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BLUETONGUE OF SHEEP

By M. R. GARDINER, B.S., V.M.D., Chief Veterinary Surgeon

BLUETONGUE is a serious disease of sheep, mainly of introduced European breeds, throughout the African continent. It is maintained there by wild and domestic ruminants in the presence of certain insect vectors (carriers).

The disease has probably existed there from immemorial times among the indigenous ruminants, emerging as a recognised disease only when the much more susceptible European breeds were brought into the continent.

Australia's main interest in bluetongue lies in its recent tendency to spread outside Africa, the presence in Australia of the vectors (species of sandflies called Culicoides) and the existence in this country of one of the largest populations of susceptible sheep in the world.

An extremely serious situation would be created if bluetongue gained a foothold in Australia since sandfly species are widespread through the continent and it would be virtually impossible for eradication measures to succeed.

During recent years, bluetongue has spread to many countries, probably by way of the importation of ruminants from Africa harbouring so-called latent virus infections, that is infections which cause no detectable clinical or pathological change. In this way, the disease has been introduced into the United States of America, Cyprus, Israel, Jordan, Syria, West Pakistan, India, Portugal and Spain.

Bluetongue is caused by a very resistant virus which may survive under certain conditions for many years outside the animal body. In those countries where it exists, the disease is seasonal in its appearance since the insect vectors must be actively propagating and flying in order to transmit it. Hence warm weather and regular rainfall are most favourable for the increase of sandfly populations and therefore for the spread of the virus throughout the susceptible ruminant population. During cold weather, the virus probably overwinters in the dormant eggs and embryos of the insect.

All European and Asian breeds of sheep are susceptible to bluetongue, especially among populations which have never before been exposed to the disease. African breeds of sheep are highly resistant. Cattle and goats possess a high degree of resistance but are susceptible under certain conditions. Although in Africa these species are seldom affected clinically, in previously unexposed countries, they may show severe signs of infection. Certain wild ruminants such as blesbok and hog deer and some rodents are also susceptible although they show no signs of the disease. The main importance of susceptible species other than sheep is that they may be symptomless carriers of the virus.

It is a well-known principle of animal disease that a severe form due to a virulent agent is much more easily controlled than mild or so-called subclinical forms for the simple reason that it is much more readily recognized and therefore dealt with.

There are 16 distinct bluetongue virus types and the disease may occur in different degrees of severity. In sheep, bluetongue may be seen as an acute condition with many highly characteristic signs and with marked tissue changes, or, at other times, the disease may be so mild as to be inapparent except to the most experienced observer.
It is important that bluetongue be recognized at the earliest possible moment, should it gain entry into this country. Failure to do so would have serious consequences to the sheep industry.

This article details the clinical signs of the disease and illustrates the pathological changes as a guide to veterinarians, agricultural advisers and farmers.

**Clinical picture**

The sheep loses its appetite and rapidly becomes emaciated, both symptoms resulting from fever and from severe damage to the lining of the mouth and intestinal tract. These linings and the nasal membranes become inflamed and congested.

The lips, tongue, face and under the chin are swollen due to excess fluid. The name "bluetongue" is taken from the dark, swollen congested appearance of the tongue in the typical disease.

Superficial abrasions and sores occur on the lips, around the muzzle and in the mouth.

Bluetongue may look, in some cases, like "scabby mouth" in its early phases.
Reddening and congestion of the coronary bands at the top of the claws

Streaks of degeneration in the leg muscles

Dark red bands occur on the skin bordering the upper part of the hoof (coronary band) and there may be some inflammation of the foot itself.

The skeletal muscles are affected and may undergo degenerative changes. This change may cause a very characteristic twisting of the neck to one side (wryneck).

Pregnant ewes may abort and there may be a severe “break” in the wool. Breathing may be affected with a mucoid or purulent discharge from the nose. Diarrhoea occurs in some sheep, and salivation may be prominent.

The affected sheep is very depressed and very debilitated.

In highly susceptible sheep, as many as 90 per cent. of the flock may die. In bluetongue-infected countries, an average of 30 per cent. of sheep in an affected flock may show signs of the disease but mortalities are much less.

The convalescent period is long.

Pathological changes

Besides the changes mentioned in the clinical picture, there are haemorrhages in and degeneration of, the muscles. The rumen, fourth stomach and small intestines and various internal organs show areas and streaks of congestion and inflammation. There is much fluid in the lung. Haemorrhage may be seen in the wall of the large arteries coming out of the hear.

There are a number of diseases which may, to some extent, be confused with bluetongue. “Scabby mouth” has already been mentioned since it occurs in Australia. In cattle, bluetongue may be confused with mucosal disease and this is important because mucosal disease is seen occasionally in Western Australia. There are also a number of African sheep diseases which resemble bluetongue but which can be distinguished only by pathologists and virologists. The muscle degeneration may superficially resemble that of white muscle disease.
Foot and mouth disease of sheep may also look like bluetongue and must be identified at the earliest possible moment. Foot and mouth disease is, of course, spread by contact and thus could appear at any time of the year while bluetongue requires the insect vector and will never show itself except in the seasons when the vectors are active.

By far the most likely way that bluetongue could enter Australia is by way of an infected Culicoides insect. Live ruminants, or their products such as bovine semen, which is thought capable of carrying the virus, are totally prohibited imports into Australia.

Quarantine officials are vigilant in destroying insects on overseas aircraft and in guarding against the entry of any animal or animal product remotely capable of introducing the disease.

Nevertheless, everyone concerned in any way with the sheep industry of Western Australia should inform himself on this disease and be prepared to help the veterinary authorities of the State in the immediate recognition of bluetongue wherever it might appear.

Acknowledgment

The illustrations in this article were provided by the Onderstepoort Veterinary Research Institute, South Africa, to whom sincere thanks are given.
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Journal of Agriculture, Vol 9 No 2 1968