Scientific Works. Series C. Veterinary Medicine. Vol. LIX (3)
ISSN 2065-1295, ISSN Online 2067-3663, ISSN-L 2065-1295

CONTRIBUTIONS TO THE PERI-OPERATIVE SUPPORTIVE CARE AND ANESTHESIA FOR UROGENITAL SURGERIES IN SMALL ANIMALS

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Abstract:
A complete and correct individualized management in the peri-operative period for urogenital surgery is the key for good results. This study presents the peri-operative anesthesia and analgesia protocols, along with all the support addressed for individual patient needs, used in the Clinic of Obstetrics and Gynecology at the Faculty of the Veterinary Medicine used for a number of 71 cases. A good support of circulatory system, individualized fluid therapy, metabolic and nutritional support, intra-operative support, postoperative support, pain management and infection control were applied for all the patients and recovery time was assessed. Delayed recovery from anesthesia was commonly encountered due to hypothermia and metabolic disorders, in geriatric cases.

Key words: *anesthesia, monitoring, peri-operative, surgeries, urogenital.*

INTRODUCTION

Individualized care for patients that undergo urogenital surgeries provides the recognition of anesthetic risks and supports the management of this cases. It can be achieved trough complete evaluation and monitoring of the patient, correct anesthesia protocol, optimal timing for surgery.

MATERIALS AND METHODS

A number of 71 patients (51 dogs, 19 cats, 1 rabbit), aged from 3 month to 17 years old, were presented in the Clinic of Obstetrics and Gynecology at the Faculty of the Veterinary Medicine of Bucharest for urogenital surgeries from May 1st 2013 to November 1ST 2013. The cases were divided in 3 groups: 0-1 years (8 dogs, 5 cats), 1-7 years (16 dogs, 4 cats), 7-17 years (27 dogs, 10 cats).

RESULTS AND DISCUSSIONS

The most common urogenital surgeries were represented by ovariohysterectomy 46% of cases, mamectomy 27% of cases, orchiectomy 14% and cystotomy 4%. In this study 9% of the surgeries are rare conditions (1 case each): nephrectomy, vaginal leiomyoma excision, phimosis, aderential syndrom post ovariohysterectomy, penis amputation.

Safe anesthesia and surgery can be achieved only after a correct evaluation of the patient. Recognition of anesthetic risks and support for each patient can be achieved after complete evaluation (signalments, history, physical examination), optimal timing for surgery, adequate anesthesia protocol and accurate patient monitoring. The anesthesia protocol was selected according to the ASA (American Society of Anesthesiology) categories of anesthetic risk classification system, type of procedure, surgeon request or drug availability. Laboratory tests are performed according to ASA status (Table 1).

Table 1. Laboratory tests

ASA1	HLG, TP
ASA2	HLG, TP, CREA
ASA3	HLG, BUN, CREA, TP, GLU, ALT, ALKP, urine biochemistry & sediment
ASA 4-5	HLG, BUN, CREA, TP, GLU, ALT, ALKP, urine biochemistry & sediment blood electrolytes and acido-base status

Withholding water 6 hours before surgery and food for 12 hours, was applied for each patient. The preparation continued with exact weighting, intravenous catheterization and correction of any preexisting problems.

Intravenous catheterization is needed for analgesics, electrolytes or any other i.v. drug

and especially for any emergency that can occur, for this reason we perform it for every animal anesthetized.
Balanced fluid and electrolyte infusion 10 ml/ kg/ h started before induction was applied to prevent hypotension, maintain normovolemia, electrolyte balance and pH.
For hypovolemia cases we administrated colloids to restore blood volume and blood pressure in 7 cases (9.85% of total cases).
In 6 cases with hypoalbuminemia were treated with hydroxyethyl starch 1 ml/kg/h and 1 case of blood presure dropped with a 5ml/kg bolus of hydroxyethyl starch.
Urogenital patients have special anesthesia needs. We used low anesthetic dosages and concentrations and analgesics for pain management, that don't affect renal function. Dissociative anesthetics, such as ketamine impaired renal clearance and we avoid them. Premedication protocols used in this study are presented in table 2.
After premedication (Table 2) patients received oxygen via face mask for 5-10 minutes and after preoxygention propofol 4-6 mg/kg/i.v. The patients were intubated and anesthesia maintained with isoflurane during the entire surgery.

Table 2. Premedication protocols

ASA	Premedication protocols used
ASA I-II 71.82%	Acepromazine 0.02-0.05mg/kg (dogs) +Butorphanol 0.2 mg/kg Medetomidine 10 µg/kg (dogs) +Butorphanol 0.2 mg/kg Medetomidine 20µg/kg (cats) +Butorphanol 0.2 mg/kg
ASA III-IV 28.18%	Midazolam 0.1-0.4 mg/kg (dogs) +Butorphanol 0.2 mg/kg Midazolam 0.4-0.8 mg/kg (cats) +Butorphanol 0.2 mg/kg
ASA V -	Midazolam 0.1-0.8 mg/kg (dogs) Midazolam 1-1.5 mg/kg (cats)

Monitoring anesthetized patients for evaluate oxygenation, ventilation, tissue perfusion, cardiac rhythm and rate, muscle relation, body temperature and urinary output is extremely necessary. We recorded patient parameters at 5-10 minute intervals, or more frequent if sudden changes in physiologic status occur.
We continue to monitor until the patient is stabilized in recovery, measuring indirect arterial blood pressure, cardiac rate and rhythm trough EKG, hemoglobin oxygen saturation, puse rate (pulsoxymetry), urine output (the goal was to maintain 1-2 ml/kg/h). Ideal is to measure blood gases and pH, to perform capnography and direct arterial blood pressure measurement.
Postoperative analgesics were administrated for each case: Tramadol 1mg/kg for cats, every 24 hours and 2 mg/kg for dogs, every 8 hours, for 3 days.
Recovery from anesthesia depended on the length of the procedure, the type of anesthetic used and the patient's condition and not last his temperature.
Delayed from anesthesia was encountered due to inadequate drug elimination or low metabolic rate and to hypothermia (35.5°-38°C).
Prolonged recovery after anesthesia stopped occurred for all the cats patient (100%) and in 39 dogs (76.47% of dog cases).
Oliguria <0.5ml/kg/h was observed in 2 dog cases (2.81%) and Dopamine infused 1-3 µg/kg/min.
Dyspnoea in the recovery period occurred in 26.31% cats and in 7.84 % dogs cases. For this case supplementary oxygenation by mask or in intensive care unit cages was necessary.

CONCLUSIONS

73% of the surgeries record in our study were represented by ovariohyterectomy and mamectomy cases. 52.11% of the patients were aged 7-17 years and 53.52% considered to present a ASA2 risk.
Anamnesis, clinical evaluation, ultrasound exam and laboratory tests, plus basic monitoring were performed for all cases.
Oliguria <0.5ml/kg/h was observed in 2 dog cases (2.81%) and dyspnoea in the recovery period occurred in 26.31% cats and in 7.84 % dogs cases.
Hypothermia prolonged recovery after anesthesia for all the cats patient (100%) and in 39 dogs (76.47% of dog cases).
Safe anesthesia and surgery in urogenital cases require correct evaluation of each patient, best anesthetic protocol available and careful monitoring.

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