

HAEMATOLOGICAL ALTERATIONS AFTER EPIDURAL ADMINISTRATION OF ROPIVACAINE IN BUFFALO CALVES

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Abstract

The present investigation was conducted on 6 buffalo calves of 6-12 months of age to study haematological changes after epidural administration of Ropivacaine as an epidural analgesia. Ropivacaine was found to have no clinically relevant effects on respiratory, cardiovascular, renal and hepatic parameters. Ropivacaine did not show any adverse clinical effect on the physiological parameters. From the present study, it was concluded that it can be used as an effective epidural analgesic in physiologically impaired animals.

Keywords:

*Buffalo calf,
Haematological alteration,
Epidural analgesia,
Ropivacaine.*

INTRODUCTION

Ropivacaine alone provides late onset and short duration of analgesia as compared with Ropivacaine alone with adjuvant, thereby requiring frequent administration of the drug for post operative analgesia.[1] Therefore, adjuvants are administered by various routes and are added to local anaesthetics to improve the quality and to accelerate the onset of action. α -2 adrenergic agonists Dexmedetomidine has both analgesic and sedative properties when used as an adjuvant in regional anaesthesia. Ropivacaine is a long acting aminoamide local anaesthetic with both anaesthetic and analgesic effect. At high doses it produces surgical anaesthesia and at lower doses it produces analgesia (sensory block) with limited and non-progressive motor block. It is less lipophilic and is less likely to penetrate large myelinated motor fibers resulting in relatively reduced motor blockade.[2] It provides more differential block when given epidurally, allowing for a better separation between sensory and motor block. In several studies it was concluded that ropivacaine was less cardio-depressant, less arrhythmogenic and less neurotoxic than bupivacaine.[3] Epidural administration of α 2 agonists produce potent analgesia by activation of α 2 adrenergic receptors (α 2A/D, α 2C) in the substantia gelatinosa of the dorsal horn in spinal cord and inhibits the release of norepinephrine.[4] It has minimal sedative or cardiovascular effects [5] and considered as one of the most reliable techniques for regional analgesia in calves, sheep and goats for all surgical procedures caudal to the umbilicus.[6, 8-10] The present investigation was carried out to study haemato-biochemical changes after epidural administration of ropivacaine alone and in combination with dexmedetomidine as an epidural analgesia in buffalo calves.

MATERIALS AND METHODS

The present study was conducted on 6 apparently healthy buffalo calves of 6-12 months of age. The animals were administered with Ropivacaine hydrochloride (0.75%) @ 0.25 mg/kg b.wt. in sacrococcygeal space. 5 ml blood sample from each group was collected at 0, 1, 3, 6, 12, 24, 48 and 72 h for haematological studies in sterile vial containing anticoagulant EDTA for estimation of haematological parameters such as haemoglobin (g/dl) and PCV (%).

Statistical analysis was done with the use of completely randomized design.[7]

RESULTS AND DISCUSSION

The base value of Hb (g/dl) concentration was found to be 12.60 which decreased non-significantly to 12.37 till 3 h and after 72 h the value reached up to 12.59 g/dl. In PCV (%) estimation, the base line value concentration was 35.8 which non-significantly decreased up to 12 h (35.35) followed by non-significant increase reaching to 35.88 (**Table**). There was non-significant decrease in Hb (g/dl) concentration till 6 h and PCV (%) till 12 h. Similar observations were made by Sharrawy and Yagiela [3], Fierhellar *et al.* [6], Amarpal *et al.* [8] and Kamble *et al.* [11, 12].

Table. Effect of epidural Ropivacaine on the haematological parameters of buffalo calves at regular time intervals.

Time (h)	Hb (g/dl)	PCV (%)
0	12.60 ± 0.37	35.8 ± 0.45
1	12.45 ± 0.37	35.51 ± 0.47
3	12.37 ± 0.54	35.23 ± 0.46
6	12.23 ± 0.38	34.90 ± 0.49
12	12.35 ± 0.39	35.35 ± 0.51
24	12.42 ± 0.38	35.53 ± 0.51
48	12.51 ± 0.38	35.66 ± 0.49
72	12.59 ± 0.36	35.88 ± 0.47

Values were expressed as Mean ± S.E., n=6

CONCLUSION

The changes observed in haematological parameters after epidural administration of Ropivacaine in buffalo calves were transitory and compensatory. Ropivacaine has no clinically relevant effects on respiratory, cardiovascular, renal and hepatic parameters. So, it can be useful in animals with poor cardiopulmonary function including geriatric and obese animals with impaired and hepatic function.

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