

## **Electroencephalographic responses of halothane - anaesthetised *Bos indicus* bull calves during surgical castration treated with lidocaine or meloxicam for analgesia.**

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The aim of this study was to evaluate the electroencephalographic (EEG) response to surgical castration in *Bos indicus* bull calves using the minimal anaesthesia model described by Murrell and Johnson (2006).

Thirty-six *Bos indicus* bull calves were randomly assigned to one of three treatment groups (n=12 each): castration without analgesia (C); castration with 320 mg intra-testicular and SC lidocaine (CL); or castration with 0.5 mg kg<sup>-1</sup> meloxicam administered SC 30 minutes prior to surgery (CM). Anaesthesia was induced (by mask) and maintained (following endotracheal intubation) with halothane in oxygen. A far-field EEG was recorded during baseline stable anaesthesia (EThal 0.9-1.0%) and for a five-minute period following surgical incision. Following fast-fourier transformation, median frequency (F50), spectral-edge frequency (F95) and total power (ptot) were derived. Normalised area-under-the-curve (AUC) with a mixed-effects model was applied. Significance was set at  $p \leq 0.05$ .

The animals weighed 237 ( $\pm 19$ ) kg and were 6-8 months of age. Following surgical incision the F50 increased from baseline in each group but was not different between groups ( $p = 0.65$ ). The change in F95 from baseline to after surgical incision between each of the groups was different ( $p = 0.005$ ): the F95 increased in the C and CM groups (consistent with nociception) and decreased in the CL group (consistent with anti-nociception). Additionally, ptot was different for each group ( $p = 0.016$ ): ptot decreased from the baseline to the least extent in the CL group (consistent with anti-nociception).

Lidocaine has anti-nociceptive effects during surgical castration of *Bos indicus* bull calves.

Murrell JC, Johnson CB (2006) Neurophysiological techniques to assess pain in animals. *J Vet Pharmacol Therap* 29, 325-335.