

The Welfare of Sheep: Mulesing and its alternatives for controlling breech flystrike

Addresses the welfare problems caused by mulesing and discusses the criteria of alternatives currently available for controlling breech flystrike in sheep in Australia.

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Introduction

Flystrike in sheep is a life-threatening condition whereby fly larvae, primarily *Lucilia cuprina*, infest the flesh, often in the moist, wrinkled, breech area. Mulesing is currently the main method for preventing breech flystrike of sheep in Australia. Although the combination of topical anaesthetic and long-acting non-steroidal anti-inflammatory drugs (NSAIDs) – carprofen was demonstrated to give the greatest pain relief during and after mulesing – NSAIDs are not currently registered for use in sheep in Australia (Paull *et al.*, 2007). Post-treatment pain alleviation by topical anaesthetic thus becomes the only option. Therefore, welfare concerns involving alternatives to mulesing, for instance, intradermal-cetrimide injection, clip application, and breeding flystrike-resistant sheep, are being investigated.

Discussion

Lepherd *et al.* (2011a) assessed the short-term systemic effects of mulesing (n=10), intradermal-cetrimide injection (n=10) and clip application (n=10), compared with two control groups (i.e., tail-docking only (n=10) and no treatment (n=10)). Bodyweight, haematological and biochemical profiles and concentrations of three acute phase proteins (APPs), haptoglobin, serum amyloid A and fibrinogen, were measured repeatedly for 29 days post-treatment (Lepherd *et al.*, 2011a). Results showed that the mulesing group had the most marked and prolonged increase in APP concentrations, a transiently increased neutrophil/lymphocyte ratio and a persistently decreased albumin/globulin ratio (Lepherd *et al.*, 2011a). The magnitude and duration of these test results were followed by the intradermal-cetrimide group, then the clip group (Lepherd *et al.*, 2011a). The mulesing group had the lowest weight gain by the end of the study and was the only group to develop mild persistent anaemia (Lepherd *et al.*, 2011a). Therefore, clipping showed a significantly reduced short-term systemic effect compared with mulesing, with the intradermal-cetrimide treatment lying between the two (Lepherd *et al.*, 2011a). In this case, clipping should be promoted because it can provide sheep with better welfare. However, the sample size in this study was too small to be representative.

Effectiveness, practicality and expense of methods for controlling flystrike in sheep are important

to farmers making decisions. To compare the effectiveness of different methods, Lephherd *et al.* (2011b) assessed the gross and microscopic damage and wound healing after mulesing (n=30), intradermal-cetrimide treatment (n=30) and clip application (n=10), compared with a control group (n=30) handled without treatment. The results showed that mulesing provided a more consistent and desirable outcome for preventing flystrike because the lambs had a clean breech bare-skinned area and noticeable tightening of skin folds around the perineum, which helped to avoid the moist and soiled conditions that attract blowflies (Lephherd *et al.*, 2011b). The only complication in mulesing wounds was that numerous foreign bodies (e.g., wool fragments) in the wound bed and scar caused persistent inflammation, thus affecting later remodelling of the wound bed and delaying healing (Lephherd *et al.*, 2011b). Although intradermal-cetrimide treatment underwent the same second-intention healing phase as mulesing, wound healing was delayed because of the persistence of necrotic tissue (eschar) adhering to the wound bed, which acted as a large foreign body, impeding re-epithelialisation of the wound (Lephherd *et al.*, 2011b). Together with the deep penetration of chemical into the underlying dermis, subcutis and muscle, they were found to impede wound contraction and interfere with skin stretching, thus causing poor expansion of bare area (Lephherd *et al.*, 2011b).

On the other hand, the clips provided a more acceptable result, with noticeable tightening of skin wrinkles on ventrolateral breech and on either side of the tail, compared with the intradermal-cetrimide treatment (Lephherd *et al.*, 2011b). Fewer complications were associated with the clips, despite the skin dag formation and the variations in scar size between left and right breech (Lephherd *et al.*, 2011b), presumably due to clip slippage and handedness of the operator. However, since samples from the clip group were collected only at 32 and 47 days post-treatment (Lephherd *et al.*, 2011b), further studies are required to assess the wound healing at earlier time points. More-extensive studies are required to determine whether the apparent wound healing outcomes of both alternatives are able to achieve an acceptable degree of flystrike prevention comparable with mulesing.

Farmers' perspectives on preventing flystrike are also very important. Wells *et al.* (2011) interviewed 22 farmers with Merino sheep that were mulesed or scheduled to be mulesed about their intended methods for preventing flystrike and their comments on mulesing and its alternatives (Wells *et al.*, 2011). The study showed that although most interviewees regarded breeding resistant sheep as the best long-term approach, they still intended to continue mulesing because they believe that consumers do not care about it and the current alternatives are not as effective and efficient as mulesing, particularly the clips (Wells *et al.*, 2011). However, none of them had tried the clips and their beliefs were based only on opinions of other producers who had used them (Wells *et al.*, 2011). Despite consumer indifference towards mulesing, breeding programs for flystrike-resistant sheep should be encouraged on farms as there are advantages other than welfare in doing so (e.g., improving wool quality, reducing cost of mulesing and

chemical usage for flystrike prevention). Therefore, public concerns about sheep welfare should be raised through media and by introducing a market premium for un-mulesed wool so farmers will become more inclined to stop mulesing. Further studies with more interviewees are required to give a more objective overview of current farmers' responses to the issue of sheep welfare and mulesing.

Conclusions

The studies above have provided a broad view on the issues of mulesing and its alternatives. Although intradermal injection and clips are available to improve the welfare of sheep and produce similar effects on breech conformation, many farmers still intend to continue mulesing. Therefore, further studies of the effectiveness of these alternatives in preventing flystrike are necessary to persuade farmers to stop mulesing. Alternatives also need to be cost-effective and efficient for farmers to implement them. Finally, ongoing breeding programs for flystrike-resistant sheep should be encouraged and public concerns about the impact of mulesing on welfare of sheep should be raised through media so farmers will be more inclined to phase out mulesing.

References

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