An investigation into lamb deaths while grazing on a Pasja crop

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Introduction

On February 13, 2003 our client requested a visit to investigate some deaths in a mob of lambs that had been shifted off a Pasja crop the previous day. This history had similarities to other cases in the Rangitikei that have occurred in the late January/early February period since 1999.

History

A mob of 120 lambs had been introduced to a crop of Hunter Pasja on February 1. The paddock contained approximately 18 acres of crop with a further 2.5 acres of non-cultivated area (sidlings). On about February 10 the farmer became concerned with the appearance of the lambs because they were doing poorly, and he assumed they needed drenching. They had last been drenched on December 27 with Valbazen Combo, a mineralised albendazole/levamisole combination. On the morning of February 12 the lambs were removed from the crop and taken to the yards. After lunch they were drenched with Valbazen Combo and released to a holding paddock. About 4pm they were moved to another paddock and it was noticed they were lethargic and reluctant to move.

The following morning when the lambs were checked, about a dozen hadn't moved from around the gateway where they had been driven to the previous evening. These were driven to a dam about 400 metres away, which took about an hour. Later in the morning the farmer checked the whole paddock and found 2 lambs dead.

Clinical investigation

When I arrived late-afternoon 8 lambs were dead and many were recumbent. Severely affected lambs were unable to support their weight when assisted to stand, others would rise but would only move short distances before sitting down. Terminally affected lambs showed respiratory distress prior to death.

On examination of the crop there was no evidence of the lambs having eaten the pasja. The crop was reasonably heavily infested with weeds including stagger weed, willow weed, fathen and black nightshade. The grass verges and sidlings had been grazed hard and the willow weed was the only plant to have apparently been grazed in the crop.

Blood samples were collected from 2 recumbent lambs for creatinine phosphakinase and serum selenium analysis and post mortem examinations were carried out on 2 lambs, with samples from a range of body tissues submitted to Gribbles Veterinary Pathology in Palmerston North for histopathological examination. On gross postmortem examination there were petechial haemorrhages on the heart. The lungs were congested, the livers were swollen and the intestinal

mucosa was congested. Some transudate-like fluid was present in the abdomen and pericardial sac. There was no evidence of unusual plants or seed in rumen contents.

Laboratory results

CPK: 14, 520 and 75, 920 IU/l (normal 120-1430 IU/l).
Serum selenium: 1070 and 1150 nmol/L (cattle reference range 140-3000 nmol/L).

Histopathology: skeletal muscle - degeneration and necrosis of fibres with loss of striation, eosinophilic hyalinisation, nuclei loss and bundle swelling. No significant inflammation was associated with this degeneration.
Lung – many alveoli dilated by erythrocytes, oedema in the interstitium and interlobular septae
Heart – multiple haemorrhages in the pericardium, no degenerative lesions in cardiac muscle.
No significant lesions present in other tissues.

In total, 15 lambs died. The deaths stopped by the second day after removal from the crop and the balance of the lambs recovered condition over the next week. The affected mob of lambs were grazed on pasture for the rest of their time on the property. The Pasja crop was used to finish another group of lambs without any problems, using a 1 day on crop, then 2 days on pasture grazing policy.

Discussion

There have been a number of cases involving lamb weakness, collapse and death in late summer in the Rangitikei area over the past few years. All but one have involved lambs that have been on a Pasja crop. In all cases, lambs are the age group that have been involved and cases have occurred during the January/February period. In some cases the lambs have been undernourished and yarding was a feature in the history.

The main features of this case are the muscle pathology found histologically which confirmed rhabdomyolysis, and the apparent grazing of willow weed (*Polygonum persicaria*) in preference to the Pasja or the stagger weed. Willow weed has been reported as causing death in pigs and sheep in Australia and suspected of sheep deaths in New Zealand (Connor, 1977) but the toxic principle or pathogenesis is not reported. Previous cases in this area have implicated stagger weed (*Staccys arvensis*) as a possible toxic factor. This plant is listed as containing toxins including convulsants, isoquinolines and alkaloids, and staggering has been reported in ruminants but muscle damage is not reported (Philby et al, 2001). Feeding trials would need to be done with the weeds to determine whether the syndrome is repeatable and to confirm the pathogenesis.

Reference

Connor H E. The poisonous plants in New Zealand. EC Keating, Government Printer, 137-138, 1977.

Philbey, AW. Hawker, AM, Evers, JV. A neurological locomotor disorder in sheep grazing *Stachys arvensis*. Australian Veterinary Journal, 79, 6, 427-430, 2001