vessels forming. These vessels will leak

and bleed if left untreated. The most common cause of decreased vision is swelling of the retina from leaky blood vessels. Lasers are used to treat these leaks when possible.

Regular examinations are critical for early diagnosis and to determine when treatment will be most effective. Vision can be preserved in the majority of patients who are diagnosed early and examined regularly.

FLASHES

Stimulation of the visual receptors in the eye gives rise to the sensation of light. Stimulation usually occurs when the image of an object is focused onto the retina, and this results in our ability to see. The receptors may also be stimulated by pulling on them or by pressure on the eyes. This type of stimulation causes the appearance of lights. Flashing lights, commonly in the form of an arc, and lasting only for a moment, usually indicates that the vitreous is pulling on the receptors. The vitreous is the clear, jelly-like body that fills the back of the eye and gives it shape. Normally, the vitreous is attached firmly only at the optic nerve and just in front of the retina. Abnormal attachments to other parts of the retina occur frequently. As the eye moves, structures within the vitreous move, causing these attachments to pull on the retina, stimulating the receptors, and producing the appearance of light.

Immediate evaluation is needed to rule out a retinal tear or detachment, which can occur when a firm attachment pulls hard enough on the thin retina to separate it from its blood supply.

LATTICE DEGENERATION

The retina lines the back of the eye, and its function is to transform visual images into nerve impulses. Sometimes areas of retinal tissue break down or degenerate. Blood vessels which cross these areas of degeneration appear as white latticework, hence the name “lattice degeneration.”

Tears and breaks in the retina can lead to retinal detachments, where the retina becomes detached from its blood supply in the back of the eye. Lattice degeneration plays a role in about one-third of the retinal detachments which involve tears and breaks. This occurs in two ways. (1) The degeneration may lead to the formation of a hole in the retina, through which fluid can leak. This fluid causes the retina to peel away from its blood supply. (2) The vitreous, the gel-like body which gives the eye its shape, becomes attached to the edges of the degeneration. Over time, the vitreous ages, becomes less stable, and collapses. As it collapses, it pulls on the areas of degeneration with enough force to tear the retina. The tear can lead to a detachment.

Symptoms of black spots floating in the field of vision, or of arcs of flashing light need to be evaluated immediately, as they can be signs of retinal tears or detachments. Most individuals with lattice degeneration remain symptom free, but they must be evaluated periodically to determine whether there is any fluid leakage behind the retina. In the absence of symptoms, lattice degeneration is usually only considered for treatment when there is a family history of retinal detachment, or when the patient has already had an episode of

retinal detachment. Treatment is aimed at reducing the risk of tears and the chance of fluid leakage behind the retina.

MACULAR DEGENERATION

Macular degeneration is the leading cause of vision loss after the age of 50. The disease occurs equally in men and women, and is more common among Caucasian people. There is some evidence that heredity plays a role. In macular degeneration, central vision is lost, but good peripheral vision may continue. While both eyes are affected, one eye may be more affected than the other.

There are two types of macular degeneration: the nonexudative (dry) form and the exudative (wet) form. In the dry form, there is a slow loss of central vision. No treatment has proven to be effective. However, recent studies suggest that eating spinach and kale reduces the rate of deterioration. Many patients benefit from low vision aids, especially for reading. It is important to look daily for any changes in the size and shape of the area of vision loss. Such changes may signal onset of the wet form of macular degeneration, so they require immediate evaluation. To monitor for changes, patients are instructed in the use of an Amsler grid.

In the wet form of macular degeneration, there is a rapid deterioration of vision, often accompanied by distortion of straight lines, or by the appearance of a blind spot, at or near the center of the visual field. The sudden onset of vision loss is caused by hemorrhage or fluid leakage close to or into the area of central vision. Laser treatment may be advised and should be performed within 72 hours after the initial onset.

MACULAR HOLE

The macular is the part of the eye that is necessary for sharp vision. The retina, the back lining of the eye, is very thin at the center of the macula, and this makes it prone to holes. Holes may be caused by localized swelling, by trauma, or by an abnormal pulling on the retina. The amount of vision loss resulting from these holes depends on the size and depth of the holes. Women are more commonly affected. Fortunately, the condition rarely occurs in both eyes. Visual loss was irreversible until recently, when surgery was shown to benefit some people. Frequent follow-up on patients with macular holes is needed to monitor for complications, such as retinal detachment.

RETINAL HOLE

The retina is the back lining of the eye and is necessary for vision. There are various causes of retinal holes; some lead to retinal detachment, where the retina is separated from its blood supply in the back of the eye.

A small percentage of the population has small round holes of unknown cause which rarely cause symptoms or detachment. Trauma to the eye can also cause holes in the retina. More commonly, holes result from the vitreous, the gel-like part of the eye, pulling on the retina. This pulling, or traction, usually causes a tear in the retina. However, when the area of traction is small, a piece of the retina may be torn out, leaving a hole. These holes are less likely than tears to cause detachments. Traction on the retina leads to symptoms of light flashes, which must be clinically evaluated to determine whether or not treatment is needed. It is important to seek immediate care if there are associated “floaters,” (floating particles in the visual field) as these can indicate a tear or detachment.

Treatment is aimed at increasing the attachment between the retina and its blood supply. This is accomplished by freezing, laser, or high energy current.

RETINAL TEAR

The retina is the back lining of the eye and is necessary for vision. It is firmly attached to the inner layers of the eye only at its most forward part and at the optic nerve. The rest of the retina is loosely attached, and can be torn away or detached easily from its blood supply. Since the retina has no pain receptors, any tears are painless. Retinal tears can occur when the vitreous, the gel-like part of the eye, pulls on the retina. Scarring, trauma, or liquification of the vitreous can cause increased pulling or traction on the retina, with resulting tears.
Fortunately, most tears are small, and the retina remains attached to the inner layers of the eye. But occasionally, large tears occur, with resulting retinal detachment. If capillaries are ruptured in the tear, a shower of black spots is seen. Retinal traction also stimulates the visual receptors in the retina, which causes light flashes to be seen. Symptoms of light flashes need to be clinically evaluated. It is important to seek immediate care if there are associated “floaters,” (floating particles in the visual field) as this usually indicates a tear. Your doctor will evaluate the retina and determine whether or not treatment is needed.

RETINAL VEIN OCCLUSION

Occlusion or blockage of the central retinal vein, or of a branch of the retinal vein, usually occurs only in one eye. Blockage of a branch occurs more frequently than blockage of the central vein. The central vein becomes blocked where it exits the back of the eye, at the optic nerve. There is usually a slow, painless loss of vision. Patients who have glaucoma seem to be more predisposed to this condition.

Blockage of a branch vein occurs where an artery crosses it and exerts enough pressure on it to prevent blood flow. High blood pressure is the most common cause. Blockage of a branch vein may cause a blind spot or a generalized loss of vision. Both are painless.

The underlying medical problems must be treated and frequent follow-up visits must be performed to monitor for any eye complications. These complications can be sight threatening if left untreated.

RETINITIS PIGMENTOSA

Retinitis pigmentosa is a genetically transmitted disease, in which light receptors in the retina slowly lose function and are destroyed. The first area of vision to be affected is in the mid-periphery, but the entire field of vision gradually becomes smaller. Night blindness and loss of peripheral vision are the most common symptoms. One eye may be more affected than the other.

There is no known treatment for retinitis pigmentosa. Some individuals have been helped by specially tinted lenses. If research underway is successful in growing retinal tissue, replacement of the retina may become possible. A retinitis pigmentosa society has been established to keep people updated and to offer support.

SOLAR RETINOPATHY

When someone looks at the sun, the eye acts like a magnifying glass and focuses the intense rays onto the macula, the spot on the retina used for sharp vision. The intense rays burn the retina, and this causes swelling. Vision usually improves as the swelling decreases. Permanent loss of vision occurs when there is sufficient damage to cause a hole in the retina.

Fortunately, glare from the sun prevents most people from staring at it long enough to cause damage. The greatest danger occurs when people view eclipses through inadequate filters, filters which reduce the glare but fail to screen out the rays that burn the eye. Prevention is the best form of treatment.