Eye problems in the over fifties

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Ocular problems occur frequently in the over 50-year-old population and are often associated with the ageing process. Some of the more common problems in this age group are discussed in this article.

Eye ailments are common in people who are aged over 50 years. Some of these disorders have a significant effect on vision and may require surgical intervention; they may also create personal, social and economic problems. Table 1 summarises some of the common ocular problems occurring in this population.

Presbyopia

Presbyopia, also known as the 'short arm syndrome', is a term used to describe an eye in which the natural crystalline lens can no longer accommodate. Accommodation is the way the eye changes its focusing distance: the lens thickens, increasing its ability to focus close up. At about the age of 40 years, the lens becomes less flexible and accommodation is gradually lost. Symptoms of presbyopia, a normal ageing process experienced by everyone, are listed in Table 2.

Treatment

Treatment for presbyopia is straightforward and dependent on the individual's age, lifestyle, occupation and hobbies. If the person has good distance vision and difficulty only seeing up close, reading glasses are the easiest solution. For others, bifocals, multifocals (glasses with reading and distance correction) or separate pairs of reading and distance glasses are necessary. Another option is monovision: adjusting one eye for distance vision and the other eye for reading vision. This can be achieved with contact lenses or with refractive surgery.

Cataract

The word cataract refers to opacification of the crystalline lens (Figure 1) and is derived from the Latin *cataracta* and the Greek *katarraktes*, denoting 'a waterfall'. Patients with cataract see as though they are looking through a waterfall (see Figure 2).

The prevalence of cataract increases with age, with more than 50% of people in Australia aged 70 years or over affected (Figure 3).

Cataracts occur when proteins in the lens, notably alpha crystallins, clump together to form opaque areas. They usually develop slowly over several years and are related to ageing. In some

IN SUMMARY

- **Ocular problems are common in people aged over 50 years.**
- **Presbyopia is a universal problem that is readily correctable.**
- **Cataracts can cause severe visual loss; surgical management is very successful.**
- **Age-related macular degeneration can severely affect patients' quality of life; treatment is aimed at slowing the rate of visual loss. The use of antioxidants and smoking cessation may delay its development.**
- **Early diagnosis of diabetic retinopathy and glaucoma is important to reduce the risk of visual loss.**

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continued

Table 1. Common eye problems in the over fifties

- Presbyopia
- Cataract
- Age-related macular degeneration
- Diabetic retinopathy
- Glaucoma
- Ptosis
- Dry eyes
- Excessive tearing
- Floaters

Table 2. Symptoms of presbyopia

- Difficulty seeing clearly for close work: most people first notice difficulty reading very fine print such as the phone book
- Print seems to have less contrast
- Brighter, more direct light required for reading
- Reading material must be held further away to see
- Fatigue and eyestrain when reading

cases, depending on the cause of the cataract, loss of vision progresses rapidly.

Treatment

Once a clouded lens develops, surgical removal is the only remedy. Cataract surgery may be the oldest procedure in the world, having been practised since 800 BC. In the past, surgery was not performed until the cataract had become well developed; however, newer techniques, such as phacoemulsification (Figure 4) have made it safer and more efficient to operate at earlier stages.

Cataracts can be removed and replaced

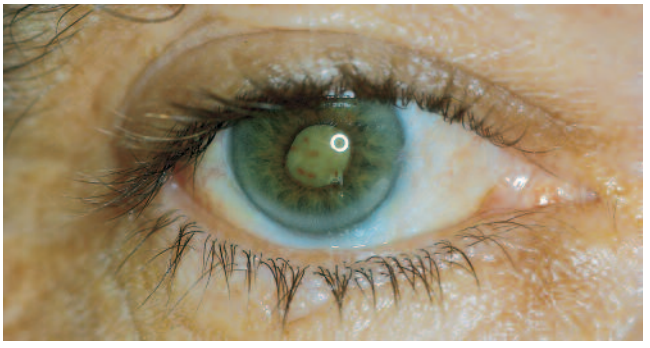

Figure 1. Cataract.

Figure 2. Typical blurred vision experienced by a patient with cataract.

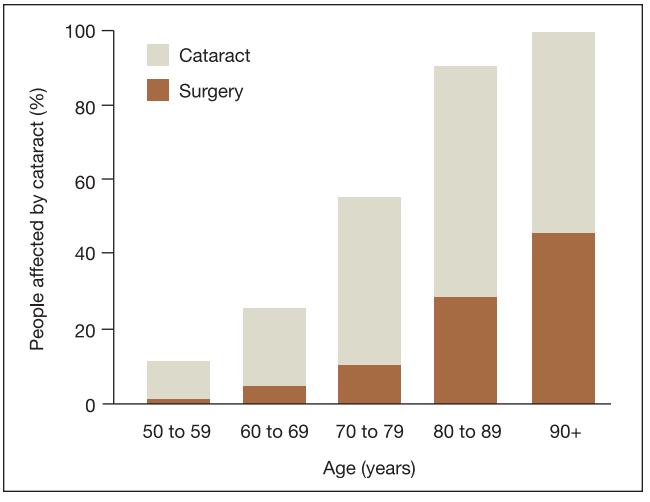

Figure 3 (left). Demographic distribution of cataract in people aged 50 years and over in Australia and proportion of these people having cataract surgery.

FIGURE 3 ADAPTED WITH PERMISSION FROM: EYE RESEARCH AUSTRALIA. CLEAR INSIGHT: THE ECONOMIC IMPACT AND COST OF VISION LOSS IN AUSTRALIA. REPORT BY ACCESS ECONOMICS FOR THE CENTRE FOR EYE RESEARCH AUSTRALIA, 2004.

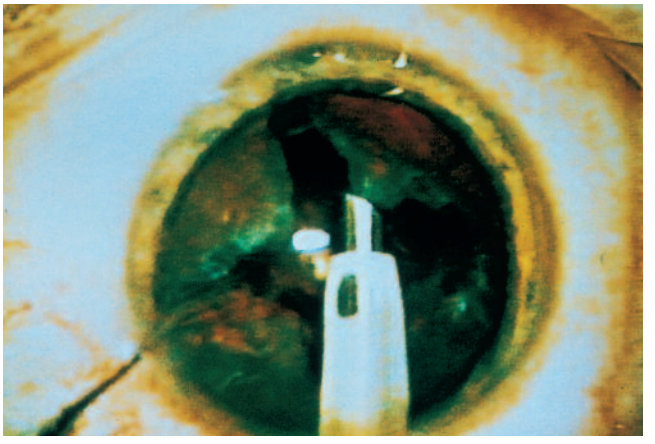

Figure 4. Phacoemulsification of the nucleus of a cataract.

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with artificial lenses. Cataract surgery with lens implantation has the following advantages:

- nearly all patients have better vision after surgery (although patients with significant eye disease such as glaucoma or corneal or retinal disease may not experience the same degree of improvement)
- many people experience significant improvement in quality of life after the operation
- some studies indicate that better vision might help to slow down age-related health problems unrelated to the eyes – for example, after cataract surgery, patients have a reduced incidence in the rate of falls and rate of traffic accidents.

Indications for surgery

Generally, surgery is indicated for people who have cataracts under the following circumstances:

- the Snellen eye test result is 6/12 or worse, with the cataract being responsible for vision loss and glasses or visual aids no longer being helpful
- everyday activities have become difficult to perform to the point that independence is threatened
- the patient is at risk of falling.

Whether surgery is appropriate also depends on the patient's specific condition and needs. For example, even if the criteria for surgery are met, a very sick elderly person in a nursing home may have less need for sharp vision than an active, younger adult. Elderly patients (85 years and older), especially those with serious health problems, also have higher risks for complications during surgery and poorer outcomes. Nevertheless, these cautions should not prevent the elderly from undergoing this procedure; vision improvement rates are still over 85%. Sometimes, if retinal disease is also suspected (usually a complication of diabetes or macular degeneration), a surgeon may perform cataract surgery to obtain a clear view of the fundus.

Macular degeneration

Many people develop macular degeneration as part of the body's natural ageing process (Figure 5). The two most common types of age-related macular degeneration (AMD) are:

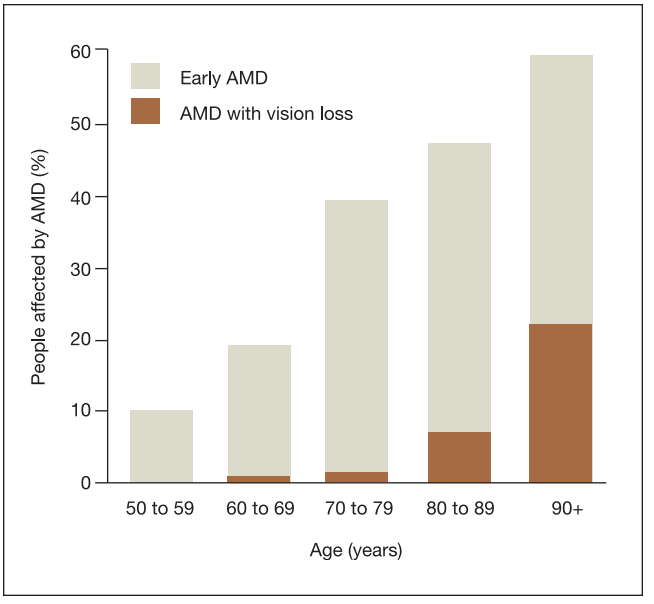

Figure 5 (above). Demographic distribution of age-related macular degeneration (AMD) in people aged 50 years and over in Australia.

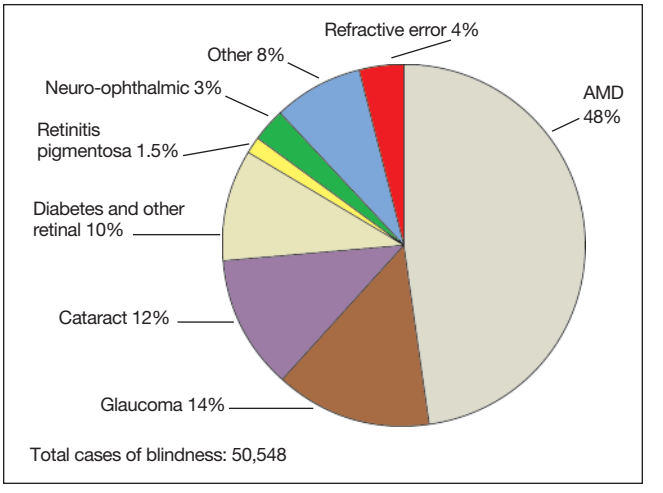

Figure 6 (above right). Causes of blindness in people aged over 40 years in Australia, 2004.

FIGURES 5 AND 6 ADAPTED WITH PERMISSION FROM: EYE RESEARCH AUSTRALIA. CLEAR INSIGHT: THE ECONOMIC IMPACT AND COST OF VISION LOSS IN AUSTRALIA. REPORT BY ACCESS ECONOMICS FOR THE CENTRE FOR EYE RESEARCH AUSTRALIA, 2004.

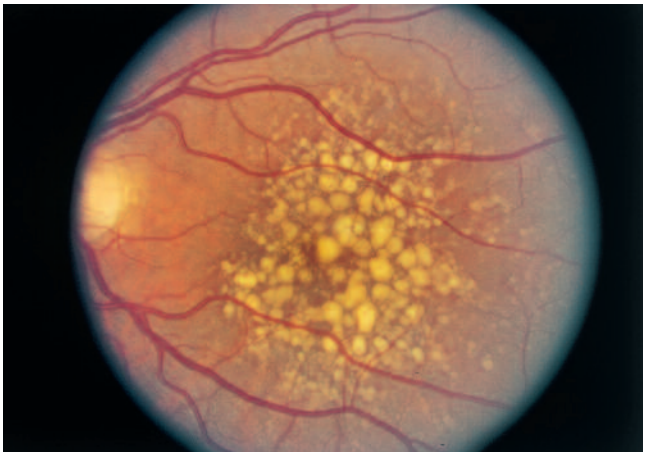

Figure 7 (right). Drusen in a patient with age-related macular degeneration.

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Table 3. Symptoms of macular degeneration

- Loss of vision
- Words on a page look blurred
- Straight lines look distorted
- Colours look dim
- Dark or empty area (scotoma) appears in the centre of vision

- atrophic (dry) AMD, caused by thinning of the tissues of the macula and associated with gradual loss of vision
- exudative (wet, or haemorrhagic) AMD, accounting for about 10% of all cases, and caused by abnormal blood vessels forming under the retina (resulting in a neovascular membrane) and leaking fluid and blood.

The symptoms of AMD are listed in Table 3. Sometimes, patients lose vision in only one eye and continue to see well for many years with the other eye. The condition may be hardly noticeable in its early stages, but when both eyes are involved quality of life can be severely affected. In Australia, AMD is the most common cause of blindness in people over 40 years (Figure 6).

Diagnosis

Early detection of eye problems can lead to more effective treatment. This is especially critical in people who are aged over 50 years or who have a family member with a history of retinal problems. The macula is observed with an ophthal - moscope or slit lamp biomicroscope. Typically drusen (fatty deposits) are the earliest lesions seen in patients with atrophic AMD (Figure 7). In addition, a simple vision test, the Amsler grid test, in which the patient looks at a grid resembling graph paper, can indicate loss or distortion of vision (Figure 8). A fluorescein angiogram can also be performed to identify abnormal blood vessels and tissue.

Treatment

Atrophic AMD

Treatment of the more common atrophic form of AMD focuses on helping people find ways to cope with the visual impairment. Despite ongoing medical research, there is no cure for AMD. Nutritional supplements may slow the rate of progression, although scientific evidence for this is preliminary (the Age-Related Eye Disease Study). A diet high in vegetables, fruit, fish and nuts may also help. Smoking increases the risk of developing AMD.

Various low vision optical devices (magnifying devices, closed-circuit television, large-print reading materials, and special lighting) can help to minimise the effects of visual impairment. Because side vision is usually not affected, a person's remaining sight can be very useful. A wide range of support services, rehabilitation programs and devices are available to help people with AMD continue with many of their activities.

Exudative AMD

People with the less common exudative AMD can be helped also by using low vision optical devices. In its early stages, exudative AMD can be treated with laser surgery (Figure 9), a brief and usually painless outpatient procedure. Although this will not cure AMD, it can slow the rate of vision loss. Patients should be

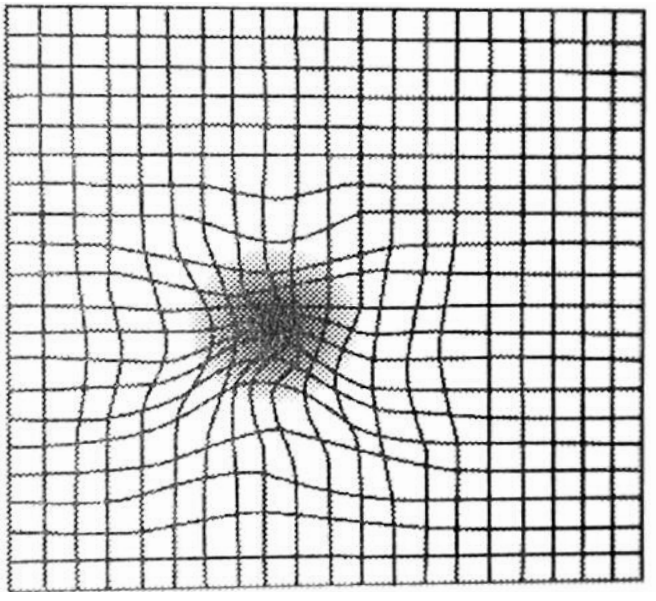

Figure 8. Amsler grid. Typical distortion of the grid seen by a patient with age-related macular degeneration.

Figure 9. Subretinal new vessel after laser treatment for exudative age-related macular degeneration.

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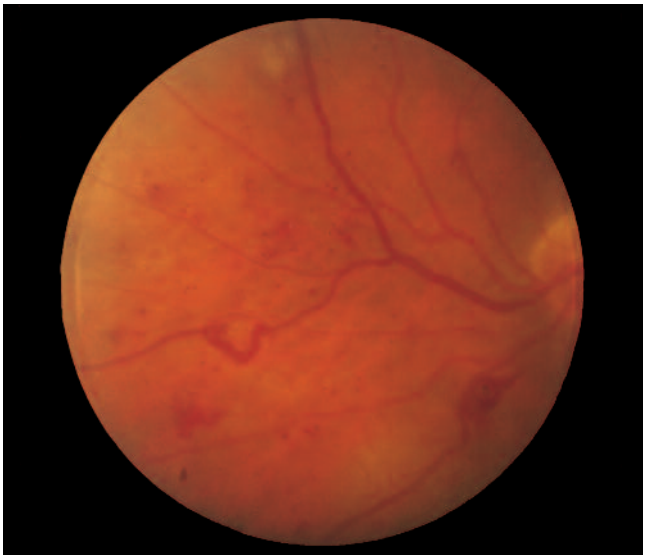

Figure 10. Vascular changes in diabetic retinopathy.

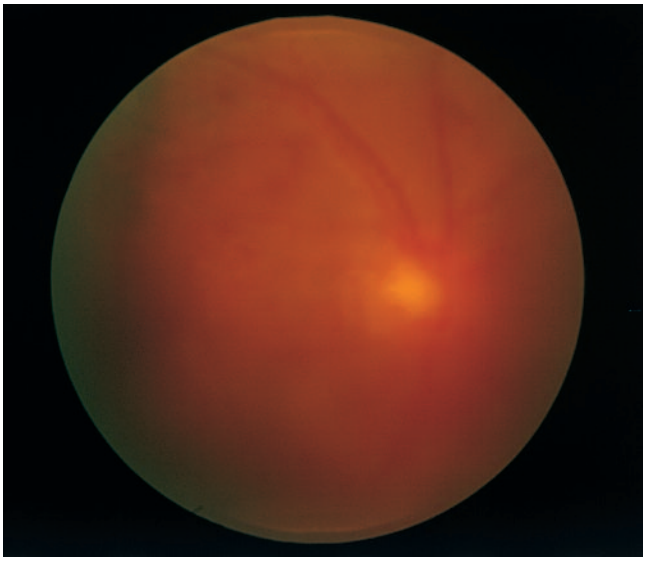

Figure 11. Diabetic vitreous haemorrhage.

aware that laser surgery leaves a small permanent scotoma at the point of laser contact, but the procedure can retard damage to the entire macula and, overall, preserve more sight.

Diabetic retinopathy

Patients with diabetes are more likely to develop eye problems such as cataract and glaucoma, but the effect of the diabetes on the retina is the main threat to vision. Most patients develop diabetic changes in the retina after about 15 years. One of these changes is diabetic retinopathy.

Over time, diabetes affects the circulatory system of the retina. In the earliest phase of the disease, known as background diabetic retinopathy, the arteries in the retina weaken and leak, forming small, dot-like haemorrhages (Figure 10). These leaking vessels lead to retinal oedema and decreased vision.

In the next phase, proliferative diabetic retinopathy, circulatory problems cause areas of the retina to become ischaemic. New, fragile vessels develop as the circulatory system attempts to maintain adequate oxygen levels within the retina – a process called neovascularisation. Unfortunately, these delicate vessels haemorrhage easily, and blood may leak into the retina and vitreous (Figure 11), causing spots or floaters along with decreased vision.

In the later phases of the disease, continued abnormal vessel growth and scar tissue may cause serious problems such as retinal detachment and neovascular glaucoma.

Diagnosis and treatment

Investigations for diabetic retinopathy include fluorescein angiography, retinal photography, and ultrasound imaging of the eye.

Treatment depends on the stage of the disease and the specific problem needing attention. The abnormal blood vessels can be treated with panretinal photocoagulation (PRP). In this procedure, a surgeon uses an argon laser to destroy ischaemic retinal tissue outside the patient's central vision. Although this creates blind spots in the peripheral vision, PRP prevents the continued growth of the fragile vessels and seals the leaking ones. The goal of this treatment is to arrest disease progression.

Vitrectomy is another surgical procedure used to treat a vitreous haemorrhage. The surgeon carefully removes blood and vitreous from the eye, replacing it with balanced saline. At the same time, the strands of vitreous attached to the retina that create traction and could lead to retinal detachment or tears are cut.

Prevention

Researchers have found that people with diabetes who are able to maintain appropriate blood sugar levels have fewer eye problems than those with poor control. Diet, exercise, blood pressure and lipid levels all play important parts in the overall health of those with diabetes.

People with diabetes can also greatly reduce the risk of eye complications by scheduling routine annual eye examinations. Many problems can be treated more successfully when detected early.

Glaucoma

Glaucoma is characterised by visual field loss, usually secondary to high intraocular pressure (IOP), which damages the optic nerve. However, 30% of patients with glaucoma have normal tension, so IOP measurement alone represents inadequate screening. If the IOP is not controlled, blindness may result.

Glaucoma can be hereditary and is

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seen more often in people aged over 50 years; however, most patients are unaware that they have the disease until it is in an advanced state (Figure 12).

Table 4. Symptoms and signs of glaucoma

Acute glaucoma

- Severe eye and facial pain
- Loss of vision
- Cloudy vision with halos appearing around lights
- Red eye
- Fixed, mid-dilated pupil
- Nausea and vomiting

Chronic glaucoma*

- Gradual loss of peripheral vision
- Blurred or foggy vision
- Mild, chronic headache
- Rainbow coloured halos seen around lights

* Most people with chronic glaucoma have no symptoms until peripheral visual loss is severe.

Glaucoma is the second most common cause of blindness in the world, and the most common cause of irreversible blindness. Table 4 lists the symptoms and signs of acute and chronic glaucoma.

Diagnosis and treatment

The best way to prevent vision loss from glaucoma is early diagnosis and treatment. An eye check at least every two years is important for people who are aged over 50 years.

One of the changes to be detected in patients with glaucoma is cupping of the optic disc (Figure 13). If glaucoma is suspected, a visual field test is performed to detect peripheral vision loss. In this test, patients stare straight ahead into an automated perimeter and click a button each time they see a blinking light. The test may be repeated at regular intervals to look for any changes.

Glaucoma treatment entails decreasing aqueous humour production, increasing fluid drainage, or a combination of both. These treatments will not restore any vision already lost.

A number of medications are used to treat glaucoma, the most popular being prostaglandin analogues and beta blockers. Beta blocker eye drops are not used in people with heart conditions or asthma because they can affect heart and lung function. GPs need to be aware that many of the drugs used for glaucoma interact with other commonly used medications.

Most cases of glaucoma can be controlled with a single drug or drug combinations, but some patients may require surgery or laser treatment, including:

- laser trabeculoplasty, in which an argon laser is used to create tiny holes in the trabecular meshwork to increase aqueous humour drainage
- trabeculectomy, in which an artificial drainage area is created through a scleral flap
- implantation of a drainage device to improve removal of fluid.

Ptosis

Eyelids lose their elasticity and the muscles that control them become flaccid, causing

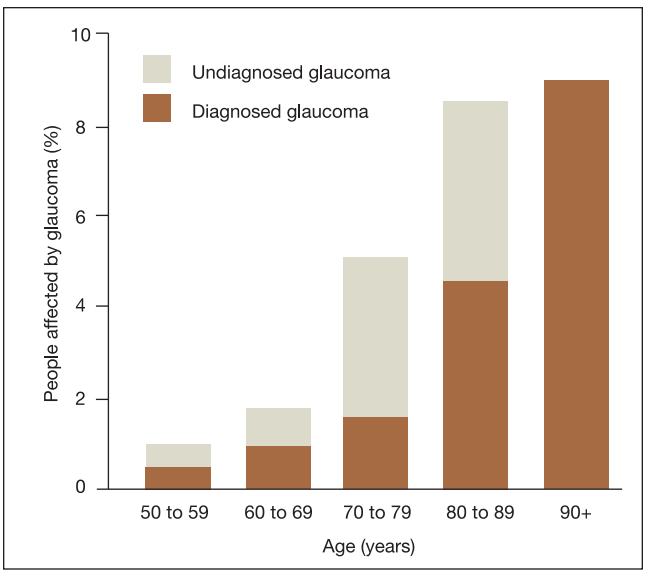

Figure 12. Demographic distribution of glaucoma in people aged 50 years and over in Australia.

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Figure 13. Cupped optic disc in a patient with glaucoma.

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the skin and lid to droop and sag. This is often seen in the elderly and usually does not cause any discomfort or impair vision unless it disturbs peripheral field or reading. The levator muscle and skin can be tightened if necessary.

It is important to exclude Horner's Syndrome if the ptosis is unilateral.

Dry eye

There are a number of causes of dry eye, including:

- degenerative change of the tear gland
- extremely dry or polluted environments
- blepharitis
- side effects of some medications (such as cold tablets, antihistamines, diuretics and beta blockers) or preservatives in eyedrops.

Dry eyes have a stinging, burning sensation and can become photophobic. The discomfort can often be relieved by using artificial teardrops or humidifying the air.

Excessive tearing

Causes of excessive tearing include:

- ectropion (drooping) of the lower eyelid, leading to poor contact between the openings of the tear ducts and the eyeball; as a result, tears cannot drain efficiently into the ducts and spill on to the cheek
- blocked nasolacrimal duct
- foreign bodies irritating the eyes – e.g. ingrowing eyelashes
- eye infection
- dry eyes, paradoxically, as tears do not adhere to the eye.

Excessive tearing should be managed according to the cause.

Floaters

Floaters are small mobile opaque or translucent particles in the vitreous gel of the eyeball. They appear as dark spots in the visual field, and are mostly transient phenomena. Their number varies with time, and they often disappear spontaneously. However, the sudden onset of floaters may herald a vitreous or retinal detachment and patients experiencing this should be referred promptly to an ophthalmologist.

Conclusion

Ocular problems are common in people aged over 50 years and are often associated with the ageing process. Some of these problems can cause severe visual loss, but if diagnosed early may be readily treated. MT

Further reading

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DECLARATION OF INTEREST. None.

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