

Materials and Methods

Five Holstein calves aged 5 to 10 months and weighing 231 to 326 lb (105 to 148 kg) were enrolled in the study. Anesthetic induction was carried out with propofol at 3 mg/kg combined with fentanyl at 0.001 mg/kg administered intravenously (IV). The animals were intubated with an appropriate sized endotracheal tube and positioned in lateral recumbency, where they remained breathing room air spontaneously. Subsequently, anesthesia was maintained with a constant rate infusion of propofol at a rate of 0.6 mg/kg/minute IV, combined with a constant rate infusion of fentanyl at a rate of 0.001 mg/kg/hour IV. The drugs were administered during 60 minutes using an infusion pump. Hemodynamic (HR, SAP, DAP, MAP, CO, CVP, MPAP, MPAOP, CI, SI, SVRI, PVRI) and bispectral index (BIS, IQS, EMG) variables were measured before anesthetic induction (T_B) and 15, 30, 45, and 60 minutes after initiating the constant rate infusion of the drugs (T_{15} , T_{30} , T_{45} , T_{60} , respectively). Data were submitted to repeated measures ANOVA and Tukey's test. Data were considered significantly different when $p < 0.05$.

Results

BIS and EMG values were significantly higher at baseline when compared to the other times, as IQS values did not present significant differences. Regarding hemodynamic parameters, HR was lower at baseline when compared to the other times, and DAP was higher at T_{60} when compared to T_{15} , but it did not differ at other times. In addition, MAP was higher at T_{60} when compared to T_{30} . SI values were higher at baseline when compared to the other times and SVRI was higher at T_{60} when compared to T_{15} , but it did not differ at other times. The remaining variables did not change significantly during the evaluation period.

Significance

The constant rate infusion of propofol combined with fentanyl at the studied rates did not result in clinically relevant changes in the evaluated parameters. Therefore, this protocol can be safely used in healthy calves; however, its use in cattle in the United States is extra-label, thereby requiring a veterinarian-client-patient relationship when used.

Co-administration of meloxicam and gabapentin does not compromise beef bull semen quality

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Introduction

Feet and leg soundness are of critical importance for breeding bulls, and lameness is a common problem affecting bulls. Lameness pain in the bovine typically has both inflammatory and neuropathic components, and often coincides with a decline in fertility. As neuropathic pain is refractory to non-steroidal anti-inflammatory drugs (NSAIDs), γ -aminobutyric acid (GABA) analogues are commonly used in conjunction with NSAIDs to treat lameness in cattle. Meloxicam, an NSAID, and gabapentin, a GABA analogue, are frequently used extra-label under the supervision of a veterinarian to mitigate pain associated with lameness. Though neither of these compounds is currently labeled for use in bovines in the United States, previous research has indicated that the pharmacokinetic profiles of these drugs support further evaluation for clinical use as analgesics in bovines. A decline in fertility is often observed in lame bulls; how-

ever, the pathogenesis of this transient subfertility is unknown. Currently, no controlled studies have been conducted to evaluate the effects of meloxicam and gabapentin analgesics on bull fertility. Thus, the objective of the present study was to evaluate the effects of meloxicam and gabapentin combination therapy on beef bull semen quality. It was hypothesized that treatment with meloxicam and gabapentin might have deleterious effects on semen quality.

Materials and Methods

To this end, 6 purebred Angus bulls approximately 20 months of age that had previously passed a Bull Breeding Soundness Evaluation (BBSE) were assigned to an analgesic treatment group (TREAT = 3) or control group (CON = 3). Bulls in the TREAT group were treated with the clinically recommended doses of meloxicam (0.45 mg/lb; 1 mg/kg loading dose; 0.227 mg/lb (0.5 mg/

kg) there after PO) and gabapentin (6.8 mg/lb; 15 mg/kg PO) on days 0 through 4. Bulls were weighed on days 0 and 56, and average daily gain (ADG) for the duration of the study was assessed. All bulls received breeding soundness evaluations including scrotal circumference measurement, transrectal palpation of accessory sex glands, and semen collection and evaluation on days 0, 14, 28, 42, and 56. In each evaluation, sperm motility and morphology were analyzed via light microscopy by the same veterinarian. Daily high and low temperatures were also recorded. Bulls were comingled and managed identically for the duration of the study. SAS for Windows 9.3 was used for statistical analyses. Gain was analyzed via the TTEST procedure, and measures of sperm morphology were analyzed using the MIXED procedure. All data are presented as mean \pm SEM.

Results

No negative side effects were observed in TREAT bulls following the administration of meloxicam and gabapentin. Initial BW for TREAT and CON bulls was not different ($P > 0.05$) as bulls weighed 1300 ± 52.5 and 1390 ± 40.7 lb (589.6 ± 23.81 and 630.5 ± 18.46 kg), respectively. There was no difference in ADG between TREAT and CON bulls ($P > 0.05$). No significant main effects of group or day or interactions thereof were ob-

served on the incidence of abnormal sperm morphologies ($P > 0.05$). All bulls displayed at least 70% morphologically normal sperm (the minimum for obtaining satisfactory potential breeder status per Society for Theriogenology (SFT) standards) at each collection. Furthermore, all bulls maintained acceptable motility ($>30\%$ progressively motile, per SFT standards) for the entirety of the study. Daily high and low temperatures ranged from 86 to 89° F and 63 to 70° F (30 to 31.7° C and 17.2 to 21.1° C), respectively.

Significance

Administration of meloxicam and gabapentin did not adversely affect bull semen quality. Clinical observations and previous studies indicate that, when administered simultaneously, these drugs may be useful in alleviating inflammatory and neuropathic pain due to lameness. Our findings that the combination of meloxicam and gabapentin does not induce subfertility or infertility in breeding bulls is significant as these analgesics are frequently used in lame bulls, especially in AI studs. Further studies evaluating the fertility decline in lame bulls can now be performed with the knowledge that these analgesics do not play a role in the pathogenesis.

Comparison of cardiopulmonary effects of 5 degree reverse Trendelenburg and horizontal positions in dorsally recumbent sevoflurane-anesthetized calves: preliminary data

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Introduction

The purpose of the study was to compare the cardiopulmonary effects of 5 degree reverse Trendelenburg ("head-up") to the horizontal position in dorsally recumbent calves anesthetized with sevoflurane.

Materials and Methods

Five healthy male Holstein calves weighing 340 ± 46 lb (154 ± 21 kg) were included in the study. Each animal was anesthetized 2 times, 1 for each experimental group: control group (CG), table with no tilting (horizon-