



CASE STUDY: ANESTHESIA MONITORING AND PAIN EVALUATION FOR PYOMETRA SURGERY IN A BITCH USING BUTORPHANOL, MEDETOMIDINE AND LOCAL ANESTHESIA WITH LIDOCAINE

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Abstract: Ovariohysterectomy is an elective procedure in bitches. It can also be performed in uterine pathologies. For closed cervix pyometra surgery is required as quickly as possible, but most of the time the female already has some other pathologies making the anesthesia protocol a challenge.

An eleven years old bitch was diagnosed with closed cervix pyometra. Clinical exam, blood analysis and sonography were corroborated to reach the diagnosis.

For anesthesia, butorphanol was used in premedication combined with medetomidine in order to acquire heavy sedation. Local infiltration of linea alba, ovarian pedicles and cervix with lidocaine was performed in order to supplement analgesia.

Anesthesia monitoring of the 11 years old bitch showed that this protocol maintained proper sedation and analgesia. The heart rate registered between 42 and 71 beats per minute. Oxygen saturation registered between 93% and 97%. The dog was oxygenated by endotracheal tube. Mean arterial pressure registered 73 to 114 and the temperature was maintained above 36.3°C.

Because of thrombocytopenia an electric scalpel and bipolar forceps were used to ensure a better hemostasis.

Keywords: Anesthesia, Local anesthesia, Ovariohysterectomy, Pyometra, Radioelectrosurgery, Ultrasound.

• Introduction

Pyometra is a uterine pathology characterized by the presence of purulent content in the uterus.

Anesthesia was achieved using medetomidine for muscle relaxation and butorphanol for analgesia. Meloxicam was administered preoperatively. Lidocaine has been used locally to supplement analgesia. It was administered by injection on the incision line and then infiltrated inside the ovarian pedicles and intramural cervix (1).

Ketamine was avoided because the biochemical examination suggested that liver and kidney function were impaired which could have prolonged the excretion time of ketamine and increased the risk of possible complications. We also wanted to evaluate the depth of anesthesia using only medetomidine and butorphanol.

During the pyometra surgery, the dog was monitored by following heart rate (HR), pulse rate (PR), end tidal CO₂ (EtCO₂), respiratory rate (RR), blood pressure and temperature. The purpose of anesthesia is to provide muscle relaxation, analgesia and amnesia.

• Material and method

An 11-year-old, 40 kg female was presented because she had hematuria, poor appetite, and apathy. Following the clinical examination, the only remark was abdominal tenderness and a temperature of 38.9°C. On the first day, blood samples were collected that revealed neutrophilia, monocytopenia and thrombocytopenia, a decrease in albumin and Alanine Aminotransferase and an increase in creatinine and globulin were observed. Ultrasound exam showed anecogenic content in the uterus. (fig. 1, fig.2).

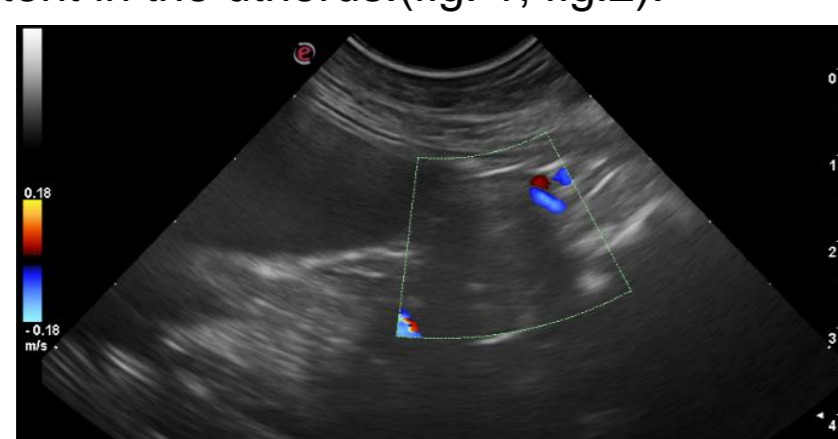


Fig. 1



Fig.2

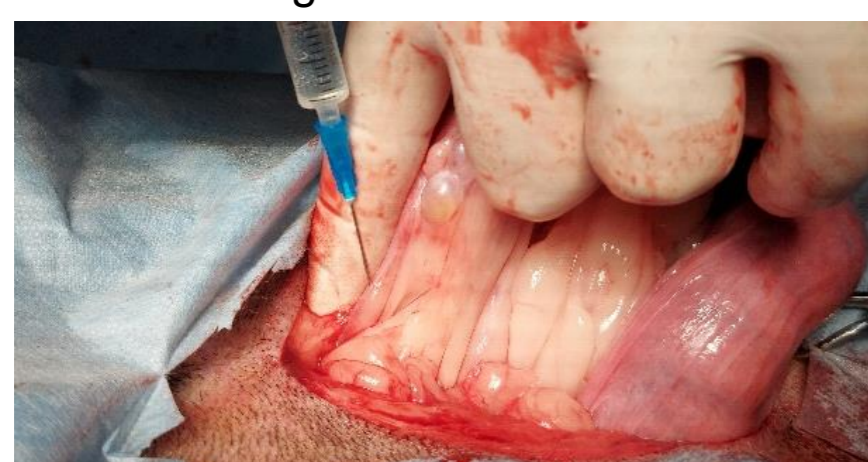


Fig. 3

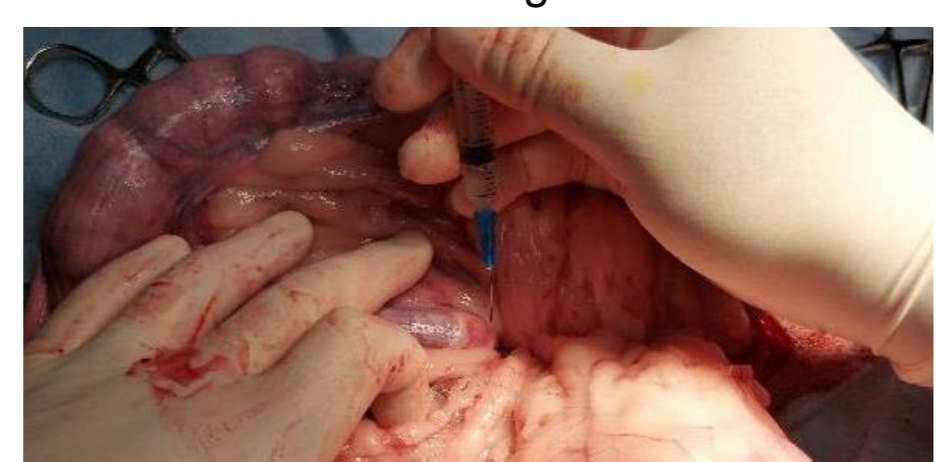


Fig. 4

Premedication was initiated by administering 8 mg of meloxicam subcutaneous. Anesthesia was achieved by administering 40 mg of Butorphanol intramuscularly followed 10 minutes later by the intravenous administration of 0.4 mg of medetomidine hydrochloride, completed 4 minutes later with 10 mg of propofol i.v. to further enhance muscle relaxation and allow intubation. At the time of intubation, the dog coughed. It was positioned in dorsal recumbent position, the sidestream capnograph and the rebreather circuit from the anesthesia machine were connected to the patient. Lidocaine was used on linea alba and in each ovarian pedicle (fig. 3) and then a total volume of 0.8 ml of lidocaine was administered on the dorsal side (fig. 4) and on the ventral side of the cervix.

• Results and discussions

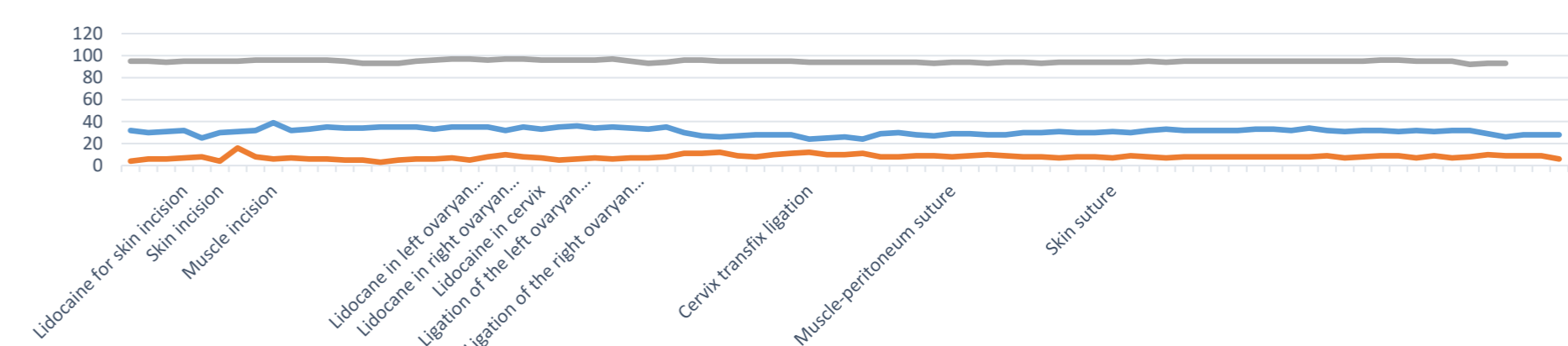


Fig.5

Fig. 5 shows that SpO₂ remained between 93 and 97% throughout the monitoring period. EtCO₂ had been recorded with values between 24 and 39 mmHg. These low values were attributed to the flowmeter set at 3l/min. The respiratory rate was influenced by both the skin incision and the tugs on the ovary and uterine body when they were removed. During the skin incision the heart rate increased to 16 resp/minute, but during the muscle wall and skin incision it decreased to 6-7 breaths/minute. This suggested better local analgesia of the white line than of the skin. Tugs on the reproductive apparatus increased the respiratory rate from 7-8 breaths per minute to 10-12 resp/min.

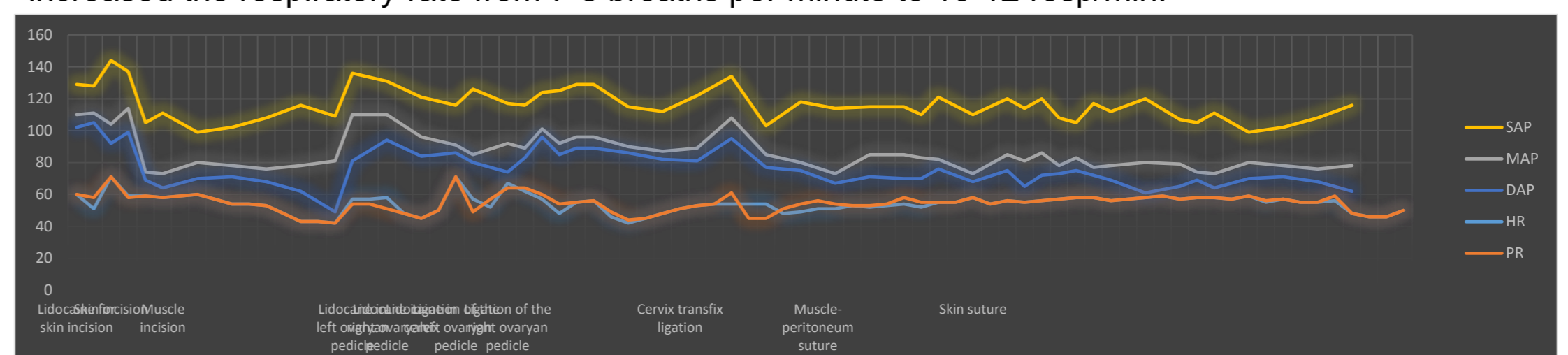


Fig. 6

In Fig 6, the chart for oscillometrically measured systolic (SAP), diastolic (DAP) and mean (MAP) blood pressure was superimposed on that of heart rate to demonstrate that the difference between HR and PR is influenced by blood pressure variation. Blood pressure was noted to increase at the time of skin incision as well as at the time of traction on the reproductive apparatus.

• Conclusions

The medetomidine butorphanol protocol was studied by Robinson, K.J.(2001) and proved a 55% decrease in heart rate and a 62% decrease in respiratory rate.

The anesthetic protocol used induced deep muscle relaxation but insufficient analgesia for a major surgery. Although local anesthesia was used, the dog felt some discomfort that was noted by the increase of RR, HR, blood pressure (5). These increases were temporary and no muscle contractions were noted, thus considering that the animal was in stage III anesthesia (2). Also, the presence of pain can be attributed to insufficient local anesthesia associated with strong tugging on the reproductive system due to short ovarian ligaments.

Anesthesia monitoring is essential because it provides us with data on the functioning of the respiratory and cardiac systems. An anesthesia plan that is too shallow is not enough to perform safe surgical procedures, and an anesthesia plan that is too deep can lead to sequelae or even the death of the patient.

The anesthetic protocol used may suffice for older dogs with other comorbidities, but does not for a routine spay in a healthy dog.

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