Acute Eye Conditions

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Introduction

Eye is one of the most vital sense organs, important for survival as well as for all the basic needs of day to day life. Eye physiology is a delicate balance between clear refractive media like the lens of a camera and retinal neural layer akin to the photographic film. Any disturbance in this delicate balance can lead to severe diminution of visual capacity leading to permanent incapacitation.

In our country, acute eye conditions constitute the commonest group of preventable blindness. Access to proper eye care in India is as such very poor. According to statistics there is one Ophthalmologist for every one million Indians and out of them also, most are urban based. In Armed Forces scenario also, most personnel are in contact with Medical Officers who provide the primary care. Hence, it is important for general public as well as Medical Officers/General practitioners to be aware of common acute eye conditions as well as their emergency first aid.

Pathogenesis

Eye being a highly vascular organ is commonly involved in systemic infections as well as inflammations. It is also affected in diseases of surrounding structures as paranasal sinuses and lacrimal sac. Being well connected to brain, eye infections can spread to meninges, venous sinuses and the brain tissue. In spite of being well protected all around by the bony orbit, eye is frequently involved in traumatic conditions whether occupational, accidental or intentional. In Armed Forces scenario, ocular trauma in war is a major cause of morbidity. Main effect of all acute eye diseases is diminution of clarity of ocular media which can lead to diminution of vision.

Common Acute Eye Conditions

1. Red Eye - Acute mucopurulent conjunctivitis
 - Acute anterior uveitis
 - Acute congestive glaucoma
 - Corneal ulcer
2. Post traumatic - Closed globe injury

- Open globe injury
- Chemical injury

Acute red eye

Differentiating causes of acute red eye is important as line of management differs in different conditions.

Acute mucopurulent conjunctivitis

Patient presents with mild pain, photophobia, red eye and copious mucopurulent discharge [1]. Patient may give history of seeing halos around lights. On examination, superficial conjunctival congestion, chemosis and conjunctival discharge is seen. It usually occurs due to infection in the surrounding tissues as lids, paranasal sinuses and lacrimal sac.

Treatment-Topical antibiotics as eye drops. Ciplox 0.3% one hourly

- Antibiotic ointment as Ciplox at bed time
- Avoid pad and bandage
- Try to eradicate source of infection
- Prevent spread of infection by avoiding the use of common soap, towel and handkerchief.

Acute anterior uveitis

Patient presents with pain, photophobia and diminution of vision more than conjunctivitis [2]. There is hyperlacrimation and the patient is more symptomatic. On examination there is lid edema with ciliary congestion, haziness in ocular media, aqueous flare in anterior chamber, constricted pupil which is irregular and non reacting.

Treatment - Eye drop 1% Atropine 8 hourly is given [3].

- Topical steroids as eye drop 1% Prednisolone acetate 2 hourly
- Systemic steroids as tablet Prednisolone 1 mg/kg body weight in severe cases.

Acute Congestive Glaucoma

It occurs in predisposed individuals with narrow angle of anterior chamber. Patient presents with intermittent episodes of headache, blurring of vision followed by

sudden onset of severe pain in eye, forehead and ipsilateral face usually precipitated by dim light, stress and anxiety. Patient has associated symptoms of prostration, nausea and vomiting [4].

On examination, there is a severe diminution of vision in a painful tender red eye. There is lid edema, ciliary congestion, cornea is hazy and edematous [5]. Anterior chamber is very shallow. Pupil is oval, dilated and non reacting. Digitally, eye is hard due to raised intraocular pressure.

Treatment

- Immediate lowering of intraocular pressure with intravenous 20% mannitol 150 ml over 20 minutes [6]
- Give tablet Acetazolamide 250 mg 8 hourly
- Followed by eye drops 2% Pilocarpine every half hourly for 2 hours then every 6 hourly
- Eye drops 0.5 Timolol to be given 12 hourly. Later on decision for surgery or LASER therapy to be taken by an ophthalmologist.

Corneal Ulcer

Patient presents with pain, watery discharge from a tender red eye with an opaque cornea. Ulcer can be detected with fluorescein staining [7].

Treatment

- Eye drop Ciplox 0.3% every one hourly
- Eye drop Atropine 1% every 8 hourly [8]
- Give pad to the eye if purulent discharge is not present
- Systemic antibiotics Ciprofloxacin
- Corneal ulcer can rapidly deteriorate, so an urgent evaluation by an ophthalmologist is needed.

Few important points in the management of acute red eye conditions are

1. Do not rub the eye
2. Safest is topical antibiotics
3. Give eye drop Atropine 1% if glaucoma is ruled out
4. Do not give pad and bandage if purulent discharge is present
5. Urgent referral to an ophthalmologist.

Trauma

Trauma is an important cause of acute eye which is highly preventable. Commonest among them is blunt trauma due to an accidental injury. Penetrating injury is usually occupational and preventable with the use of protective eye wear.

We in Armed Forces are likely to face ocular injuries

in both peace time and in war scenario. In modern warfare, ocular injuries incidence has been reported to the extent of 10-12%, most of which are severe in nature, associated with other systemic injuries and are likely to be overlooked on first examination by Medical Officers.

Closed Globe Injury

Closed globe injury usually is due to blunt ocular trauma. Blunt trauma commonly causes lid edema, subconjunctival haemorrhage and corneal abrasions with black eye. Hot fomentation, topical 0.3% Ciplox eye drops 6 hourly and eye pad is usually sufficient treatment.

More severe injuries due to blunt trauma in the form of perforation, orbital fractures, lens dislocation, retinal tear, retinal edema are ocular emergencies which may be masked behind a superficial black eye. Hence, all cases of closed globe injuries should be referred to an ophthalmologist for confirming diagnosis and further disposal.

Penetrating Injuries

Penetrating injuries are mainly occupational and preventable. They cause severe intraocular damage, infection and have chances of inflammation in the other eye due to sympathetic ophthalmitis. These patients are dealt with at specialized eye centres where wound reconstruction with or without vitrectomy is done by microsurgical techniques.

In war scenario, in case of penetrating injuries, Medical Officers must give;

- Injection Tetanus Toxoid
- Systemic antibiotics
- Topical antibiotic - 0.3% Ciplox eye drops one hourly and antibiotic eye ointment as Ciplox once daily
- 1% Atropine eye drops 8 hourly
- Eye pad can be given if there is no purulent ocular discharge.

Penetrating injury should be referred to an ophthalmologist and evaluated as an emergency. Any delay can affect the visual prognosis badly.

Penetrating injury with retained intraocular foreign body is a separate entity altogether which is commonly encountered in industrial workers and in war scenario. The foreign body can cause intraocular infection and retained intraocular foreign body can cause suppurative reaction or degenerative changes within the eye. The foreign body has to be localized with ultrasonography or CT scan and removed in a specialized eye centre by using intraocular magnet or intravitreal foreign body forceps.

Chemical Injury

These injuries are due to domestic chemicals, lime, acid or alkalis. Alkalis cause saponification of cell lipids, penetrate deeper and cause more severe damage which is difficult to circumscribe [9].

Acids cause coagulation of cell proteins and hence the ocular damage is localized to superficial ocular injuries only.

Treatment

- Immediately on occurrence, wash the eye with plenty of plain water for 30 minutes
- In alkalis - use a solution of weak acid as boric acid or acetic acid for chemical neutralization
- In acids - use a weak alkali as 2.5% sodium bicarbonate solution for chemical neutralization
- Give topical antibiotics : -0.3% Ciplox eye drops 6 hourly
1% Atropine eye drops 8 hourly and topical steroids as eye drops 1% Prednisolone acetate 6 hourly
- Systemic steroids in the form of tablet prednisolone 1mg/kg body weight is also given in severe cases
- Urgent evacuation to an ophthalmologist is required as these injuries cause disorganization of anterior segment of the eye due to necrosis and ischemia leading to ocular surface disorders and finally diminution of vision
- Ocular surface reconstruction is done later on and finally in presence of an opaque cornea, penetrating keratoplasty is done.

War Gases

In today's scenario of NBC warfare, use of irritant or tear gases by the enemy is a likely possibility. Irritant

gases as tear gas cause excessive lacrimation which can be minimized with copious eye wash with saline or water and the use of topical antibiotic drops : 0.3% Ciplox eye drops 6 hourly. Nerve gases as Sarin are acetylcholine esterase inhibitors which can cause hyperlacrimation as well as excessive secretion of all sweat glands and other glands of the body. Hyperlacrimation is an indication of systemic absorption and is an indication of treatment with injection Atropine or Pralidoxime (PAM).

All the above mentioned acute eye conditions are a part of exhaustive list of ocular conditions which can present as an emergency. Above conditions have been described in brief as they are common, preventable or complications due to them are avoidable with timely first aid at the level of Medical Officers and further urgent evaluation and management by ophthalmologist.

Timely management and early referral go a long way in preventing avoidable blindness due to acute eye conditions, hence it is again emphasized that unnecessary delay or holding up of patients at the peripheral level should be discouraged, especially in the above mentioned conditions.

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A serious problem

A man went to the doctor complaining that every time he spoke, he farted. "You must (FFFaaart....) help me, Doc. Its extremely (whwhwhiiiiiffle...) embarrassing. The only (Phhheeeeeeoowwww....) saving grace is that the farts don't (sssssphrrrrroophphphphph....) smell."

"Hmm!" said the doctor, "I'll have to send you to a specialist."

"Will that be a gastro-enterologist (Faaaaaaart) or a surgeon?" said the patient.

"Neither," said the doctor. "I'm sending you to an Ear, Nose & Throat Specialist. If you think those farts don't smell, then you've got something wrong with your nose ! !"

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