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BACKGROUND

Patients who are comatose or semicomatose are at risk of corneal dryness and ulceration (5). Recent studies have shown that 75% of patients under sedation or muscle relaxants have poor eyelid closure (1). 60% of these patients and 40% of all ITU patients are found to have superficial corneal damage (2). Predictive factors for this include reduced Glasgow Coma Scale, intubation and the length of stay (1,2,3). The use of muscle relaxants reduces the tonic contraction of the orbicularis muscle around the eye which keeps the lids closed and heavy sedation eliminates the blink reflex.

Superficial corneal damage can lead to serious corneal infection which can permanently damage vision. In many units, lubrication is not used or it is incorrectly applied over closed eyelids

AIMS OF EYE CARE IN ITU

1. To protect the eye in vulnerable patients i.e. semi-comatose or comatose patients
2. To identify disease affecting the eye when this occurs while the patient is in ITU
3. To deliver treatment to the eye when it is prescribed

The overall aim of looking after the eyes in these patients is to ensure that when they leave ITU their future vision is not going to be compromised by a lack of care at this time when they are very sick and the main priority of care is keeping them alive.

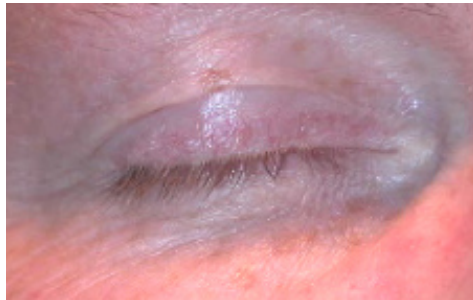
1. PROTECTING THE EYE IN VULNERABLE PATIENTS

Vulnerable patients in this context are those who are unconscious or semi-comatose and those who are unable to close the eye for themselves. The main problem is exposure of the eye due to inadequate lid closure. This leads to drying of the conjunctival and corneal epithelium which can then become infected leading to permanent corneal scarring and visual loss.

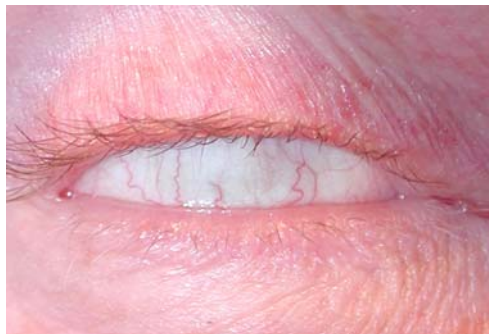
Accurate assessment of the degree of exposure is important and needs to be accurately graded at the onset of the care plan and regularly reviewed.

EYE GRADING GUIDE

Grade 1 - Lids completely closed

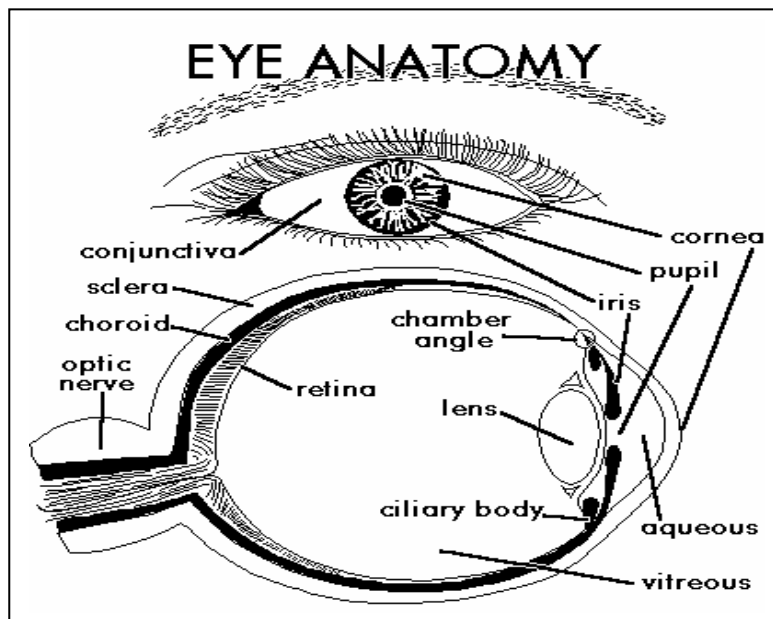


Grade 2 - Any conjunctival exposure as shown by any white of the eye being visible, but no corneal exposure



Grade 3 - Any corneal exposure, even a very tiny amount





Patient nursed supine - Poor lid closure is very common in this situation and eye care must be an important part of the regular care routine. Lubrication is the key and this is best achieved with ointment as drops do not last long enough. Eyes should be bathed with water first to remove dried ointment and new ointment applied to the inner aspect of the lower lid every 4 hours. Before each application the eye should be examined with a bright light to look for areas of swelling in the conjunctiva (conjunctival chemosis) and dullness of the cornea. If these are found, the medical staff should be alerted and initially considerably increased lubrication given.

If the eyes do not close properly the grade of severity (grade 2-3 above) must be assessed. The algorithm demonstrates the plan of action as this has been shown to reduce significantly the incidence of superficial ocular damage (4). Eyes that have no exposure (grade 1) require no action. Eyes that have grade 2 exposure need to be lubricated and grade 3 exposure needs lubrication and closing the lids with geliperm along the lash margin. Care is needed to do this as the lashes must be clear of the cornea before geliperm is applied otherwise the lashes will abrade the cornea.

Lubricant ointment is put on first, the eyes are closed, the position of the lashes is checked and then the geliperm is applied.

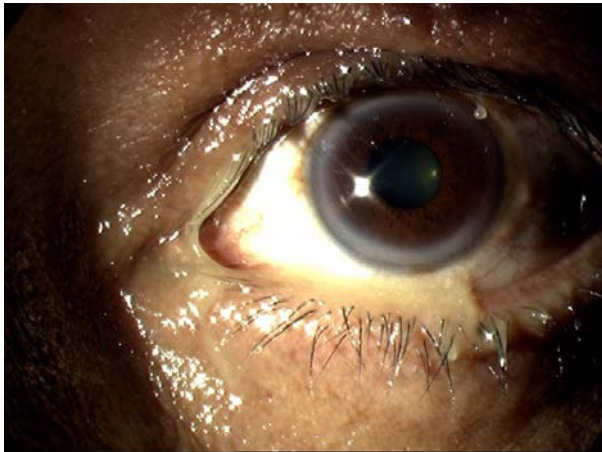
Patient nursed prone and unconscious - in these patients the eyelids and face can become oedematous and conjunctival swelling (chemosis) is common. Drying of the conjunctiva and cornea is a major problem and adequate lubrication and proper eye closure are vital. The eyes should be re-lubricated every 4 hours. Corneal abrasions from poor eye lid closure can occur and all eyes should be shut with geliperm. Where there is severe oedema and the swollen conjunctiva prolapses through the closed eyelids, the medical staff should be contacted as the eyelids may need to be temporally closed with micropore tape or sutures.

2. IDENTIFYING DISEASE AFFECTING THE EYE

- in ICU patients there are 3 main eye problems that need to be identified

a) Conjunctivitis - for you to diagnose this, the eye must be sticky and is usually but not always red - if it is red but not sticky, this is not conjunctivitis. Medical help should be sought in both incidences.

STICKY

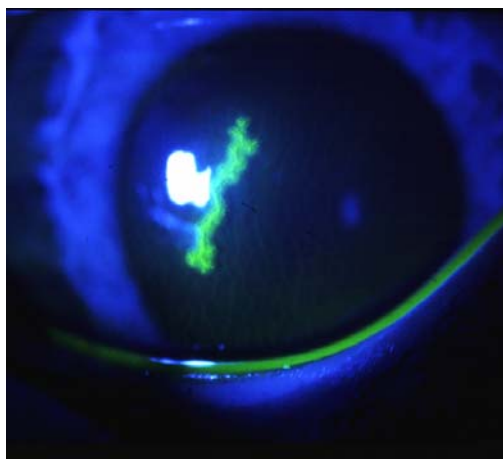


RED BUT NOT STICKY

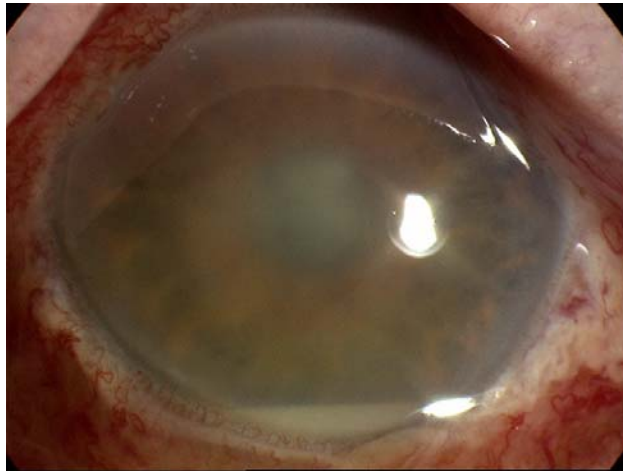


Conjunctivitis in this setting is usually bacterial and can be very infectious. Without due care it can be spread, as many of the bacteria in ITU are virulent, it is wise to take a swab of the eye discharge and send it for microbial culture. The discharge can be removed by bathing the eye lids with water - separate gauze for each eye - and chloramphenicol eye ointment applied along the inner eyelid margin four times a day. If the microbial results suggest that the organism is not sensitive to chloramphenicol but the eye is better, leave alone and do not change this. The ointment should be applied for 5-7 days. If the eye is not doing well, then the ointment can be changed to one containing an antibiotic to which the organism is deemed sensitive. If the cornea becomes dull or a white patch appears, the medical staff must be informed quickly. If the discharge and redness have not markedly improved in 48 hours, the medical staff must be informed and ophthalmic help sought.

b) Corneal disease - this can be from dryness and become infected as described above or the eye may become red without being sticky with a lesion on the corneal epithelium. Herpes simplex can form dendrites and ulcers in the corneal epithelium in debilitated patients and stains yellow with fluorescein dye. If these are seen, urgent ophthalmic help must be sought



b) Red eye in a septic patient or/and white line visible in eye - this is potentially a very serious problem and can indicate spread of the infection in the blood stream to the eye. This is particularly likely if a white line is visible in the eye in front of the iris (hypopyon). Urgent ophthalmic help needs to be sought



3. DELIVERY OF PRESCRIBED TREATMENT TO THE EYE:

Usually given in the form of drops or ointment. Sometimes several different drops are required. When giving several different drops, do not give them at the same time as one drop may wash out another thereby reducing its effectiveness. Always put ointment on after giving the drops and not before, as the ointment prevents the drops from getting into the tear film and treating the eye.

TREATMENT POLICY

GRADE 1 - EYELIDS CLOSE WELL

NO ACTION REQUIRED

GRADE 2 - SOME CONJUNCTIVAL EXPOSURE

EYES NEED LUBRICATING WITH LACRI-LUBE EVERY 4 HOURS
OINTMENT APPLIED TO INSIDE OF LOWER LID
CLEAN OFF OLD OINTMENT BEFORE PUTTING ON NEW
EACH TIME CHECK CORNEA FOR CLARITY WITH BRIGHT LIGHT
IF NOT CLEAR – ALERT MEDICAL STAFF

GRADE 3 - CORNEAL AND CONJUNCTIVAL EXPOSURE

MAJOR RISK TO EYE

EYES NEED LUBRICATING WITH LACRI-LUBE AND GELIPERM APPLIED
APPLY OINTMENT AS FOR GRADE 2
ENSURE LASHES ARE OUTSIDE EYE
CHECK CORNEA REGULARLY WITH BRIGHT LIGHT
IF NOT CLEAR – ALERT MEDICAL STAFF

PATIENTS NURSED PRONE AND UNCONCIOUS

**FOR ALL PATIENTS WHETHER CORNEAL AND CONJUNCTIVAL EXPOSURE
PRESENT OR NOT**

EYELIDS AND FACE ARE SWELLING

DRYING OF CORNEA AND CONJUNCTIVA IS A MAJOR PROBLEM
CORNEAL AND CONJUNCTIVAL EXPOSURE IS COMMON

MAJOR RISK TO EYE

EYES NEED LUBRICATING AND GELIPERM APPLIED
APPLY OINTMENT AS FOR GRADE 2 AND 3
ENSURE LASHES OUTSIDE EYE

**IF CONJUNCTIVA SWOLLEN AND WILL NOT GO BEHIND LIDS – ALERT
MEDICAL STAFF**

**CHECK CORNEA REGULARLY WITH BRIGHT LIGHT IF NOT CLEAR –
ALERT MEDICAL STAFF**

RED EYE

TAKE SWAB - GIVE CHLORAMPENICAL OINTMENT for 5-7 DAY'S
REMEMBER THIS IS CONTAGIOUS AND CAN BE TRANSMITTED TO OTHERS
IF NOT BETTER IN 24 HOURS – **ALERT MEDICAL STAFF**

EYE NOT STICKY

IS CORNEA CLEAR?

IF NOT – COULD IT BE DRY –CHECK LUBRICATION SCHEDULE?
IF NOT DRY – **ALERT MEDICAL STAFF**

WHITE LINE VISABLE INSIDE EYE

ALERT MEDICAL STAFF IMMEDIATELY

Useful references

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