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Simple and Indolent Corneal Ulcers

What is a Corneal Ulcer?

The cornea is the transparent layer of cells that makes up the front of the eye. A corneal ulcer is a scratch or erosion on the cornea. Corneal ulcers can be categorized based on their ease of healing. A simple corneal ulcer is a corneal ulcer that heals with routine treatment, usually over the course of 5-7 days. An indolent corneal ulcer is a corneal ulcer in which the superficial healing layer (epithelium) of the cornea does not adequately adhere to the underlying layers. As a result, an indolent corneal ulcer does not heal routinely and requires additional treatments to allow for healing.

What Causes Simple and Indolent Corneal Ulcers?

Simple corneal ulcers are caused by damage to the surface of the eye. This damage may be due to external trauma or may be secondary to other underlying conditions such as tear abnormalities, face or eyelid conformation, neurologic disorders, infections or other problems. Most simple corneal ulcers will heal routinely in 5-7 days once the underlying cause is resolved. If a corneal ulcer does not heal, either the underlying cause remains, the ulcer has become infected, or the ulcer is an indolent ulcer. Indolent ulcers are caused by a defect in the attachment of the surface layer of the cornea to the deeper layers, resulting in poor healing.

Indolent ulcers occur most commonly in middle-aged to older dogs. They may occur in any breed but certain breeds, especially boxers, are predisposed to forming indolent corneal ulcers.

What are the Clinical Signs of Simple and Indolent Corneal Ulcers?

Clinical signs of corneal ulcers vary in severity but typically include redness, blepharospasm (squinting) and discharge from the affected eye. The conjunctiva may be swollen and the third eyelid may be elevated as well. The pupil in the affected eye may be miotic (constricted). With an indolent corneal ulcer, these clinical signs fail to resolve with routine treatment as would be expected with a simple corneal ulcer.

How are Simple and Indolent Corneal Ulcers Diagnosed?

Corneal ulcers are diagnosed with a routine ophthalmic exam and a fluorescein dye test. With a fluorescein dye test, a drop of green dye is applied to the eye. If an ulcer is present, the dye will adhere to the ulcer and will be visible when viewed with the naked eye or with a blue light. If no corneal ulcer is present, the dye will wash away and will not adhere. Other tests, which may be performed in specific cases, include a Schirmer tear test (STT) to assess tear production, testing of intra-ocular pressures, a corneal culture and sensitivity if an infection is suspected, and a cytology of the cornea.

Indolent corneal ulcers are suspected when a corneal ulcer does not heal with routine treatment and when no other underlying causes for delayed healing are present. With indolent corneal ulcers, a rim of loose epithelium is often present around the corneal defect. Fluorescein staining may show a faint halo of stain uptake around the more heavily stained ulcer.

How are Simple and Indolent Corneal Ulcers Treated?

Simple corneal ulcers are treated with a topical broad spectrum antibiotic to prevent or resolve any infection. Topical atropine and systemic anti-inflammatory medications (NSAIDs) may also be used to reduce discomfort. If the pet is rubbing the eye, an e-collar may be needed as well. In some cases, application of a soft contact lens may be used to protect the cornea while it is healing.

Indolent corneal ulcers, which have not healed with the treatment described above, require additional procedures. First, a topical anesthetic is applied and the loose corneal epithelium that has failed to adhere to the rest of the cornea is debrided away using a cotton swab. If this still fails to heal the ulcer, either or both of the following procedures may be utilized:

- Grid keratotomy – the patient is sedated and a small needle is utilized to make superficial scratches along the cornea in the area of the ulcer
- Diamond burr – a rotating tool called a diamond burr is used to debride the surface tissue in the area of the ulcer. This may or may not require sedation.

What is the Prognosis with Simple and Indolent Corneal Ulcers?

The prognosis with most simple and indolent corneal ulcers is good with prompt treatment, though more serious complications can occur if treatment is delayed. Most heal without residual effects, though in some cases multiple treatments may be required to achieve healing with indolent corneal ulcers. Animals predisposed to indolent corneal ulcers may experience a recurrence of an indolent ulcer at some point in the future.