

SHORT COMUNICATION

(Open Access)**The anesthetic techniques of local anesthesia during the rumenotomi in cattle**DASHAMIR MAMUTI¹, PASKAL GJINO²¹The Department of Veterinary, Tetovo, Macedonia²Faculty of Veterinary Medicine, Agricultural University of Tirana, Albania**Abstract**

The present study comprises 12 female cows on one farm in Tirana district. The purpose of this study is to investigate and evaluate the efficiency of three common local anesthetics techniques used during rumenotomi. The purpose was to compare different conditions and types of foreign bodies syndrome which precipitated the need to perform the surgical intervention. The selected cows were divided into four groups with three cows belonging to each one of them. Rumenotomi was performed under the sedation protocol with Xylasine (0.05 mg/kg). After that proksimal paravertebral nerve block was performed in the first group. In the second group the distal paravertebral block was administered. In the third group linear infiltration local block was performed. While in the fourth group distal paravertebral nerve block with linear infiltration was performed. The local anesthesia was administered using lidocaine 2%. To conclude, the quality of anesthesia and analgesia used in the fourth group (distal paravertebral nerve block with linear infiltration) was more clinically suitable for performing surgery without complications during rumenotomi when compared with the other three techniques performed in the other three groups.

Keywords: cattle, rumenotomy, local anesthetic, Xylasine, Lidocaine

1. Introduction

Several features of local anesthesia render it particularly useful in veterinary practice. Many surgical procedures can be carried out satisfactorily under local anesthesia (e.g., C-section in cows).

In adult cattle many operations are performed on standing animals and since sedation may induce the animal to lie down it is better to avoid it. Operating on standing animals also eliminates the dangers associated with forcible casting and restraint as well as prolonged recumbency. Preemptive local anesthesia in animals undergoing general anesthesia will reduce the amount of general anesthetic, will minimize the cardiopulmonary depression that may follow and will also lead to quicker recovery. It provides a useful pain relief even beyond the full recovery process from general anesthesia [3, 7].

By infiltrating anesthesia the nerve endings are affected at the actual operation site. Most minor surgeries can be done in this way. Problems that occur vary from infection, irritation, wound distortion, swelling and some delays in post-operative healing.

A variant of infiltration anesthesia designed to minimize these effects is field anesthesia [6, 10]. In this case, the walls of anesthesia are created by infiltrating the tissues around (rather than at) the surgical site.

Advantages include absence of distortion of the anatomical features in the incision line; muscle relaxation and no interference to healing. Infiltrating the ring blocks of the tissue all around a distal organ with local anesthetic is another form of field anesthesia.

Paravertebral anesthesia refers to the perineural injection of local anesthesia into the spinal nerves where they emerge from the vertebral canal through the intervertebral foraminae.

One of the advantages is that it provides analgesia and muscle relaxation of the whole area covered by the segmental nerves blocked. All methods approaching from the dorsal surface are equally effective [8].

The method described in which the needle is inserted to the transverse processes of the spine has one disadvantage that the dorsal branches of the segmental nerves are not blocked thus some skin sensitivity remains.

Proximal paravertebral block (Farquharson, Hall, or Cambridge Technique)

Indicated for standing laparotomy surgery such as C-section, rumenotomy, cecotomy, correction of gastrointestinal displacement, intestinal obstruction and volvulus. Distal paravertebral block (Magda, Cakala, or Cornell technique) is indicated for some as proximal paravertebral block.

2. Material and methods

The aim of this study was to evaluate the efficacy of three common local anesthetic techniques during rumenotomy and to compare them in different conditions and types of foreign bodies syndrome which were needed to perform the surgical intervention. The selected cows were divided into four groups with three cows belonging to each of them.

Rumenotomy was performed under the protocol of sedation with Xylazine (0.05 mg/kg). After that proximal paravertebral nerve block was performed in the first group. In the second group the distal paravertebral block was performed. In the third group linear infiltration local block was administered. While in the fourth group distal paravertebral nerve block with linear infiltration was performed. The local anesthesia was administered using Lidocaine 2%.

In the first group the *proximal paravertebral block technique* was performed at the level of the transverse processes of the last thoracic (T-13) and first and second lumbar (L-1 and L-2) vertebrae is the site for needle placement. The dorsal and ventral nerve roots of the last thoracic (T-13) and 1st and 2nd lumbar spinal nerves emerging from the intervertebral foramina were desensitized. 10 ml of 2% lidocaine was injected to each site. Analgesia of the skin, scoliosis toward the desensitized side - due to paralysis of the paravertebral muscles, increased skin temperature due to vasodilation (paralysis of cutaneous vasomotor nerves) indicate effective block.

In the second group distal paravertebral block technique; the dorsal and ventral rami of the spinal nerves T13, L1 and L2 were desensitized at the distal ends of L-1, L-2 and L-4. A 7.5-cm, 18-gauge needle was inserted ventral to the tips of the respective transverse processes in cows where approximately 20 ml of a 2% lidocaine solution was injected in a fan-shaped infiltration pattern. The needle was completely withdrawn and reinserted dorsal to the transverse process, where the cutaneous branch of the dorsal rami was injected with about 5 ml of the analgesic.

The procedure was repeated for the second and fourth lumbar transverse processes. 10-20 ml 2% Lidocaine was used per site.

3. Results and discussion

The quality of analgesia and anesthesia was evaluated in each group and was compared for that

purpose. Each technique presented its own advantages and disadvantages.

Proximal Paravertebral Block required a technique which needed a lower dose of analgesic, (10 ml Lidocaine) than the Distal Paravertebral Block technique (20 ml Lidocaine). Meanwhile the last technique induced anesthesia which lasted less than the time for anesthesia induced by proximal Paravertebral Block.

Despite this the proximal paravertebral block causes wide and uniform areas of analgesia and muscle relaxation and minimal intra-abdominal pressure but it is technically difficult and during this technique there pervade risks of penetrating vital structures such as the aorta and thoracic longitudinal vein on the left side and the caudal vena cava on the right side. While the Distal Paravertebral Block technique can be carried out using of more routine size needles, that has no risk of penetrating a major blood vessel.

Distal Paravertebral Block technique does not cause weakness in the pelvic limb and ataxia.

Eventhough Infiltration Anesthesia is an easy technique, it is better for it to be combined with paravertebral anesthesia because of the incomplete analgesia and muscle relaxation of the deeper layers of the abdominal wall that it provides [12]. This is an anesthesia technique that needs large doses and longer time required for injection which increases cost and causes toxicity because of injecting significant amounts of analgesic solution.

The results of present clinical study shows that the rumenotomy was performed in all of the operative animals under sedation and local, regional, and local anesthesia was combined without complications and side effects.

Anesthesia in the first group (proximal paravertebral nerve block) resulted in fast induction (10 minutes) and the duration was much longer (70 minutes). The induction of anesthesia in the second group (distal paravertebral block) was (13 minutes) and the duration was long (55 minutes). While the anesthesia performed in the third group (linear infiltration local block) resulted in slow induction and the duration was long (30 minutes).

The local anesthesia performed in the fourth group (distal paravertebral nerve block with linear infiltration) resulted in fast induction and loss of body reflexes (7 minutes) and the duration was long (91min). There were no significant changes in physical parameters in all groups.

4. Conclusions

As a conclusion the quality of anesthesia and analgesia used in the fourth group (distal paravertebral nerve block with linear infiltration) was more clinically suitable for performing long surgery without complications in rumenotomy compared with the other three other techniques performed in three others group.

5. References

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