Take Home Message

Eye problems in feedlot cattle are caused by a bacterial infection (pinkeye), IBR virus infections, or foreign bodies such as dust or chaff. Careful observation of affected animals will help to differentiate the primary cause of the problem. An effective and practical antibiotic treatment for pinkeye is intramuscular injections of long-acting oxytetracycline.

Introduction

Virtually all of the eye problems commonly encountered in feedlot cattle initiate as a form of ‘conjunctivitis’ which is simply an inflammation of the soft tissues surrounding the eye and eyelids. Cattle affected with conjunctivitis will have reddening of the eyeball and swelling of the inner lining of the eyelid. These animals will have an increased sensitivity to sunlight which is demonstrated by ‘squinting’ or closing their eyes in bright sunlight. There will usually be a discharge from the eye as well. Although conjunctivitis is not a fatal disease, it can cause severe economic losses to the cattle producer through: 1) reduced growth rates; 2) costs of treatment including labour costs, and; 3) reduced value of affected cattle.

The three most common causes of conjunctivitis in feedlot cattle would include:

1. ‘Pinkeye’ or Infectious bovine keratoconjunctivitis (IBK).
2. Infectious bovine rhinotracheitis (IBR).
3. Foreign bodies in the eye such as barley awns, chaff or dust.

Many cases of conjunctivitis in feedlot cattle are misdiagnosed as pinkeye and treated as such. It is important to differentiate between these various causes of conjunctivitis as the treatment and prevention for each differs significantly. Less common causes may include irritations from flies, chemicals such as ammonia, photosensitivity, or trauma such as a puncture or scratch across the surface of the eye. Consultation
with a veterinarian and careful observation of the affected animals will help to differentiate the primary cause of the problem. Specific preventive measures can then be implemented.

Pinkeye (Infectious Bovine Keratoconjunctivitis)

Clinical signs and risk factors

Pinkeye is a widespread and highly contagious disease of cattle. In 1976, the US Department of Agriculture estimated that 20% of beef calves and 10% of feedlot cattle developed pinkeye. The earliest signs of the disease are excessive tearing, squinting and blinking, and sensitivity to sunlight. The inner lining of the eyelids and the eyeball will become reddened. Eventually the central area of the eye will become clouded or white and within one to two days ulcers may develop on the cornea of the eye. These ulcers will enlarge and blood vessels will begin to form in the cornea to promote the healing of the ulcer. Many of these ulcers will heal on their own, however, some cases if left untreated will result in rupture of the cornea or in permanent blindness. One or both eyes may be affected.

The infection is caused by a bacteria called *Moraxella bovis*. Certain animals may become ‘carriers’ of this bacteria and harbour the infection from year to year. These carrier animals may be the source of new infection in the herd in following years. Several other factors predispose cattle to infections with *Moraxella bovis*. A major factor appears to be the amount of exposure to ultraviolet (UV) radiation. This is one of the main reasons that most pinkeye infections tend to occur in the summer time when cattle are exposed to a large amount of UV radiation. A lack of eyelid pigmentation has also been suggested as a factor that predisposes cattle to pinkeye infections. The face fly of cattle (*Musca autumnalis*) has been shown to be an important carrier of the bacteria. An increase in population of face flies has been associated with an increase in the number of cases of pinkeye.

Treatment and prevention

The cornea of cattle has a remarkable ability to heal, and many cases of pinkeye may heal spontaneously without any treatment. However, treatment of early cases will speed healing and prevent blindness and permanent damage to the eye. A wide variety of antibiotics with different routes of administration have been used to treat pinkeye in cattle. However, administration of antibiotics in the form of
ophthalmic ointments, drops, sprays or powders must be applied three times daily into the affected eye making it very impractical for feedlot cattle. As well, certain sprays and powders may actually be more irritating than beneficial.

Two intramuscular injections of long-acting oxytetracycline (OTC), given 72 hours apart, has been shown to reduce the duration of clinical signs, eliminate Moraxella bovis from affected eyes, and prevent the recurrence of lesions. This appears to be a far more practical form of treatment for most early cases of pinkeye in the feedlot.

One other form of antibiotic therapy commonly used is the use of ‘subconjunctival injections’ of penicillin. A 1 ml dose of penicillin or a combination of penicillin and steroids is injected under the conjunctiva of the upper part of the eyeball using a 25 gauge needle. Since this is a difficult procedure to accomplish, 5-10 ml of penicillin have sometimes been injected into the upper eyelids instead. It is thought that the penicillin acts as a depot of antibiotic which slowly leaks out of the injection site onto the surface of the eye. Recent studies have shown that repeated injections of small doses of penicillin or penicillin and steroid combinations do not appear efficacious. There have been no controlled studies that have evaluated the efficacy of injections of penicillin into the upper eyelids of cattle with pinkeye. In fact, injections with antibiotics other than penicillin could actually do more harm than good. Some antibiotics are very irritating and can cause severe swelling and damage. In summary, antibiotic treatment should be limited to intramuscular injections of long-acting OTC only, unless directed to do differently by your veterinarian.

In very severely ulcerated eyes, it may be necessary to provide some form of protection for the cornea. Your veterinarian may be able to protect the eye by suturing the third eyelid over the eye or by temporarily suturing the eyelids together. Commercial patches are also available which can be glued over the affected eye.

In addition, ASA (aspirin) boluses given orally can provide short term pain control and decrease inflammation. Severe cases may require a veterinarian to provide other medical or surgical treatments in order to avoid total blindness or rupture of the eyeball.

Reduction of face flies is an important factor in controlling pinkeye. The use of insecticidal powders, back rubbers or ear tags results in a reduction in the number of cases of pinkeye, but does not completely eliminate the disease. A vaccine for
pinkeye is also available. However, a Canadian field trial was only able to show that vaccinated animals had less severe clinical signs. It is doubtful that this vaccine would be economically worthwhile to use in a feedlot situation. The use of long-acting OTC on arrival in many feedlots to prevent bovine respiratory disease may actually help to prevent pinkeye by eliminating the bacteria from 'carrier animals'. However, this method of prevention has not been tested using controlled clinical trials.

Infectious Bovine Rhinotracheitis (IBR)

Conjunctivitis may occur as the primary sign of IBR outbreaks or in association with the respiratory form of this common feedlot disease. In most cases, many animals will be affected simultaneously. The cattle affected with IBR usually have a fever greater than 40 degrees Celsius (104 degrees Fahrenheit). The conjunctivitis caused by IBR can occur in one eye only or in both eyes. Clinical signs include a discharge from the eye that is initially watery and in two to 4 days becomes a thick white or yellow discharge. The inner lining of the eyelids and eyeball become reddened and swollen. There are usually no ulcers on the eyes as seen with pinkeye. Other clinical signs of IBR may also be evident such as the characteristic nasal plaques. Therapy usually consists of parenteral antibiotic injections to control secondary infections. IBR is prevented by vaccination of all animals entering the feedlot. It is important to differentiate IBR conjunctivitis from pinkeye as an outbreak of IBR conjunctivitis may suggest that there is a problem with the vaccination status of the animals or the vaccination protocol being used in the feedlot.

Foreign Bodies in the Eye

Foreign bodies such as dust, barley awns, or chaff may also cause a conjunctivitis that appears very similar to pinkeye. The affected cattle will have clinical signs that are virtually identical to pinkeye. Often only one eye will be affected. However, a careful examination will reveal the presence of a foreign body, such as a piece of chaff or a grain awn. These cases will not respond to treatment unless the foreign body is removed. Once the foreign body is removed, they can be treated in a similar fashion to cattle with pinkeye with injections of long-acting OTC. Outbreaks of conjunctivitis caused by foreign bodies can sometimes be seen in very dusty or windy environments or where overhead or self feeders are used which expose the animals eyes to contact with feed material.
Conclusions

Conjunctivitis can be a very painful and debilitating disease which causes reduced growth rates in feedlot cattle. Pinkeye, IBR and foreign bodies are the three most common causes of conjunctivitis in Western Canadian feedlot cattle. A careful examination of affected animals will usually help to differentiate these three diseases. Systemic antibiotics such as injections of long-acting OTC are an effective treatment for infectious conjunctivitis in cattle. Cattle that do not respond to initial treatments should be carefully examined for signs of IBR infection or the presence of foreign bodies in the eye, or other contributing factors.