BRIEF COMMUNICATION

Effects of daily larval challenge on the performance of breeding ewes from late pregnancy to post weaning

R.W. McANULTY, A.S. FAMILTON AND A.R. SYKES

Animal and Veterinary Sciences Group, Lincoln University, Canterbury, New Zealand.

ABSTRACT

5-year old Coopworth pregnant twin bearing ewes were allocated to four periods of treatment which commenced either -4, 0, 6 or 12 weeks from lambing, periods 1 to 4, respectively. Within each period, pregnant ewes were further allocated to one of two groups (n=6) one receiving 4000 *Ostertagia (Teladorsagia) circumcincta* larvae per day for 30 days (MCI) or no infection (NIC). All ewes were housed indoors and offered a pelleted diet. Faecal egg counts, ewe liveweight, food intake, milk production and serum pepsinogen were determined weekly. Wool growth, fibre diameter and tensile strength were determined on wool grown within each experimental period. Abomasal damage, as judged by serum pepsinogen, occurred during all periods of infection. The magnitude of production losses varied with time of challenge. Parasitism reduced milk production by 10-59% ($p<0.01$) and wool staple strength by 29-44% ($p<0.01$) with greatest effects on wool staple strength being recorded during period 1. During lactation food intake ($p<0.01$) was reduced by 30% in period 1 by parasitic infection but little effect was seen prior to parturition. These data confirm that significant production losses do occur in breeding ewes. The effects on ewe production of any larval challenge will depend on the timing of the challenge and on the susceptibility of the ewe to infection at that time.

Keywords *Ostertagia*, artificial, challenge, parturition, breeding ewes, nematode, parasites, susceptibility, production loss, tensile strength.

INTRODUCTION

Chronic infection with abomasal dwelling nematodes can depress feed intake, milk and wool production in breeding ewes, and this has been linked with a period of increased susceptibility to larval development in the ewe (Waller *et al.*, 1978; Leyva *et al.*, 1982; Thomas and Ali, 1983). The duration of this period of susceptibility, which has not been clearly defined, is critical in determining the extent of losses in production in the ewes themselves. It also determines whether and when to include the ewe as part of a parasite control programme

EXPERIMENTAL

5-year old Coopworth ewes were selected from a common pool and mating synchronised by implanting C.I.D.R. devices in all ewes. Twin bearing pregnant ewes were allocated to one of four experimental periods which commenced either -4,0,6 or 12 weeks from lambing, periods 1 to 4 respectively. Within each period ewes were allocated to one of two groups (n=6) one receiving 4000 *Ostertagia (Teladorsagia) circumcincta* larvae per day for 30 days (MCI) and the other no infection (NIC). All ewes were housed indoors and offered a pelleted diet. Faecal egg counts, ewe liveweight, feed intake, milk production and serum pepsinogen were measured weekly. All ewes had a patch (100 cm^2) delineated on their right mid-side on day 0, with the top margin approximately 20 cm from the mid line and the rear over the last rib. This patch was clipped at the end of the fifty day experimental period and the sample collected used to determine wool growth rate and fibre diameter. Tensile strength measurements were carried out on wool grown on a left mid-side patch during the fifty day experimental period. Dye was applied at day 0 and 50 for each period and the sample removed 28 days after infection was terminated.

RESULTS

A marked change from period 1 to 4 was observed in the occurrence and magnitude of faecal egg counts recorded in MCI ewes. Mean maximum faecal egg counts were recorded six weeks after initial infection, with levels of 1330, 380, 80, and 16 epg recorded for periods 1 to 4 respectively. Abomasal damage, as gauged by elevated serum pepsinogen in MCI ewes, occurred during all periods. Mean serum pepsinogen levels in NIC ewes remained about 100 milliunits/l while values in all MCI ewe groups increased significantly to 400 milliunits/l ($p<0.01$) 2-3 weeks after infection commenced and then declined gradually until infection was terminated. The magnitude of production losses also varied with time of challenge. There was a significant effect of infection on milk production of MCI ewes in periods 1 to 3 ($p<0.01$), with the greatest reductions occurring in period 3. There were significant reductions in food intake of MCI ewes due to infection in periods 1,3 and 4 ($p< 0.01$). During period 1 feed intake was not reduced by infection until after lambing when it was reduced by 30%. In other groups infected after lambing, feed intake was reduced by up to 20%. No significant effects of infection were found on liveweight or on wool growth rate or fibre diameter. Wool staple strength was, however significantly reduced during periods 1 and 2 by 44 and 29% respectively.

CONCLUSIONS

These data confirm that when breeding ewes are subjected to sub-clinical levels of parasitism, significant production losses do occur during lactation. The data suggest that while faecal egg count, and therefore the contribution of the ewe to pasture contamination is greatest in the first 4-5 weeks after lambing, damage due to larval intake to abomasal tissues and its effects on ewe productivity are more prolonged.

ACKNOWLEDGEMENT

This study was funded by MSD Agvet NZ Ltd.

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