Respiratory Disease in Adult and Yearling Sheep

**Pasteurellosis**

*Mannheimia haemolytica* is of considerable economic importance to the sheep industry causing septicaemia in young lambs, pneumonia in older sheep, and mastitis in ewes.

**Clinical signs in adult sheep**

The clinical signs include acute onset depression, lethargy and inappetance. Affected sheep typically become separated from the remainder of the group. They show an increased respiratory rate with an abdominal component and a fever (>40.5°C). In some situations, the animal is found dead.

**Pathology**

The lungs are heavy, swollen and purple-red in sudden cases, and the airways contain blood-stained froth. Cases of longer duration show consolidation and fibrinous pleurisy.

**Diagnosis**

Diagnosis of respiratory disease caused by *M. haemolytica* is based upon clinical signs but there is no confirmatory test in the living sheep. Confirmation of diagnosis is made at necropsy with histopathological examination of lung lesions and bacteriology.

**Treatment**

A good treatment response to antibiotic therapy necessitates rapid detection of sick sheep by shepherds. Oxytetracycline is the antibiotic of choice for pasteurellosis as there are few antibiotic resistant strains in sheep.

**Management/Prevention/Control measures**

Prevention is best attempted using vaccines incorporating iron-regulated proteins. Breeding ewes require a primary course of two injections four to six weeks apart followed by an annual booster four to six weeks before lambing. However, this vaccination regimen only provides passive immunity to the lambs for up to five weeks. Lambs can be protected by two doses of vaccine administered from 10 days-old as colostral antibody does not interfere with the development of active immunity.

**Sheep pulmonary adenomatosis (SPA)**

Sheep pulmonary adenomatosis is a common contagious tumour of the lungs of sheep in the UK but often is not diagnosed because farmers rarely present sick sheep to their veterinary surgeons.
believing all pneumonias have the same cause. Disease transmission is facilitated by close confinement and has presented a significant problem in those husbandry systems where sheep are housed for long periods during the winter months.

Fig 4: Sheep pulmonary adenomatosis (SPA) is a common contagious tumour of the lungs of sheep in the UK.

Disease transmission is facilitated by close confinement.

Clinical presentation
The incubation period, in naturally infected sheep is long, with clinical disease apparent in two to four year-old sheep. Exceptionally, disease is seen in lambs 8 to 12 month-old which are generally the progeny of infected ewes. The early clinical signs include loss of body condition, and exercise intolerance, manifest as a markedly increased respiratory rate and brief periods of mouth breathing ("panting"). Appetite remains good. As the disease progresses, affected sheep have an increased respiratory rate with an obvious abdominal component to their breathing effort. Fluid gathers in the respiratory tract, which first appears as nasal discharge when the head is lowered. If the rear legs of the affected sheep are raised, large volumes of fluid will run out of the nose and mouth. A soft cough is often audible.

Death may follow a brief illness manifest as profound depression, inappetance and pyrexia, secondary to infection of the comprised lung with M. haemolytica. Antibiotic treatment of such secondary bacterial infection often results in temporary improvement but affected sheep must be culled as they are a source of infection for others in the group.

Diagnosis
There is presently no commercial confirmatory blood test for SPA. Confirmation of SPA diagnosis is established at necropsy. The tumours are solid and grey, and sharply-demarcated from normal lung tissue. These lesions may contain abscesses or necrotic centres.

Fig 5: Disease transmission is facilitated by close confinement.

Fig 6: Confirmation of SPA diagnosis is established at necropsy. The tumours are solid and grey, and sharply-demarcated.

Fig 7: Death may follow a brief illness secondary to infection of the compromised lung with M. haemolytica.

Treatment
There is no treatment and affected sheep must be slaughtered as soon as possible. They should never be sold to other farmers as potential breeding stock.

Management/Prevention/Control measures
The disease is introduced into flocks with purchased infected sheep. The main route of infection is by respiratory aerosol with housing or trough feeding increasing its rate of spread.
Maintaining sheep in single age groups has been shown to be the most important management factor in reducing clinical disease. The offspring of affected sheep frequently develop SPA and must never be kept as replacement breeding stock.

**Atypical pneumonia**

A non-progressive chronic pneumonia of housed sheep under a year-old caused by *Mycoplasma ovipneumoniae*, and possibly other organisms (Parainfluenza 3 virus and *Chlamydia psittaci*). The true prevalence of this disease is unknown because the clinical signs are mild and do not generally warrant veterinary investigation.

**Clinical presentation**

The significant clinical finding is one of slightly reduced growth rate despite an appropriate ration. A chronic soft cough and nasal discharge spreads slowly through the group most noticeable when the sheep are suddenly disturbed.

**Pathology**

Lung changes are usually only detected at the abattoir and consist of red-brown or grey collapsed areas in the apical and cardiac lobes.

**Treatment**

Treatment is generally not necessary because clinical signs are mild. Oxytetracycline should be given to sick lambs which are not eating.

**Management/Prevention/Control measures**

Control can be attempted by improving ventilation and reducing the stocking density. The airspace should not be shared with older sheep. Purchased lambs should be housed separately from homebred stock.

**Parasitic bronchitis**

Lungworm may cause coughing and weight loss in heavy infestations but this is very uncommon. Relative to parasitic gastroenteritis, lungworm infestation is of no economic significance to sheep farmers.

**Treatment/Control**

Treatment for lungworm is not necessary as their control can effectively be achieved by regular anthelmintic treatments used in the management of parasitic gastro-enteritis. Severe lungworm infestations are often seen in sheep with
paratuberculosis (Johne’s disease) due to compromise of the immune system.

**Fig 12: Severe lungworm infestation in sheep with paratuberculosis (Johne’s disease).**

**Chronic suppurative pneumonia/lung abscesses**

Lung abscesses are very common in mature rams but are difficult to identify by inspection alone and veterinary investigation is essential to establish an accurate diagnosis. Chronic respiratory disease is a very important disease in breeding rams which is all too frequently overlooked or treated incorrectly.

**Fig 13: Lung abscesses are very common in mature rams but are difficult to identify.**

**Clinical presentation**

Sheep with significant chronic lung lesions present with a history of weight loss although appetite may appear normal. The rectal temperature is often slightly elevated (up to 40.0°C). At rest, affected sheep have a higher respiratory rate compared to normal sheep in the group, and cough occasionally. There may be an occasional purulent nasal discharge.

**Fig 14: Veterinary examination is very important to diagnose lung abscesses.**

**Treatment**

Veterinary examination is very important, not least because the patient is likely to be a valuable breeding ram. Penicillin is the antibiotic of choice for chronic respiratory disease. A three to four week treatment regimen for treating valuable breeding stock with multiple pleural and superficial lung abscesses identified by ultrasonographic examination has produced encouraging results. A single long-acting injection of oxytetracycline will not work.

**Management/Prevention/Control measures**

The common finding of lung abscesses in mature rams is probably related to long periods of housing after birth and during their first winter. Viral infections (see enzootic pneumonia above) are common during such times, and such lesions may become infected with bacteria causing abscesses. Failure to recognise and treat early lesions allows these abscesses to grow into significant structures. Weight loss during the mating period causing debility may render rams more prone to infection or exacerbate existing pathology.

**Fig 15: Weight loss during the mating period causing debility may render rams more prone to infection**
Fig 16: Adequate supplementary feeding is essential during the mating period to maintain health.

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