Ovine Johnes Disease (OJD)

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Ovine Johnes Disease (OJD) was first described by Johnes and Frothingham in 1895, with the disease taking its name from one of the founders. OJD is contracted when animals become infected with the bacteria "Mycobacterium avium spp. paratuberculosis" (MAP). Johnes is a condition which affects all ruminants, although not in the same way.

Cattle with Johnes typically display tell-tale signs of infection which include producing extremely watery diarrhoea. This is an infrequent sign of infection in sheep which can make OJD particularly difficult to diagnose. Ovine Johnes Disease is a chronic condition which affects the ability of "villi" (tiny projections which line the small intestine) to absorb nutrients from food. As a result the main clinical sign of OJD in sheep is extreme weight loss. Despite this loss of condition, infected animals generally appear to have a normal or even increased appetite.

Animals suffering from OJD infection also generally experience a reduction in immunity, meaning that they are increasingly susceptible and unable to effectively control worm burdens. A high worm egg count in a thin adult ewe may therefore be a result of underlying disease. Sub clinical signs of OJD can include a progressive reduction in fertility and productivity.

Young lambs are most susceptible to infection with OJD but the long incubation period means that clinical signs are often not evident until animals are older. This means that a reduction in productivity can be wrongly attributed to ageing. Research detailed by the University of Glasgow indicates that mortality rates are significantly higher (4-12%) within infected flocks in comparison to healthy flocks (1-2%).

There are several methods by which sheep can contract OJD, however, the main method is faecal-oral exposure, when MAP bacteria shed in faeces are ingested. The disease can also be transmitted through the placenta and via consumption of infected milk. Ewe lambs born to infected ewes are therefore at higher risk of developing the disease later in life.

Despite cattle and sheep both being susceptible to Johnes, they are affected by two different strains. Sheep are generally infected by the "S" strain and cattle by the "C" strain. The "S" strain is predominately sheep associated and while cross infection to cattle is possible the likelihood of this occurring is very slim. Sheep can however be infected by the" C" strain, meaning they are a potential risk to cattle. MAP has the ability to survive within the environment for prolonged periods of time in water, soil and slurry. Therefore, to avoid the risk of cross infection farmers should avoid spreading slurry from Johne's affected cattle onto grazing pasture for sheep.

SRUC data suggests OJD is the 11th most commonly diagnosed disease in sheep – with over 600 cases reported between 2012-2018.

A licensed vaccine is available in the UK and it will reduce both the severity of clinical signs and subsequent mortality rate. It is however unable to prevent initial infection, although it will reduce bacterial shedding from infected animals.

There is no perfect test for Johnes disease in the live animal. Animals can be blood sampled to test for antibodies to MAP but these are not detectable in all cases. Faecal samples can be tested for MAP by PCR but shedding of the bacteria can be intermittent. Post-mortem examination can be required to confirm the diagnosis in some cases. Targeting testing to thin sheep and/or ewes that fail to gain condition on good grass for no obvious reason can be useful. Buying from trusted sources plus isolating and testing new stock can significantly reduce the risk of introducing Johne's into a healthy flock.

SRUC Veterinary Services now include OJD as part of their Premium Sheep and Goat Health Scheme (PSGHS) with both accreditation and monitoring schemes available. More information on the PSGHS can be found at **https://www.sruc.ac.uk/info/120113/premium_sheep_and_goat_health_schemes.**