Systematic eye examination in A&E

This article gives a description of the techniques and equipment needed in order to assess patients who present to the A&E with eye problems. It considers essential equipment and its use, the significance of the history of the episode, triage categories, assessment of visual acuity and the importance of systematic eye examination. It is intended to equip nurses in A&E with the necessary knowledge and techniques to deal confidently with this client group.

EQUIPMENT

Ideally, the department should be equipped with a slit lamp which is a binocular microscope enabling magnified and stable eye examination (Egging 1998). These are particularly expensive pieces of equipment and many departments are not able to access one. An adequate and informative eye assessment may be undertaken using a minimum of equipment. A bright light source is essential; a bright pen torch or ophthalmoscope or an adjustable light. An ophthalmoscope, while useful for examining the retina, provides only a small spot of light which is not as useful for general examination of the eye. A cobalt blue filter is essential for identifying fluorescence after instillation of fluorescein. This filter may sometimes be available as part of the department ophthalmoscope but filters are also available from specialist suppliers. They are relatively inexpensive and fit over the end of a pen torch.

Magnification is useful, either in the form of a hand held magnifier, a head loupe or a “ring light” with a magnifying section centrally. Cotton buds, or more usefully, single ended cotton tipped applicators are essential for use in evertting the lid, wiping foreign bodies off lids and globe and in eye irrigation. They are also used as a mount for needles as they fit into the bore of a hypodermic needle, for use in removal of corneal foreign bodies.

Drops which are essential for examination purposes include fluorescein, which stains damaged epithelium, either in the form of single dose units (minims) or impregnated paper strips which are moistened with saline and a local anaesthetic such as Benoxinate 0.4 per cent or Amethocaine 1 per cent again, in single dose applicators. Other essential equipment includes visual acuity testing materials for adults and children; Snellen charts for six or three metres for adults and suitable recognition books such as Sheridan Gardiner or the Kay Picture Test for children (Cheng et al 1997).

VISUAL ACUITY

Assessment of visual acuity should be undertaken at triage for any patient presenting with an eye problem, before any other investigations or treatment, except irrigation or instillation of local anaesthetic, are carried out. The patient’s affected or poorer seeing eye should be tested first, the other occluded with a card or the patient’s hand. Any distance glasses should be worn as the test is of best corrected distance visual acuity. The patient should be asked to read down from the top of the Snellen chart, making an attempt at all possible letters. Visual acuity should be
recorded as:

- The distance at which the eye is being tested (usually 6 metres)
- The last line read by the patient

The number for this line is indicated on the Snellen chart, just above or just below the letters. If only part of a line is read, this may be recorded as the line above plus the extra letters, or the line below minus the missed letters. For example; if the patient reads the ‘12’ line except for one letter, at 6 metres, it should be recorded as 6/12-1.

WHAT DOES THIS ACTUALLY MEAN?

The number on the Snellen chart indicates at what distance the normal eye can see this particular line. Therefore, the conventional recording of visual acuity actually means:

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<tr>
<th>The distance at which the eye is being tested</th>
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<tr>
<td>The distance at which the normal eye can see this letter</td>
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6/6 is normal vision. The eye can read at 6 meters what the normal eye can see at 6 metres. 6/12 is rather worse than normal vision; the eye can see at 6 metres what the normal eye can see at 12 metres or twice as far away. If the patient’s vision appears poor (less than 6/9), a pinhole, a small hole in a card or a commercial pinhole, can be held in front of the eye. No focusing is needed to bring this small beam of light to a point at the retina, so the effects of any uncorrected refractive problem (an unmet need for spectacles!) are negated. The visual acuity should be recorded with and without pinholes and note should be taken of whether distance glasses or contact lenses are worn.

If the patient is unable to read the top letter of the Snellen chart, the letter that the normal eye should be able to see at 60 metres, the distance should be reduced until the patient can see the top letter on the chart, that is 5/60, 4/60, etc. to 1/60. If the patient cannot see the top letter at one metre, it should be ascertained if he can count fingers (CF), see hand movements (HM), or just perceive light (PL) at one metre. Lack of light perception is recorded as NPL. Normal visual acuity is 6/6, but normal visual acuity for the patient may be less for a variety of reasons.

Problems in accurate visual acuity assessment may occur if the patient does not speak English, or is unable to read. Strategies to overcome this may include:

- Using a recognition chart so that the patient may match letters or shapes
- Obtaining the services of an interpreter or family member to translate for the patient
Children are often very co-operative if picture tests such as the Kay Picture Test are used and the procedure is made into a game. Patients who are in pain should have a drop of local anaesthetic instilled so that any corneal pain is alleviated and the patient can co-operate more fully with the procedure thus achieving an accurate visual acuity (Stollery 1997).

Patients sometimes feel that this is a test they have to pass and ‘cheat’ by looking through their fingers etc. It should be explained that the nurse is attempting to obtain an accurate assessment of their vision and that it is important that they are not tempted to make it seem better than it really is.

HISTORY

The history obtained from the patient with an ophthalmic problem is critical, and can help to lead to accurate diagnosis as well as providing the basis for accurate triage classification. History of the presenting problem should include:

- How long the patient has had symptoms for and are they worsening
- Rapidity and mode of onset of symptoms
- Degree, type and location of any pain
- Is vision reduced and to what degree?
- Is there any discharge or watering?
- Is the patient photophobic?
- Has the patient had this, or a similar problem before?
- Are there any concurrent systemic problems?

The answers to these questions will point to possible further lines of questioning and questions which can be ignored. For example: if a patient presents with a foreign body sensation, the nurse is likely to rule out loss of vision quite quickly and concentrate on, for example:

- The location of the sensation
- Any history of trauma (possible foreign body or corneal abrasion)
- Any stickiness or watering (possible conjunctivitis)
- Any flu like symptoms (possible conjunctivitis)
- Previous history of ingrowing lash problems etc.

If a patient presents with loss of vision however, traumatic causes would be dealt with quickly and the nurse would concentrate on issues such as the suddenness of the visual loss, whether it was getting worse or better, unilateral or bilateral (likely to be neurological rather than an eye problem if bilateral) or associated with flashing lights, floaters, or curtain effects (possible retinal detachments).

Discussion of systemic problems and medication is important as it can point to possible ophthalmic problems (Mardens In Press). For example, there is a link between ankylosing spondylitis and uveitis, a link between rheumatoid arthritis and dry eyes and obvious links between diabetes and ocular problems. Many systemic drugs also have ocular side effects; Chloroquine can cause macular disturbance and therefore problems with central vision, MAOIs can cause visual disturbance, Tricyclic antidepressants are associated with glaucoma and phenothiazines can cause ophthalmic crises. By considering these issues, not only is an accurate and comprehensive history obtained, but this may point to possible diagnoses and courses of action.

TRIAGE DECISIONS

Using a five category system, there is really only one ophthalmic problem which falls into the red or most urgent category - chemical burns. Others should be classified as shown (Figure 1).

EXAMINING THE EYE

Eye examination must be systematic. It is very easy to assume a diagnosis from the history and, in that way, miss less obvious problems (Okhravi 1997). The classical examination technique starts at the ‘outside’; the eye position, and surrounding structures and works ‘in’ to consider the globe itself. During a systematic eye examination, the clinician should consider:

THE EYES

- Is their position normal for the patient
- Is there any epiphora/exophthalmos/exopthalmos - epiphora/exophthalmos in trauma may indicate fractures, exopthalmos may indicate bleeding into the orbit which requires urgent attention
- Is movement normal – the patient should be asked to look in all eight positions of gaze (up, down, left, right, up an left, up and right, down and left, down and right) as well as straight ahead and restriction of movement or double vision should be noted
The lids

- Position – look for entropion (lid turning inwards), extropion (lid turning outwards)
- Integrity – look for lacerations – these may be tiny and only become obvious if the lid is moved
- Lash line – is it intact, are there any ingrowing lashes / crusting / infestation
- Swelling – the whole or part of the lid, pointing onto the lid margin, one or both lids
- Are both upper and lower puncta visible? They may be damaged by lacerations or obliterated by chemical or other burns.

Conjunctiva

- Integrity – look for lacerations
- Structure – is it smooth or are there follicles or papillae
- Other features – conjunctival cysts, pterygia, pingueculae
- Inflammation – is it generalised or local
- Sub conjunctival haemorrhages
- Discharge – type
- Fornices – both lower and subtarsal area – concretions (small, hard, yellow or white ‘granules’ in the lid tissue which may erode through and cause a foreign body sensation) or foreign bodies may be visible.

Cornea

- Integrity – lacerations, abrasions, ulcers
- Clarity
- Foreign bodies

The conjunctiva and cornea should be examined initially without fluorescein and then fluorescein may be instilled and the eye re-examined using a cobalt blue light to check for abrasions and lacerations.

Anterior chamber

- Depth – distance between the curved cornea and the iris – generally equal in both eyes
- Contents – such as red blood cells – inflammation is difficult to see without a slit lamp

Iris and pupil

- Colour – may be dull if there is inflammation in the anterior chamber
- Integrity – iris changes may occur in both blunt and penetrating trauma
- Position – a deviated pupil may indicate a perforated eye
- Size and shape – smaller or larger then the fellow eye, round or oval
- Reaction – to light and to near

Remember to compare the findings with the normal eye. What appears to be an abnormality may be bilateral and normal for the patient.

With adequate, basic equipment and an understanding of the techniques involved, the A&E nurse undertaking triage assessment, and the emergency nurse practitioner, will be able to undertake an accurate and comprehensive assessment of the patient presenting to the A&E department with an eye problem in order that appropriate decisions can be made about treatment, follow up and discharge or referral to ophthalmic specialists.

References: