

Effect of oral meloxicam on feed intake and pain perception in Jersey calves following cautery dehorning with a local anesthetic

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Introduction

Pain management during the dehorning of calves is an important welfare issue on dairy farms. The traditional approach of using only local anesthesia (i.e. a cornual nerve block with lidocaine) is only temporarily effective, and delays but does not prevent significant pain and distress to the calf. Recent research findings suggest that administration of a nonsteroidal anti-inflammatory drug such as injectable meloxicam in addition to local anesthesia can significantly reduce the signs of pain for ≥ 24 hours after cautery dehorning in 6- to 12-week-old Holstein calves. The objective of the current study was to conduct a randomized placebo-controlled trial to describe the effect of administration of oral meloxicam in addition to local anesthesia on behavioral measures of pain and distress following cautery dehorning in preweaned Jersey calves.

Materials and Methods

The study was conducted in summer 2012 on a commercial Jersey farm in central Minnesota. Calves ($n=60$) enrolled in the study were 2- to 3-week-old purebred Jersey heifers that were ≥ 55 lb (25 kg), clinically healthy, and had no previous treatment history. Study calves were housed in individual pens in a nursery barn, and were provided four 2-quart feedings of pasteurized whole milk per day (i.e., 2 gallons per calf per day) as well as free-choice fresh water and starter pellets. Twelve hours prior to dehorning, calves were weighed and randomly assigned to be administered oral meloxicam (0.45 mg/lb or 1 mg/kg; Unichem Pharmaceuticals USA Inc., Rochelle Park, NJ; $n=30$) or a placebo capsule ($n=30$). At time 0, all calves were administered a local anesthetic (i.e. cornual nerve block with 2.5 mL of 2% solution of lidocaine HCL per horn) and cautery dehorning was performed 10 minutes later. Dry feed (starter pellet) was weighed at (0 hour) and 24 and 48 hours after dehorning. Sensitivity to pain at the dehorning site was measured 30 minutes before and at 1, 2, 4, 8, 12, 24, and

48 hours after dehorning by use of an algometer device (Wagner Instruments, Greenwich, CT). The mechanical nociceptive threshold (MNT) was defined as the amount of pressure the calf tolerated in kilograms of force (kgf) when the rubber tip of the algometer device was applied to the margins of the dehorning wound. Comparisons between the treatment groups were made with mixed linear regression analyses.

Results

Calves treated with oral meloxicam (mean \pm SD, 115 ± 20 g) had significantly ($P=0.013$) greater dry feed intake than did calves treated with the placebo (41 ± 20 g) during the 48 hours following dehorning. Although there was some variation in MNT at different times, overall calves treated with oral meloxicam (mean \pm SD MNT, 1.72 ± 0.43 kgf) had significantly ($P=0.0002$) less sensitivity to pressure algometry between 2 and 48 hours after dehorning than did calves treated with the placebo (1.65 ± 0.43 kgf).

Significance

In this study, 2-week-old Jersey calves that were administered oral meloxicam in addition to local anesthetic prior to cautery dehorning had increased dry feed intake and decreased pain perception during the 48 hours after dehorning compared with the dry feed intake and pain perception of calves that were not administered oral meloxicam. These results suggested that oral meloxicam was effective for the reduction of post-surgical pain following cautery dehorning, and are consistent with those of other studies in which the use of injectable meloxicam in 6- to 12-week-old Holstein calves reduced measures of physiologic stress and pain following cautery dehorning. A larger multi-herd field study is currently ongoing to investigate the effects of oral meloxicam use on future calf growth and health following cautery dehorning.