ASSESSMENT AND ALLEVIATION OF CASTRATION DISTRESS IN LAMBS.

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ABSTRACT

There is increasing pressure on the farming community to assess and minimise the distress caused by husbandry procedures. This is due to an increase in awareness of animal welfare throughout New Zealand, and economic pressures from overseas. This study involved an investigations into the acute pain-induced distress of lambs caused by castration, the effectiveness of different anaesthetic methods to alleviate that distress, characterisation and validation of behavioural responses as indices of pain-induced distress, and the assessment of the use of the burdizzo to reduce the acute pain-induced distress caused by ring castration. The castration techniques examined were ring, burdizzo, and ring + burdizzo. Short scrotum creation was also assessed. The alleviation techniques were injections of local anaesthetic into the scrotum, spermatic cords, testes or the scrotum + spermatic cords, 15 minutes prior to castration.

This study assessed the effectiveness of using a burdizzo before application of a rubber ring to reduce the distress, as indicated by cortisol and behaviour responses, caused by ring application. The concept of using a burdizzo to reduce the distress caused by ring castration was based on the hypothesis that 'disabling the afferent nerves from the testes would prevent nociception caused by ring application from being transmitted' (Kent et al. 1993,1995). It was found that the burdizzo used in the conventional manner (one application to each spermatic cord and the surrounding scrotal tissue with no overlap of 'cuts') together with ring application did not reduce the cortisol or behavioural responses to ring castration. Hence it is unlikely that pain will have been reduced.

This study characterised the cortisol and behavioural response to burdizzo castration. The cortisol response was found to have a duration of 180 minutes with a magnitude similar to that exhibited by ring lambs. However, the values remained elevated for longer than ring in lambs. Although the cortisol response is likely to indicate noxious sensory input caused by burdizzo application, it cannot be proved, using the results of this study, that sensory-independent

stimulation of the hypothalamic pituitary adrenal axis is not responsible for this cortisol response to burdizzo castration.

Local anaesthetic administrated into the scrotum, spermatic cords plus scrotum, or testes was found to abolish the cortisol response and either reduce or abolish different behaviours after ring castration suggesting that pain-induced distress caused by application of a rubber ring was prevented. The cortisol response and some behaviours caused by burdizzo plus ring castration were also prevented by injecting local anaesthetic into the scrotum prior to treatment indicating that pain-induced distress was also prevented. Local anaesthetic injected into the spermatic cords reduced numerically (although not significantly), but did not abolish the cortisol response to ring or burdizzo plus ring castration. This suggested that the scrotum, which was presumed to be unanaesthetised, was a significant source of nociception after these two treatments.

Local anaesthetic injected into the scrotum or spermatic cords did not reduce the cortisol or behavioural responses to burdizzo castration. This can lead to two conclusions; either local anaesthetic did not anaesthetise all the tissue effected by the burdizzo, or something other than sensory input stimulated the hypothalamic-pituitary-adrenal axis after burdizzo castration. Intuitively, the former seems most likely.

Some behaviour parameters were found to be useful when comparing the pain-induced distress caused by similar treatments that elicited similar behaviours, but not when comparing between treatments that caused different types of tissue damage and elicited different behavioural responses. Burdizzo castration did not cause any obvious abnormal behaviours, suggesting that either no significant sensory input was caused by burdizzo application or that our behaviour observation methodology was not sensitive enough to pick up nuances of behaviour. Hence it was not possible to use behaviour to compare intensities of pain-induced distress caused by ring or burdizzo castration.

Practically the use of the burdizzo in the conventional manner to reduce the pain-induced distress caused by ring application cannot be advised. Further

work needs to be done to assess practical aspects of the modified use of the burdizzo (across the whole width of the scrotum suggested by Kent et al. 1993,1995) before it can be recommended as an alternative method of castration.

The use of local anaesthetic in the field needs to be investigated further before it can be recommended. It seems that simple methods of local analgesia may be possible, however the danger of possible complications such as sepsis must be evaluated.

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