CAUSES OF A PAINFUL EYE

There are numerous conditions that can cause a painful eye. Below are some of the more common causes.

**Conical Ulcers**

Conical ulcers occur when the epithelium covering the cornea is damaged. The depth of the ulcer can vary and often involves the underlying layers of the cornea. This damage typically occurs as a result of trauma, for example from a stick. Bacteria and/or fungus can then take advantage of the injury and an ulcer develops.

**Conornal Ulcers.** Note the green dye staining a large superficial ulcer with a deeper ulcer centrally. The deep stain does not take up the dye as it has progressed down to Descemet’s membrane.

An ulcer is diagnosed using a special stain which reacts with the stroma of the cornea turning it green. A simple superficial ulcer should take 5-7 days to heal with the appropriate treatment, however this is not always the case. An ulcer that continues to develop can lead to rupture of the eye.

Any lacerations that involve the eyelid margin should be seen by your veterinarian. If these heal incorrectly it can mean that the small hairs that line the eyelids can be resting against the cornea causing constant irritation (excessive tearing and blinking) and repeat ulcers.

**Melting Ulcers**

A melting ulcer is so named as enzymes are switched on that actually begin to break down the cornea and cause it to liquefy or ‘melt’. These enzymes can be turned on in any ulcer and once started can rapidly result in rupture of the eye. This is why equine eye ulcers are true emergencies and your veterinarian should be contacted immediately.

**Ruptured Cornea**

An eye can rupture as a result of blunt force trauma, a deep laceration, or from a worsening ulcer. Sometimes it can be obvious that rupture has occurred, however sometimes the puncture can be plugged by iris and may disguise the true seriousness of the lesion. This is an equine emergency and great care has to be taken to prevent catastrophic rupture of the eye.

**Herpes Keratitis**

The only recognised infectious primary cause of corneal ulcers in horses is herpes virus. Herpes Virus infection can lead to multiple pinprick ulcers developing in the cornea and requires different treatment than your typical ulcer.

**Stromal Abscess**

Stromal abscesses occur when an infectious agent penetrates into the stroma of the cornea and then the epithelium of the cornea heals over the puncture, trapping the infection. These are painful and difficult to treat as the infection is essentially walled off and requires appropriate drugs and an extended period of treatment. Hospitalisation and surgical intervention are sometimes required.

**Bullous Keratopathy**

Bullous keratopathy is a non-specific diagnosis that describes the formation of severe corneal oedema that gives the appearance of the cornea hanging over the lower lid margin. This severe oedema results either from an extensive shallow ulcer that allows fluid to enter the corneal stroma from the tear film or from blunt trauma damaging the endothelium allowing water to penetrate from the fluid inside the eye.

Your horse is very dependent on vision, not only as a prey animal but also as an athlete. A painful eye can very easily lead to irreversible damage and vision loss if the appropriate treatment is not administered in a timely manner. This is why it is essential that every horse owner be able to recognise when their horse’s eye is painful and therefore when to seek veterinary attention.

Normal eye anatomy

To better understand a painful eye it is helpful to first have an understanding of the normal eye anatomy (see pic above). The cornea is the external most layer of the eyeball. Its prominent position on the side of the head makes it a prime target for wayward sticks and grass when our horses are busy grazing. The cornea is made up of several layers with a combined thickness of less than 2mm.

The cornea’s layers are as follows:

1. Tear film
2. Conornal Epithelium
3. Conornal Stroma
4. Descemet’s Membrane.
5. Endothelium

The cornea has no blood vessels to provide nourishment but rather relies on the tear film produced by the eye. This tear film is spread across the eye not only by the upper and lower eyelids but also by the third eyelid, which can spread across the entire eye from the medial canthus. This can also serve to help protect the eye from trauma.

The coloured iris surrounds the pupil and contracts and dilates to mediate the amount of light which enters the eye to reach the retina. Sitting immediately behind the iris is the lens which helps bring everything into focus.

Recognising a painful eye

This is critical so that immediate veterinary attention can be sought.

A horse with a painful eye will react much the same way we do when we get a bit of dirt in our eye. You can expect to see one or all of the following:

- **Squinting:** Holding the eye slightly or completely shut. The easiest way to assess this is to stand in front of your horse and compare the eyelids position of the painful eye to the normal eye.
- **Tearing:** Excessive tearing (lacrimation). You may see staining from the medial canthus streaking down the face.
- **Excessive blinking:** Again compare one eye to the other.
- **Rubbing the eye:** Some horses will try to rub their eye. They may do this for example against their leg, a fence, or on you.
- **Eyelid Swelling:** The upper and lower eyelids can swell.
- **Redness of the Conjunctiva**
- **Conornal Oedema:** The cornea can take on a cloudy bluish appearance. This may involve a small area or the whole of the cornea.
- **Constricted Pupil:** The pupil may be contracted and will not dilate normally.
- **Avoidance:** Your horse may not want you to touch the eye or go near it.
- **Blood Vessels:** In response to a lesion the body can deploy blood vessels which slowly grow across the cornea, advancing at roughly ~1mm per day.

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Uveitis

Uveitis is defined as inflammation of the internal structures of the eye. Uveitis is extremely painful in the horse and commonly occurs secondary to any ocular injury or even systemic disease. It can however occur as a primary entity. In these instances it can be part of a disease called equine recurrent uveitis. As the name suggests horses suffer from repeated bouts of uveitis and this can result in blindness from cataracts and retinal damage. If the pain can not be controlled unfortunately the eye needs to be removed.

When the iris constricts it essentially shuts the pupil and if not treated promptly the iris can adhere to itself, the lens, or the cornea which, as the most serious consequence, can lead to complications which necessitate removal of the eye.

Foreign Bodies

Foreign bodies can become lodged beneath the eyelids or beneath the third eyelid. If not removed promptly these can then lead to ulcers as the foreign body continually rubs against the cornea.

This horse has a treatment tube placed beneath the upper eyelid and secured along the neck and a temporary tarsorrhaphy.

AN EXPERT EYE

Treatment of a painful eye requires accurate diagnosis and instigation of appropriate treatment. This may involve medicating the eye at home or hospitalisation and the placement of a treatment tube to allow frequent and easy administration of drugs.

A temporary tarsorrhaphy may also be placed to temporarily stitch the eyelids shut to protect the cornea.

Surgical intervention is sometimes warranted which can involve placing a conjunctival graft over the lesion or scarring the cornea to allow penetration of drugs and activation of healing. Depending on the severity of the lesion it is sometimes necessary and in the best interests of the horse to remove the eye. Horses adapt extremely well to having one eye and can continue to be ridden.

KEEP AN EYE OUT

A good habit to get into is giving your horse a good once over every time you see them so that problems can be identified quickly. With the warmer months brings pesky flies so it is important to remove fly masks daily to make sure your horse has two comfortable eyes.

If you think your horse has a painful eye please call your veterinarian. As evidenced above there are many different causes of a painful eye and if your horse has had a painful eye previously do not assume it is the same cause and try and treat yourself.

Grass Seeds and other foreign bodies can become lodged in the eyelids and lead to ulcers.

This horse has a treatment tube placed beneath the upper eyelid and secured along the neck and a temporary tarsorrhaphy.

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