

Ovine Pulmonary Adenocarcinoma (OPA)

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SUMMARY

- OPA is an infectious lung cancer caused by Jaagsiekte sheep retrovirus.
- It is spread mainly through aerosol transfer (nose to nose contact)
- Affected animals struggle to breath and lag behind the flock when handled.
- Diagnosis is confirmed on post mortem examination.
- Purchase of clinically healthy but infected replacement animals is the biggest risk factor for the introduction of OPA to a flock.
- There is no vaccination or effective treatment.
- Flock management practices can help to reduce the spread of infection.

Ovine pulmonary adenocarcinoma (OPA also known as Jaagsiekte) is a contagious viral disease that leads to lung cancer of sheep.

It is caused by Jaagsiekte sheep retrovirus (JSRV). It is a significant production limiting disease in many countries of the world including the UK. All breeds are susceptible to OPA and no single breed has been shown to be more susceptible than another.

Affected animals most commonly show signs of disease at 3 to 4 years of age, but the condition is occasionally identified in lambs as young as 2 months old. When the disease is first introduced losses can be as high as 20% within the first few years. Ongoing losses are then estimated to be around 1 to 5% per year. In addition to mortality, production losses such as increased ewe barren rate and poor weight gain can be seen but are harder to quantify.

Transmission

The virus is found in the fluid from lungs of infected sheep and is mainly transmitted through aerosol transfer (nose to nose contact), but also through milk and colostrum.

Close contact such as housing and trough feeding provides ideal conditions for the virus to spread. The incubation period of the virus is between 6 months and 2 years, but can be very much reduced when lambs become infected.

Clinical signs of disease

- Progressive weight loss (despite appearing to have normal appetite).
- Increased cases of pneumonia in adult animals that fail to respond to antibiotics.
- Increased deaths
- Animals seen lagging behind the flock when gathered or handled.
- Animals struggling to breathe (flared nostrils and increased breathing rate) particularly after exercise.
- In some advanced cases fluid can be seen run out of animals' nostrils when the head is lowered.

Diagnosis

There is no laboratory test that can be used to diagnose OPA in the live animal and a diagnosis is made on clinical signs and flock history supported by post mortem examination of affected animals.

Trans-thoracic ultrasound examination is used as a diagnostic test in suspect cases. The specificity and sensitivity of scanning



for OPA is generally very good, detecting tumours down to 2 cm in diameter; however, false positives can occur and it must be remembered that scanning cannot guarantee a sheep to be free from disease as the very smallest tumours will go undetected.

Some cases of OPA produce so much fluid from the lungs that it can be detected by the "wheel barrow test" (see box 1), although some cases do not produce excess lung fluid.

Control of OPA in a flock is very difficult because of the lack of a diagnostic screening test that can be used to identify infected animals in the very early stages of the disease.

"Wheel barrow test"

The test involves raising the hind limbs to lower the head to check for lung fluid that will flow from the nostrils. This test can cause significant distress to the animal and should only be performed if there are means to euthanase the animal immediately after testing.



Image 1: Advanced case of OPA (lung fluid flowing from nostrils)

Treatment

There is currently no effective treatment or vaccination for OPA.

Flock management to help prevent infection

Purchase of clinically healthy but infected replacement animals is the biggest risk factor for the introduction of OPA to a flock. Ultrasound scanning can be useful to screen for lung lesions although it cannot guarantee an animal is uninfected.

One option is to maintain a closed flock. Effective boundary biosecurity is important to prevent contact with neighbouring flocks.

Control in the infected flock

The goal is to reduce spread of disease in the flock and the following management practices can prove effective:

- Regularly inspect the flock and cull hard on the basis of body condition and/or respiratory signs. Ultrasound scanning is being assessed as a tool in the screening of infected flocks.
- Don't keep the progeny of culled animals for breeding as they are often infected.
- Thoroughly disinfect buildings and pen divisions where suspect animals have been isolated.
- Hold stock off any paddock that has had suspect animals for at least two months.
- Find ways to reduce the amount of close contact within the flock
 - Move away from indoor lambing
 - Manage sheep in single-age groups
 - Minimise the use of trough feeding by using snackers and feeding on different parts of the field each day.

The most effective control is to snatch lambs and rear them artificially but this option is only really practical for small pedigree flocks.

OPA control should be part of your health plan and worked up with your own vet.

The future

A nasal swab PCR test is being validated as the basis of a screen to identify infected flocks (not individuals).

The Moredun Research Institute has an OPA research programme with the ultimate aim of developing a diagnostic test that can be used to identify infected animals at an early stage.

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