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Nodule worm of sheep

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Introduction

Nodule worm (*Oesophagostomum columbianum*) is a parasite of the large intestine of sheep and goats.

This parasite was once ranked second only to barber's pole worm (*Haemonchus contortus*) in summer rainfall areas (northern NSW, southern Queensland). Its prevalence has decreased considerably since the 1960s with the advent of modern anthelmintics and the increase in the amount of improved pastures (Cole, 1986). It can still cause losses to meat processors, however, with condemnation of 'sheep runners' (intestines) due to 'pimply gut' caused by migrating nodule worm larvae.

Life cycle and effects

Adult nodule worms are found in the colon. They are stout white worms, 12–21 mm long, with a hooked head. Eggs, passed in the faeces, hatch under conditions of adequate warmth and moisture to produce larvae which develop through stages until they reach third stage (L3) infective larvae. The free-living stages (eggs and larvae on pasture) are even more intolerant of cold and desiccation than barber's pole worm (*Haemonchus contortus*), hence the restriction of this parasite to summer rainfall areas.

Larvae are ingested by grazing animals and, once inside a suitable host (sheep or goat), travel to the large intestine, then migrate through tissues ('histiotrophic' phase), resulting in nodules (0.5 – 1.0 cm across) in the walls of the small and large intestines. (See www.wormboss.com.au for image). Nodules can also be found in the lung, liver, mesentery and mesenteric lymph node.

The lining of the intestines is damaged (reddening, thickening) as larvae progress to adult stage, making the intestines useless for by-products such as sausage skins and specialised surgical thread.

Clinical signs in heavy infections, usually in weaners, include variable diarrhoea, emaciation, a humped appearance, and a stiff gait.

In heavy infections, worm egg counts are around 500–1000 eggs per gram of faeces. Worm counts of around 100 are considered pathogenic in weaners, 200–300 in adults. The egg output of this worm is 5000–12,000 per female per day, similar to barber's pole worm.

Significance

Because the free-living stages of *Oesophagostomum columbianum* are intolerant of cold and desiccation, this parasite has virtually disappeared from higher rainfall areas (e.g. northern NSW tablelands and slopes), which have relatively cold winters and frequent anthelmintic treatments (drenching). Its niche seems to have been largely occupied by the relatively non-pathogenic large bowel worm (*O. venulosum*). (Nodules associated with *O. venulosum* occur infrequently, are small, and occur mainly in the caecum and colon.)

However, nodule worm still occurs in pastoral zones (western plains) of northern NSW and southern Queensland, and processors sourcing sheep from those areas can suffer significant economic losses due to condemnation of intestines ('runners') affected by *Oesophagostomum*-associated 'pimply gut'. In 2001, for example, one NSW processor had 9% of sheep runners condemned because of pimply gut. Each set of runners, sold overseas as sausage casings, represented a loss of $2–$3. With almost 200,000 runners condemned, this was a significant loss (Love and Hutchinson, 2003).

Control and prevention

As noted above, climate, drenching practices and improved nutrition have decimated nodule worm populations in the decades since the 1960s.

If, in particular cases, treatment aimed at nodule worm is deemed necessary, it seems likely that use of an effective drench after the onset of sufficiently cold weather would have the biggest impact. A

disadvantage of treatment at this time, when there are few worms ‘in refugium’ (i.e. free-living stages are few in number), is that selection for drench resistance may be higher.

References and further reading

Cole VG (1986). *Helminth Parasites of Sheep and Cattle. Animal Health in Australia*, Volume 8. Australian Agricultural Health and Quarantine Service, Department of Primary Industry, Canberra, p.255.

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Wormboss: www.wormboss.com.au (Australian Wool Innovation and Australian Sheep Industry Cooperative Research Centre).

Nodule worm information: wormboss.com.au/LivePage.aspx?pageId=526

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