

NADIS Sheep Disease Bulletin

Caseous Lymphadenitis

In 1991 the first report of caseous lymphadenitis was confirmed in British sheep. The disease is believed to have been introduced to the country 4 years earlier with imported goats. The incidence of the disease in sheep remained very low for the next 5 years. However, over the past 3 year period British veterinary disease surveillance laboratories have identified caseous lymphadenitis in about 150 new sheep flocks and in several goat herds. These figures probably underestimate the true prevalence of the disease, but suggest that caseous lymphadenitis is an emerging and a potentially important problem in British sheep flocks.

Clinical signs

So far, the disease in Britain has been predominantly in pedigree flocks of terminal sire and longwool breeds, and within these flocks the disease has been seen first in rams.

Caseous lymphadenitis in British rams has been characterised by thick-walled abscess of the head and neck. Various lesions have been described, including inflammation of the skin over the poll, single or multiple discrete superficial 1 - 2 cm diameter firm subcutaneous abscesses with loss of overlying hair on the side of the face and firm palpable swellings up to 5 cm in diameter under or behind the angle of the jaw, involving the submandibular or parotid lymph nodes. Abscesses have also been identified in the prescapular lymph nodes in front of the shoulders. Lesions may rupture if accidentally lanced resulting in a discharging wound. So far, no association has been made between the presence of lesions and ill thrift or poor fertility.

Post mortem examination of clinically affected animals and of clinically unaffected seropositive animals has also demonstrated the presence of firm palpable abscesses within the lung tissue and mediastinal lymph nodes.

The economic importance of caseous lymphadenitis in British sheep flocks

It has proved difficult to predict the potential risks associated with caseous lymphadenitis in Britain and the economic consequences of the disease in the national flock remain uncertain. Caseous lymphadenitis is widespread in many overseas countries, but the clinical manifestations of the disease differ, so direct comparison of potential economic losses is not possible.

In Australia and New Zealand the disease causes considerable economic loss to the sheep meat industry, but not necessarily to individual producers, through the slaughterhouse cost of trimming abscessed lymph nodes from carcasses. However, the economic cost to individual producers of carcass abscessation could be greater in Britain because of different meat inspection rules, which could result in total carcass condemnation when more than one abscess is identified.

In Australia the disease in merino sheep has been associated with poor wool production, although this is unlikely to be significant in British sheep breeds.

Infection of supramammary lymph nodes in milk breeds of sheep and goats presents a potential public health concern and is therefore economically important. This has prompted costly eradication programmes in milking goat herds in the Netherlands.

A thin ewe syndrome is recognised in America, associated with the presence of abscesses in the lungs and abdominal viscera. However, in Australia enormous abscesses are sometimes found in the mediastinal lymph nodes of otherwise healthy sheep. So far, no association has been made between the presence of pulmonary abscesses and ill health in British sheep.

Caseous lymphadenitis is probably of greatest economic importance in British pedigree flocks, because clinically affected rams may be un-marketable and the presence of the disease could result in loss export trade.

Caseous lymphadenitis occasionally causes potentially serious swelling of the axillary lymph nodes in man, although the disease risk is low when sensible hygienic precautions are taken.

Spread of the disease

Caseous lymphadenitis is caused by the bacterium *Corynebacterium pseudotuberculosis*. In experimental studies the incubation period from infection to the appearance of abscesses is about 42 days. The severity of disease outbreaks is associated with the level of environmental contamination. Discharging abscesses are an important source of contamination and *C. pseudotuberculosis* can survive for up to 5 months in soil. The bacterium can also survive on faeces and survives for at least 24 hours in faecal contaminated sheep dips. Dip antiseptics only kill *C. pseudotuberculosis* at very high concentrations.

The method of spread of the disease appears to be dependant on the sheep husbandry system, so overseas experience may not be directly relevant to the British disease. In New Zealand it is believed that the disease is transmitted by infection of superficial skin wounds and subsequent spread to regional lymph nodes. The prescapular and prefemoral nodes are most frequently affected, associated with the common sites of shearing wounds. In some animals, lymph node infection is followed by spread to internal organs. Abscessation of internal organs appears to be more severe in merino than in 'British' sheep breeds. Transmission occurs at shearing either following contamination of equipment by discharging and accidentally-ruptured abscesses, or following infection of wounds from a contaminated environment. Close contact between animals after shearing also contributes to the rate of spread of the disease. *C. pseudotuberculosis* can also penetrate freshly-shorn, wet intact skin and shower dipping within 2 weeks after shearing has been shown to spread the disease.

In Australian merino sheep, aerosol spread from abscesses in lung tissue onto shearing cuts of unaffected sheep is believed to be important. The disease is only spread by the small proportion of affected animals which have well-established substantial lung infection.

The clinical signs of caseous lymphadenitis in Britain differ from those seen overseas, because the primary site of infection appears to be the skin and lymph nodes of the head. The mode of transmission is still unclear, but the distribution of lesions indicates that infection enters through wounds on the head, or through abrasions in the mouth, possibly associated with tooth eruption. The dissemination of abscesses throughout the lung tissue, which has been seen on post mortem examination, is indicative of subsequent haematogenous spread. Housing, close confinement for prolonged periods in a contaminated environment, trough feeding and fighting amongst ram lambs are likely to be important risk factors. Shearing has

been implicated in some British flocks. Practices associated with the preparation of rams for sale and their handling at marts may also contribute to the spread of caseous lymphadenitis in Britain.

Management of established cases

C. pseudotuberculosis is sensitive to a wide range of antibiotics. However, once thick-walled abscesses are formed treatment with antibiotics is ineffective. Surgical drainage and flushing may initially reduce the size of the lesions, but will not eliminate the infection. This practice only results in further environmental contamination and should be avoided.

Sheep should be inspected regularly and animals with discharging lesions should be isolated or culled. Clinically affected sheep should be shorn last. Improvements in environmental hygiene, prevention of unnecessary wounds, reduction in stocking rates at housing and provision of adequate trough space are likely to reduce the spread of infection. Ram lambs should be kept apart from older animals. Sheep should not be handled in heavily faecal contaminated, dusty yards and should be released from the pens as quickly as possible.

Overseas, caseous lymphadenitis can be controlled effectively using a formalin inactivated toxoid vaccine. Unfortunately, there is little prospect for the availability of such a vaccine in Britain. A formalin killed vaccine based on bacterial cell walls can be produced under an emergency licence for individual farms, but is not as effective as the overseas toxoid vaccine.

Eradication of caseous lymphadenitis from endemically infected flocks by culling affected animals is not currently possible, because affected sheep do not always show overt clinical signs. In the future a serological blood test may prove to be a useful tool for the eradication and prevention of caseous lymphadenitis. However, it is unlikely for most flocks that the very high cost of a test and cull policy, that would be needed to control the disease, could economically justified.

Prevention

The future economic importance of caseous lymphadenitis in commercial British sheep flocks is uncertain, so it is sensible to avoid the introduction of the disease. All purchased sheep should be carefully examined for the presence of head abscesses and suspect animals should be rejected, along with others in the same group. When abscesses are found in flocks with no history of caseous lymphadenitis, their cause should be investigated. Attention should also be directed towards the maintenance of a hygienic environment, especially at shearing and dipping.

Your vet can provide more specific advice about the diagnosis, management and prevention of caseous lymphadenitis.

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