

Influence of adding detomidine to a lidocaine paravertebral anaesthesia on proinflammatory cytokines in cows undergoing laparotomy

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The aim was to investigate proinflammatory cytokines (IL-1 β , IL-2, IL-6, IL-8, TNF- α) in cows undergoing abomasal displacement surgery, and the potential influence of adding detomidine to the lidocaine proximal paravertebral nerve block (PPNB).

Thirty-nine adult cows requiring surgery to correct left (LAD) or right abomasal displacement (RAD) were enrolled in this prospective, blinded, randomized clinical study. Cows were divided into 2 groups: PPNB using lidocaine (40 ml 2% lidocaine per injection site, n = 20) or lidocaine-detomidine (lidocaine + 5 $\mu\text{g kg}^{-1}$ detomidine equally distributed to the lidocaine syringes, n = 19). The PPNB was performed at T13, L1 and L2 vertebra, always by the same investigator using a blind technique. Citrate blood samples were collected from a jugular catheter before surgery and T2, T12, and T24 hours postoperatively. Plasma was separated and frozen immediately after centrifugation, and later analyzed using multiplex assay based on the Luminex technology and ELISA (IL-6, IL-8) techniques. Following logarithmic transformation of data, linear mixed models were used to investigate the effects of timepoint, PPNB protocol, surgery duration, experience of surgeon, and LAD/RAD on plasma cytokines ($p < 0.05$).

IL-1 β increased at T2 (31.5 [8.29 – 254.92] pg mL^{-1} , $p = 0.027$; median [range]), whereas IL-2, decreased at T24 (313.3 [53.41 – 6643.47] pg mL^{-1} , $p = 0.014$) compared to before surgery (IL-1 β : 24.5 [8.29 – 279.23], IL-2: 376.8 [39.43 – 8956.87] pg mL^{-1}) with no effect of PPNB protocol. IL-6 increased at T2 (7.6 [0.8 – 32.5] ng mL^{-1} , $p = 0.04$) compared to T0 (5.7 [0.6 – 33.3] ng mL^{-1}) when detomidine was added to the PPNB. No other effects were detected.

In cows undergoing L-/RAD surgery, proinflammatory cytokines exhibited time-dependent changes, with IL-6 being influenced by detomidine administration. However, further research is needed to determine the clinical significance of these findings.

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