Outbreak of Nematodirus battus infection in calves

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NEMATODIRIOSIS is an important disease of young lambs in the UK and Ireland. There are a number of Nematodirus species, but it is Nematodirus battus which is responsible for clinical disease in young lambs during the spring. Lambs which grazed the same pasture during the previous grazing season are at risk of infection. N. battus eggs only hatch after a prolonged cold spell, that is, winter, followed by a rise in ambient temperatures in early spring.

However, calves can play an important role in the epidemiology of N battus (Bairden and Amour 1987, Coop and others 1991) and clinical nematodiriosis has been reported in calves (Armour and others 1988). This short communication describes the first recorded outbreak of clinical nematodiriosis in calves in Northern Ireland.

The outbreak occurred in April 2002, in a batch of 21 crossbred bucket-reared calves on a mixed sheep and beef farm in north-east County Antrim. On April 14, 11 young calves (approximately six months old) were put out to grass following winter housing. Two weeks later, 10 younger calves, approximately four months of age, joined the group from winter housing. Three weeks after turnout of the first batch of calves, on May 5, the farmer noticed that some calves were losing weight and had a slight hunch. The farmer administered long-acting amoxicillin (Clamoxyl LA; Pfizer) to the affected calves and their condition appeared to improve over the following days. However, one week later (four weeks after turnout of the first batch of calves), the farmer called his veterinary surgeon to attend to the calves. One older calf was very downgrade, and a number of the other older calves were also losing weight and scouring. Danofloxacin (Advocin; Pfizer), buscopan (Buscopan Compositum; Boehringer Ingelheim) and vitamin B12 (Intravit 12; Norbrook) were administered by the veterinary surgeon to the scouring calves and the farmer was advised to worm and house all the animals. All the calves were wormed with injectable ivermectin (Virmamec; Virbac), housed in a pen in a slatted house and fed silage ad libitum plus 2 kg of concentrate per calf per day.
A faecal sample was taken from the sick calf and sent to the Veterinary Sciences Division's (VSD's) diagnostic laboratory for examination. A total of 7800 Nematodirus eggs per gram of faeces (epg) were detected in the sample. The eggs present were identified as N battus. No significant bacteria were isolated from the sample.

A field visit was carried out by staff from the laboratory (M. M. and J. K.) on May 23, 12 days after the animals had been treated with anthelmintic and housed. The sick calf had not recovered; it was euthanased and submitted for post-mortem examination. The remaining calves were eating silage and the farmer was reasonably content with their performance. However, on closer examination it was noted that some of the younger batch of calves were in poor condition and scouring. Samples of faeces and blood were taken from the majority of calves in the group.

Postmortem examination of the sick calf revealed 218,000 N battus worms in the small intestine and a N battus faecal egg count of 9800 epg. Armour and others (1988) recorded N battus worm burdens of 10,000 and 35,000 in clinically affected calves, while Bairden and Armour (1987) found N battus worm burdens of up to 88,600 in ‘tracer’ calves.

Examination of the faecal samples from the older calves revealed few N battus eggs. However, significant N battus egg counts were found in samples from some of the younger calves (Table 1). Analysis of the blood samples proved unremarkable, with no evidence of contributing mineral differences.

The farmer was advised to treat the younger calves with a benzimidazole-containing anthelmintic. The farmer administered nitobetin (Hapadex; Schering-Plough) to all the calves, and faecal samples taken from all the calves 13 days later were negative for worm eggs. All the calves recovered well; the older batch was subsequently grazed on silage aftermath, supplemented with 2 kg of concentrate per calf per day, and the younger calves remained indoors over the summer period, fed on silage ad libitum and 2 kg of concentrate per calf per day.

Epidemiological investigations revealed that the calves had been put on to a field which had been grazed predominantly by young calves over the previous eight to 10 years. The field was quite wet in places due to blocked drains. In previous years young calves had spent most of the grazing year on the field, as it was convenient to the farmyard, allowing the farmer to feed concentrates throughout the season. Sheep had not grazed the field during the spring or summer of the previous year. Only on a few occasions during the previous eight to 10 years, had sheep been allowed to graze the field. This occurred later in the season, when either the grass growth was excessive or when sheep were brought close to the farmhouse for weaning or sorting. It is therefore likely that the previous year’s calves were the main source of infection, supporting the findings of Bairden and Armour (1987) that calves can act as a source of infection to both calves and sheep grazing the same pasture the following year. The farmer was advised to drain and plough the field in question.

Using analysis of meteorological data, as described by Smith and Thomas (1972), the VSD predicted that hatching of Nematodirus species eggs in Northern Ireland in spring 2002 would have commenced in late March, with peak hatching during the first and second weeks of April. Peak hatching would therefore have coincided with turnout of the calves.

Commercially available injectable anthelmintics are not specifically indicated for the treatment of N battus infections in cattle or sheep, but are indicated for the treatment of adult worm (L5) burdens of other Nematodirus species (Nematodirus helvetianus and Nematodirus spathiger) in cattle. Therefore, in the present case, it is likely that the injectable anthelmintic treatment was reasonably effective in the older calves, which had been grazing for four weeks and would therefore, relative to the younger calves, have had a predominantly adult worm burden. The younger calves, which had only been grazing for two weeks, would have had a higher percentage of immature worms (L3 and L4) contributing to the worm burden, and therefore the treatment might not have been as effective in these animals. These findings support the conclusion of Yawinski and others (1997) that Nematodirus species infections in cattle are not consistently controlled by avermectin treatment. In addition, calves develop a strong immunity to N battus during the grazing season (Bairden and Armour 1987) and, although the calves in the present report were outdoors for only a short period of time, the older calves would have had a greater opportunity to acquire some immunity.

In summary, the present report details an outbreak of clinical nematodiriosis in young calves in Northern Ireland, where the main source of infection was likely to have been the previous year’s calves. Nematodiriosis should be considered in the differential diagnosis of scouring in young calves early in the grazing season. This report also highlights the need for care in the selection of anthelmintic to treat Nematodirus species infections.

References


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