

Recent developments in the control of fly strike in sheep

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Introduction

Methods used to control breech strike in sheep include tail docking, mulesing and crutching. Although these techniques are effective in controlling breech strike, their use remains questionable because of the pain caused to the animal. However, it is argued that the compromise to animal welfare during these procedures is justified as it prevents an even greater compromise in the form of breech strike. For this reason, finding alternatives to these traditional methods of controlling breech strike has been a high research priority. There have also been concomitant efforts directed at increasing our ability to evaluate pain-induced distress and the identification of practical and cost-effective methods by which distress can be alleviated. This essay focuses on three recent developments in the area of tail docking. The first study considers a breeding goal of greater inherent bareness around the perineum as a genetic solution to fly strike control. Whilst this is a promising and appealing development, the benefits will be far from immediate. For this reason, there exists a need for continual investigation into and refinement of current methods of fly strike control and pain evaluation to achieve optimal animal welfare. Such areas are addressed in the second and third studies.

Discussion

A breeding goal to improve the welfare of sheep is not an entirely new concept. Scobie et al. (1999) examined tail-length as a factor in dag accumulation and the implications of selecting for a short tail as part of a proposed breeding model. The aim of the experiments by Scobie et al. (2002) was to test the hypothesis that increased naturally occurring bare skin around the breech would reduce the incidence of breech strike.

Three experiments were conducted, dividing animals on the basis of mixed-sex groups within breech bareness scores, single sex groups, and single sex groups based on breech bareness scores. Using a variety of breeds, breech bareness was scored on a scale of 1-5. A score of 1 was given to sheep with wool growing around the edges of the anus (and vulva), a maximum of 5 when an extensive area of bare skin was present (Scobie et al. 2002). The lambs had been docked, but were not crutched or treated with an ectoparasiticide.

Figure 1. Experiment results (Scobie et al. 2002).

Breech Bareness Score	1	2	3	4+
% Fly Struck	22%	16%	11%	0%

These results (Figure 1) support the hypothesis that selection of animals with barer breech areas can reduce their susceptibility to fly strike. Very importantly, the potential benefits of this finding include satisfying markets conscious of animal welfare and chemical residue issues, reduced suffering due to fly-strike and reduced labour costs associated with the traditional methods of fly-strike control (Scobie et al. 2002).

Graham et al. (2002) investigated the proportion of lambs that showed limited behavioural responses to tail docking and how the site of application of the ring influenced these responses. The purpose of this was to investigate if current methods of tail docking could be improved. Suffolk cross lambs (n=124), between 2 and 11 days of age, were subject to the application of a rubber ring to their tails approximately 2cm distal to the normal site. Lambs classed as 'low responders' were those that exhibited little increase in active behaviours, such as restlessness, or abnormal postures. The rings were removed from these animals and applied again in two days, at the same site for half the group and a site 1cm more proximal for the remainder. No significant response in the behaviours was seen in those where the ring

was applied to the same site. However, more proximal application resulted in a significant increase in active behaviours.

Previous studies have shown that an increase in active behaviours and postures not frequently seen in control animals is indicative of pain and distress (Graham et al. 2002). This study demonstrated that the behavioural responses of lambs to the application of a rubber ring to the tail varied considerably not only between lambs but also for the same lamb with application to a different site. The reasons for these differences in response are unclear. Further research in this area is warranted as assessment and alleviation of pain is a fundamental principle in animal welfare research.

In addition to behaviour as an index of distress, two physiological systems are used (Mellor and Stafford 2000). The sympathetic adrenomedullary system, primarily concerned with fast acting 'fight-flight' responses, involving adrenaline, noradrenaline and heart rate. The hypothalamic-pituitary-adrenocortical (HPA) system generally initiates a graded response with indices include plasma cortisol concentrations, adrenocorticotrophic hormone (ACTH) and corticotropin releasing factor (CRF) (Mellor and Stafford 2000). Most assessment of docking distress to date has been conducted using behaviour and plasma cortisol concentrations (Mellor and Stafford 2000).

A study by Peers et al. (2002) examined cardiovascular, hormonal and other physiological responses of 2-month-old lambs to rubber-ring castration and tail docking. Male lambs (n=22), well accustomed to handling, were prepared with femoral artery cannulae (for blood pressure recordings) and jugular vein cannulae (for plasma analysis). They were studied during a 5 hour control period, and then two days later for one hour before and four hours after castration and docking. The results showed that in the hour following castration and docking there were significant increases in mean systolic, diastolic and arterial blood pressure, heart rate, and plasma concentrations of ACTH and cortisol. However, the later two values returned to control levels by 2.5-3 hrs. Blood pressures and heart rate remained elevated after 4 hours, suggesting that these indices may be more sensitive representations of low-grade pain induced by ring castration and docking (Peers et al. 2002).

Conclusion

The various methods used to protect against strike clearly present welfare issues. Should long term breeding goals be achieved, this may eliminate the need for many or all of the other practices. However, in the short term, pain measurement studies and the refinement of techniques to minimise stress on the animal need to continue to make advances in this important and controversial area of animal husbandry.

References

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