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CONTAGIOUS OPHTHALMIA (PINKEYE) OF SHEEP

By C. R. TOOP, Assistant Chief Veterinary Surgeon

Contagious ophthalmia, better known to the sheep owner as “pinkeye,” is a common disease of sheep particularly to occur in the majority of countries where sheep are kept and, in Australia, is prevalent throughout the sheep raising areas. The disease is highly contagious and may spread rapidly through the flock. It is caused by a microbe known as Rickettsia conjunctivae which is always present in the discharge from the eyes of affected animals.

CAUSE

The disease is caused by a microbe known as Rickettsia conjunctivae. These organisms are always present in the eye discharges of affected sheep and the disease may readily be transmitted from animal to animal when discharge taken from the eye of an affected sheep is placed in the eye of a healthy sheep.

Under field conditions the infection is believed to be spread by flies and the fact that the disease rarely occurs during the winter months and that outbreaks are frequent during summer and autumn when flies are prevalent supports this view. Moreover, when diseased and healthy sheep are held in adjacent pens in which direct contact cannot occur it has been observed that the disease has spread to the healthy animals, providing further evidence of the part played by flies in the transmission of infection. In the same manner infection may spread through fences from one property to another.

The infective agent does not survive very long apart from the sheep, particularly upon drying of the eye discharge and it is, therefore, unlikely that sheep would become infected from trucks or yards previously occupied by diseased animals.

The view held by some sheep-owners that the disease is caused by dust or foreign bodies such as grass seeds is without foundation. It may also be mentioned that contagious ophthalmia of sheep is a highly specific disease which cannot be transmitted to other animals. The disease of cattle in which the symptoms are similar is caused by an entirely different type of organism.

SYMPTOMS

Sheep of all ages and breeds are susceptible to the disease. Both eyes invariably become affected but in some cases one eye may show evidence of infection a few days earlier than the other.

In the early stages of the disease there is inflammation and reddening of the conjunctivae (the membranes which line the eyelids and cover the front portion of the eyeball) with congestion of the blood vessels and swelling of the eyelids. This is accompanied by a profuse watery discharge from the eyes and discomfort upon exposure to bright light.

After a day or two the cornea (clear front portion of eye) commences to show evidence of opacity which first appears at the margin and may later extend towards the centre. The watery exudate is now replaced by a discharge of pus which issues from the corner of the eye and gums the eyelashes together. The opacity of the cornea is usually only partial and though the sight may be impaired it is not seriously affected. In a smaller proportion of cases, however, the whole of the cornea becomes involved by opacity presenting a white milky appearance. The sheep in consequence becomes completely blind and unless given special attention may die through lack of feed and water. Ulceration of the cornea occurs in some of the more severe cases.
Fig. 1. The eye of a sheep affected by pinkeye. The eyelashes are gummed together with discharge and the cornea is becoming opaque. (After Edgar)

In the majority of sheep which become affected the disease occurs in a mild form, the opacity does not extend far beyond the margins of the cornea and complete recovery occurs within 10-14 days from the onset of the symptoms. In severe cases, however, the disease may persist for as long as six weeks and the animal may remain blind for a month during this period. It has been observed that the eye of the sheep has remarkable powers of recovery and that even when the cornea has become opaque and deeply ulcerated healing will occur leaving little or no blemish.

CARRIERS

After the symptoms have subsided and recovery has occurred the causative organisms may persist in the eyes for several months. Investigations have shown that in about half of the sheep which has suffered from an attack of the disease the organisms are still present in the eyes 100 days after contracting the infection. One case in which a sheep remained infective for 250 days has been recorded.

Such sheep remain carriers of the disease and while showing no symptoms themselves they are able to transmit infection to other sheep with which they are in contact. The presence of these carriers will explain why recurrent outbreaks of the disease may take place in a closed or self-contained flock without the introduction of infected sheep from an outside source.

Under such circumstances isolated cases may continue to occur in the flock passing unnoticed until conditions favouring the spread of infection such as droving or yarding for shearing or crutching during a period when flies are prevalent precipitate a severe outbreak. It also explains why sheep which are apparently healthy at the time of purchase may subsequently develop the disease.

IMMUNITY

Recovery from the disease does not result in the development of a lasting immunity. Investigations have shown that recovered animals are resistant to re-infection for a period of about three months following upon which the immunity gradually wanes. More than 50 per cent. of recovered sheep, however, remain resistant for a year. When this resistance is lost the sheep again become susceptible and may suffer a further attack of the disease if exposed to infection.

When the relatively short duration of the immunity is considered together with the presence of carriers in the flock the periodical occurrence of fresh outbreaks of the disease will readily be understood. Moreover each fresh drop of lambs will result in the addition of a large number of highly susceptible animals to the flock thus increasing the chance of further outbreaks occurring.

Fig. 2.—A more advanced case. The cornea is opaque and ulcerated and there is an accumulation of dried discharge below the eye. (After Edgar)
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TREATMENT

Mild cases of the disease recover spontaneously and do not require treatment. This type of case predominates in the majority of outbreaks of contagious ophthalmia and observations have shown that recovery commences on the third or fourth day and is complete about seven days thereafter. It has been shown that the treatment of mild cases does not increase the rapidity of recovery. In experiments in which one eye was treated with 10 per cent. zinc sulphate solution and the other left untreated as a control it was found that the untreated eye recovered just as rapidly as the treated one.

Severe cases showing opacity of the cornea, ulceration and blindness, however, require special attention, otherwise they may suffer serious loss of condition or death may result from starvation or thirst. Such sheep should be removed from the flock and transferred to a small hospital paddock where there is good shade and easy access to feed and water or, better still, they may be placed in the shearing shed where there is complete shade and hand-feeding may be practised.

For the treatment of these cases a 10 per cent. solution of zinc sulphate is recommended, a few drops of which should be placed in the affected eyes daily until recovery has occurred. This lotion may be prepared by dissolving two ounces of zinc sulphate crystals in a pint of water and may be applied with some convenient type of eye-dropper after separating the lids with the thumb and forefinger. A small oil-can will be found very useful for this purpose.

Better results may be obtained from the application of 1 per cent. chloromycetin eye ointment but its use is limited by its high cost. It may, however, be recommended for the treatment of stud animals or for small groups of flock sheep. This preparation is supplied in $\frac{1}{4}$ ounce tubes. A small amount should be squeezed out onto the tip of the finger and smeared beneath the lower lid. Two applications are recommended daily for severe cases but in the milder ones one treatment daily will suffice. An improvement should be noticed in 2-3 days and recovery may be expected after a week.

Wool should be clipped from around the eyes before treatment is commenced and any foreign bodies such as grass which may be present removed with blunt forceps.

PREVENTION

There is no effective method of prevention and since the eye lotions in common use cannot be relied upon to destroy the organisms present in the eyes, the practice sometimes adopted by sheepmen of treating all members of the flock in an endeavour to check the spread of infection cannot be recommended.

Indeed since this procedure by bringing the sheep into closer contact with one another favours the spread of infection it is likely to cause more harm than good.

It is far better to allow the flock to remain undisturbed making a daily inspection for the detection of badly affected or blind animals which should be transferred to a hospital paddock or the shearing shed for treatment.

Precautions should, however, be taken to prevent the introduction of the disease into a clean flock and a careful examination for the detection of ophthalmia should always be made whenever the purchase of additional sheep becomes necessary.

While the absence of symptoms does not necessarily denote freedom from infection, since carriers may be present, a careful inspection prior to purchase may succeed in preventing the introduction of the disease into the flock and it is a precaution which should never be neglected.
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