Impact of rapid treatment of sheep lame with footrot on welfare and economics and farmer attitudes to lameness in sheep

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Abstract

This review article summarises the evidence for an effective management protocol for footrot to sheep, the welfare and economic benefits of such a protocol and its likely uptake by farmers. Over 90% of lameness in sheep in England is caused by Dichelobacter nodosus, the aetiological agent of footrot. Farmers can recognise lame sheep both from video clips and when examining their own sheep but make a separate decision about whether to catch lame sheep. Only farmers who catch and treat mildly lame sheep immediately report a low prevalence of lameness (< 5%). From a within-farm clinical trial, treatment of sheep lame with footrot with parenteral antibiotic and topical spray led to over 90% recovery from lameness within 10 days whilst only 25% of sheep treated with foot trimming and topical spray recovered in 10 days. In parallel, a within-farm clinical trial with approximately 800 ewes was run for 18 months to test the hypothesis that rapid appropriate treatment led to reduced prevalence of lameness. Ewes were stratified and randomly allocated to one of two groups. The prevalence and incidence of lameness decreased in the treatment group, where lame sheep were treated with parenteral and topical antibacterials within three days of being observed lame, but remained at approximately 8% in the control group where lame sheep were treated with trimming hoof horn and topical antibacterial spray when the farm shepherd considered them sufficiently lame. Sheep in the treatment group had a higher body condition and produced more lambs that grew faster. The net economic benefit to all sheep (whether lame or not) in 2006 was £6 per ewe put to the ram. A group of 265 farmers were asked about their satisfaction with methods to manage footrot. Satisfied farmers reported a prevalence of lameness of ≤ 5% and used rapid individual treatment. Dissatisfied farmers reported a prevalence of lameness of > 5% and used whole-flock footbathing and vaccination. Overall, farmers stated that their ideal managements would be footbathing and vaccination. One explanation for this apparent inconsistency is that farmers want effective vaccines and footbaths; an alternative explanation is that this is an example of cognitive dissonance, where subjects adopt a belief because it is their current practice despite evidence that it is not effective. We conclude that farmers can identify lame sheep and that rapid treatment of individual sheep lame with footrot with intramuscular and topical antibacterials is currently the most effective control of interdigital dermatitis and footrot in sheep but that in future effective measures that prevent footrot would be ideal.

Keywords: animal welfare, Dichelobacter nodosus, footrot, lameness, sheep, treatment control

Introduction

Lameness is considered by farmers (Morgan Davies et al 2006) and veterinarians alike to be the greatest welfare concern in sheep. The only two estimates of the prevalence of lameness in sheep from random samples are 8.7% in England, Wales and Scotland in 1994 (Grogono-Thomas & Johnson 1997) and 10% in England in 2004 (Kaler & Green 2008a). Footrot is present in over 97% of flocks. It is the major cause of lameness in 80% of flocks and is responsible for approximately 90% of all lameness (Kaler & Green 2008a). Footrot is caused by the anaerobic bacterium, Dichelobacter nodosus (Beveridge 1941), and presents as an interdigital inflammation (known in the UK as interdigital dermatitis) or as a separation of hoof horn from the underlying sensitive tissue. Other causes of lameness include foot abscesses, white line disease (shelly hoof), toe granuloma and contagious ovine digital dermatitis (CODD) (Kaler & Green 2008a).

In 1999, the recommended control measures for footrot were to quarantine brought-in sheep, practise routine foot trimming and footbathing and to cull repeatedly lame sheep. The recommended managements for diseased sheep were to isolate, foot trim, and if severe, give parenteral antibiotics (Morgan 1987).