PRACTICE OBSERVED

Emergencies in the Home

Eye emergencies

DEBORAH POLLOCK

The general practitioner called to an ophthalmic emergency in the home will need some basic equipment, an awareness of relevant points in the history, a workable routine for examining the eye, and a plan for first-aid measures or for referral when necessary.

Equipment

The first essential is a good light source. Taking the patient to the window will show many points—such as associated skin disease, the hue of a red eye, or the lack of reflected images in a cornea dulled by keratitis or glaucoma.

A simple reading chart such as a Snellen's chart or alternatively the large and small print of a newspaper may be used to test visual acuity; numbers are better for those who do not read English. Cake decorations such as "hundreds and thousands" or Smarties may be used for young children. A piece of card pierced with a pinhole will show if reduced vision is due to refractive error: vision that improves by using the pinhole should improve with spectacles.

A small, bright torch is needed to elicit pupil reactions and for close observation, together with a form of magnification such as a binocular loop.

Oxybuprocaine drops (0.4%) aid observation by relieving pain and blepharospasm. Prepacked sterile fluorescein paper strips will stain corneal ulcers and abrasions. Chloramphenicol drops or ointment are the first choice as an antibiotic. Cyclopentolate drops (1%) relieve painful spasm of the iris and aid inspection of the fundus. Acetazolamide tablets (250 mg) are kept for glaucoma. Steroid drops are rarely necessary as an emergency treatment and should never be used for an undi-

agnosed ophthalmic problem. I also carry analgesics and antinauseants.

Cotton-wool buds or a matchstick are used for evertng the eyelid, and a No 1 hypodermic needle held in the hand serves to remove embedded corneal foreign bodies. Forceps, eye pads, and bandages are also necessary.

History and examination

Ask about a family history of glaucoma or a previous history of dendritic ulcers, iritis, corneal abrasions, etc. Drugs being taken may be important—for example, atropine-like drugs may predispose to glaucoma. Loss of sight may be due to ethanol, chloroquine, or methanol poisoning.

The visual acuity is recorded when possible for medical and legal reasons. Each eye is tested separately, while the other is well covered. Special note should be taken when any eye is threatened—this will lower the threshold for referral.

The general examination includes the skin and lids, and the size of the palpebral fissure. Inequalities are looked for throughout the examination. Eye movements should be elicited in all directions, especially if the patient is complaining of diplopia.

When vision is suddenly lost in a white eye the fields are tested for each eye in turn. The patient fixes the observer's eye and attempts to count the observer's fingers in the peripheral field or "out of the corner of his eye."

The conjunctiva and fornices are inspected: to view the upper fornix the lid is pulled downwards and then rotated upwards while pressure is applied to the upper border of the tarsal plate (fig 1). Redness may be greater in the fornices or around the cornea—the latter, known as ciliary injection, is of more serious import and may indicate keratitis, iritis, or glaucoma.

The cornea is inspected for clarity or haziness and for any stain with fluorescein. The anterior chamber should be examined for depth (a shallow chamber predisposes to acute glaucoma) and also for the presence of a fluid level of blood (hyphaema) or pus (hypopyon).

2016

BRITISH MEDICAL JOURNAL VOLUME 282 20 JUNE 1981

LACERATED LIDS

If the lids are lacerated then the globe must also be checked for injury. Torn lids may leave the cornea exposed, requiring ointment for protection. Medial tears may affect the lacrimal canaliculi and require early treatment.

INJURIES FROM BLUNT OBJECTS

When the blunt object—such as a fist—is larger than the globe a check is made for tenderness or for loss of sensation over a possible fracture (the infraorbital nerve is particularly vulnerable). The patient is questioned about diplopia while full eye movements are elicited.

Objects smaller than the fist—such as toys, rubber darts, shotgun pellets, champagne corks, golf balls, or ice—may damage the globe without laceration. The vision may be reduced or an area of vision lost due to haemorrhage at any point, retinal damage or detachment, or retinitis such as a dislocated lens or an avulsed optic nerve. Any positive findings need referral.

CORNEAL ABRASIONS AND FOREIGN BODIES

Both corneal abrasions and foreign bodies give pain and the sensation of something in the eye with lacrimation and blepharospasm. They may occur separately or together, and the history is important.

Foreign bodies may be lodged in the fornices and can be removed with a corner of a folded, clean handkerchief or a triangle of cardboard once the lids have been everted. Oxybuprocaine should not be necessary.

Corneal foreign bodies can be removed under magnification with a light. Having instilled oxybuprocaine drops the head is steadied, the patient fixes on a distant object, and the foreign body is removed with a hand-held No 1 hypodermic needle. Cyclopentolate drops and chloramphenicol ointment are instilled, and the eye padded firmly and taped.

Corneal abrasions

Superficial abrasions are extremely painful, and those due to fingernails or plant material have the worst prognosis. Oxybuprocaine may be necessary to aid inspection, but its repeated use may delay healing. The abrasion will stain with fluorescein. Cyclopentolate drops will relieve pain from iris spasm. Local antibiotic is given and a firm pad and tape applied. Abrasions persisting more than 48 hours must be referred, and remember that ingrowing lashes or foreign bodies may cause corneal abrasions.

BURNS

Chemical burns may come from many sources but bleach, scouring powders, paints, and whitewash are often the cause. Immediate washout under running cold water is imperative. Alkaline burns are more dangerous than acid burns: the alkali saponifies the tissue lipids causing prolonged tissue destruction and scarring. Oxybuprocaine aids lavage and inspection, and lumps of lime are picked out with forceps. Antibiotic and steroid ointment are instilled alone with cyclopentolate drops, and the chemical is sent for identification if this does not aid referral.

Explosing car batteries are an increasing hazard in the home. If the terminals are pulled from the recharging battery a small spark may ignite the hydrogen gas. The force of the explosion, together with acid burns, may be blinding.

Thermal burns to the lids are treated as skin burns, but referral is necessary if the globe is burnt. Antibiotic ointment is

FIG 1—Everting the eyelid.

Injuries and burns

Three general rules should be borne in mind: (1) record if possible the vision of both eyes, and treat an only eye like a "precious baby"; (2) look for penetrating and lacerating injuries but never overinvestigate or press on a lacerated globe; (3) use local anaesthetics to aid inspection but do not repeat their use.

PENETRATING WOUNDS

Sharp objects may penetrate the globe sometimes with minimal signs but disastrous results. The dartboard hung at head height on the back of the kitchen door may mean disaster. Other causes are the well-known flying splinters of metal from a hammer and chisel, or even fuse wire, wire-wool pads, glass-fibre insulations, drill bits, or caterpillar hairs. Wounds from animal or plant material carry dangers of bacterial or—worse still—fungal infection. Oxybuprocaine drops (0.4%) aid inspection. A deformed pupil or small conjunctival tear may be the only observable sign, and if the foreign body cannot be found it must be assumed that it is in the eye until proved otherwise. The vision is recorded, antiseptic drops instilled, and the eye covered with a pad before immediate referral.

LACERATED GLOBE

Glass fragments, pencils, and wire coat hangers are among the common causes of lacerated globes. The doctor's aim is to prevent prolapse and infection of globe contents; hence early referral without attempting a full examination is advised. Antibiotic drops may be instilled and the patient warned not to squeeze the eye, which should be covered with a pad. Sedation and analgesia may be required, and starvation started in case a general anaesthetic is necessary.

instilled, and sedation and analgesia given as required. Flash burns from welding or ultraviolet burns from sunray lamps are extremely painful and preventable with goggles. Small punctate areas of corneal staining are observed. Oxybuprocaine gives immediate relief, and cyclopentolate drops are instilled together with antibiotic and steroid ointment before padding the eyes and applying cold compresses.

Untreatable retinal burns from infrared radiation occur when patients are foolish enough to look at the sun—even when it is eclipsed.

The red eye

As a general rule unilateral redness with loss of vision and pain spells danger. Redness around the cornea (ciliary injection) as opposed to in the fornices (conjunctival injection) is a warning signal. The main causes of a painful red eye with diminished vision are keratitis, iritis, and glaucoma—all of which may require referral.

CONJUNCTIVITIS

Both eyes are red, discharging, and gritty but painless. Chloramphenicol drops six hourly are prescribed. Careful hygiene will protect other members of the family, and cases that do not improve are referred.

KERATITIS

This is usually unilateral. There is some watery discharge and ciliary injection with staining of the cornea. A foreign body or ingrowing lashes may make home treatment possible, but otherwise referral is necessary.

Dendritic ulcers due to herpes simplex virus must always be sought. If the typical spider-like dendritic ulcer is seen (and there may be a previous history) then treatment with idoxuridine ointment five times daily can be started, while waiting for an urgent ophthalmic appointment. Unfortunately herpes simplex does not always present in this form, and giving steroids could lead to loss of sight. For this reason steroids should never be used as a first line of treatment to a red eye. Remember a red eye due to herpes simplex + steroid = possible blind eye.

IRITIS

Pain, redness, and loss of vision are accompanied by a poorly defined iris and a small pupil that may be irregular if adherent to the lens. Rarely, pus may be seen in the anterior chamber (hypopyon) or small white spots (keratic precipitates) on the back of the cornea (fig 2). Early referral is necessary, and cyclo-

FIG 2—Signs of iritis.

pentolate drops, local heat, and oral analgesics will relieve pain until the diagnosis is confirmed.

ACUTE GLAUCOMA

The presentation is similar to iritis, but there may be a history of a familial tendency or of seeing coloured halos like rainbows around light sources such as electric bulbs or street lights. The cornea has a steamy look, and the iris, which is poorly seen, may look whorled. The pupil is vertically oval, half dilated, and does not react to light. The eye may feel hard; and pain, prostration, and vomiting may be severe. Glaucoma should be borne in mind when old people, who may already have poor sight and are inarticulate through aphasia or dementia develop an "acute abdomen." They do not say that they have a painful eye, but the red eye and shallow anterior chamber due to a swollen cataractous lens gives the game away. Early referral is essential, but if a delay is unavoidable then 500 mg of acetazolamide intramuscularly or orally will relieve symptoms.

Retinal detachment

FIG 3—Detached retina (reproduced by permission of the Institute of Ophthalmology).

Loss of vision in a white eye

Sudden loss of vision in a white eye often has a general medical basis and may or may not be associated with pain. Transient painless obscurations of vision lasting a few seconds may occur with raised intracranial pressure and hypertension, usually in association with early-morning headaches.

Painless loss of vision lasting several minutes or much longer and accompanied by small flashes of light may be due to emboli, possibly occurring in a patient with heart or vascular disease. The vision is lost in only a part of the field "like a curtain." Glistening cholesterol emboli may be seen in the branch retinal arteries. A treatable cause such as mitral disease or carotid stenosis may be detected and the patient referred to a physician. Possible cerebrovascular accidents may thus be avoided.

Sudden, complete, painless loss of vision in one eye may be due to occlusion of the central retinal artery or vein: the history is more sudden in the former. The pupil does not react to light; the fundus is pale apart from a pink spot at the macula; and stagnant blood lies segmentally in the vessels. Immediate treatment may help. The patient should lie down and massage the eye, and any vasodilator may be given: tolazoline, glyceryl trinitrate, or endogenous carbon dioxide generated by re-breathing in a paper bag. The patient is referred immediately. If the vein is obstructed, dilated veins and many haemorrhages are seen, and the patient is referred, as late complications may lead to a blind painful eye.

Loss of vision due to retinal detachment develops over hours or days. The story of a curtain coming across the field of vision, accompanied by flashing light is similar to that for retinal

2018

BRITISH MEDICAL JOURNAL VOLUME 282 20 JUNE 1981

emboli. Be alerted by a history of sudden floaters, trauma, myopia, or recent eye surgery. Look for the billowing grey retina on which course dark tortuous vessels and refer early (fig 3).

Temporary arteritis may also cause curtain-like loss of vision. The eye may look normal or have a pale, swollen optic disc. Headache, pain on eating, loss of appetite and weight, temporal tenderness, and a raised erythrocyte sedimentation rate in the age group over 55 point to the diagnosis. Immediate referral for treatment may prevent blindness.

Other causes of loss of vision such as multiple sclerosis (which occurs in a younger age group) or intracranial lesions may present as part of a neurological problem.

Pain and headache associated with a white eye

Pain referred to a white eye rarely has an ophthalmic cause, though it is useful to have the refractive error and spectacle correction checked by an optician before an ophthalmic appointment is made. Muscle imbalance is a possible ophthalmic cause of headache, and temporal arteritis must be considered in the elderly. Herpes zoster causes severe pain which develops after the vesicles have appeared. Migraine typically gives visual flashes and fortification spectra followed by a headache which is often unilateral. Sinusitis and trigeminal neuralgia also give pain referred to the eye.

J ELLIOT MURRAY

I was holidaying in the Hebrides after my National Service, hoping for a job in general practice to turn up, when I had an urgent message from my old chief in Edinburgh, Dr Fergus Hewat: "My brother-in-law in Dumfries needs an assistant, and he has the biggest practice in the south-west of Scotland. It is a plum job, and you must take it." Such was my introduction to that remarkable character Dr A J Gordon Hunter, remarkable even in the latter days of an era that produced many imposing personalities, when medicine relied more on faith and the healing touch than on powerful therapeutic drugs.

Gordon Hunter was educated at George Watson's College and Edinburgh University, and was awarded the MC in Gallipoli. He joined his uncle, Dr Joseph Hunter, later Liberal MP for Dumfries and Galloway, in general practice in Dumfries, and soon his influence was felt throughout the local medical world—for he became a veritable Pooh Bah, Lord High Everything Else of Dumfries. In addition to his general practice he was surgeon at the Royal Infirmary, travelling as far afield as Castle Douglas and Kirkcudbright to operate; obstetrician at Cresswell

Dumfries DG2 7NU.
J ELLIOT MURRAY, MB, FRCS, general practitioner

Infection

Two causes of infected swellings in the lids are an infected lash follicle (stye), which points towards the emerging lash, and an infected meibomian cyst located in the tarsal plate. These may be localised or the whole lid may be red and swollen. Both are treated with local chloramphenicol four times a day, and steam may give symptomatic relief. Patients with meibomian cysts need to be referred for incision and curettage once the infection has settled.

The most dangerous infection that may occur as an emergency is orbital cellulitis. The lids are red and swollen, the lymph nodes may be enlarged, the eye is immobile, and the patient is unwell. A broad-spectrum antibiotic should be started, and the patient referred immediately. Spread to the cavernous sinus is a possible but rare outcome should treatment be delayed.

I thank Mr Charles Maguire and Mr Patrick Holmes Sellers for their advice.

Suggested reading

Gardiner PA. *ABC of ophthalmology*. London: British Medical Association 1979.
Jackson CRS. *The eye in general practice*. Edinburgh: Churchill Livingstone, 1975.

Interesting GPs of the Past

A J Gordon Hunter

Lord High Everything Else of Dumfries

Hospital, police surgeon; prison medical officer; staff physician at the Crichton Royal; medical officer to St Joseph's College, a boys' boarding school in which he had a close interest, and which actually named one of their rowing boats after him; and he held many other lesser appointments. How could one man do justice to all these commitments?

Midnight surgeon

Certainly he had the support of a hard-working partner to keep the practice wheels turning, and a series of young assistants, who went rapidly on their ways as soon as they asked for a rise. I survived only because my request happened to coincide with the National Health Service's decision to limit payment of capitation fees to 3500 patients per principal, so he needed another partner to bring in the money. But he himself was tireless, and worked till all hours of the night. Many a patient, having waited all day for a call requested in the morning, has been knocked up at midnight to find Gordon Hunter, immaculate in bowler hat and yellow gloves, at the door expecting the ailing child to be roused. "Best time to examine a child," he would say. He was known in the theatre as the Midnight Surgeon, where the long-suffering staff were well used to preparing for an 8 pm emergency, only for Dr Hunter to turn up at 12, and woe betide