RESEARCH ARTICLE   **OPEN ACCESS**

ANESTHETIC RISK AND PERIOPERATIVE MORTALITY IN BITCHES WITH PYOMETRA

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ARTICLE INFO

ABSTRACT

In the present study, we aimed to evaluate the classification proposed by the American Society of Anesthesiologists (ASA) of bitches with pyometra. The most of the bitches in the current study (96.87%, 31/32) were classified as ASA IV, receiving the emergency classifier (E), because pyometra is considered an emergency disease. Only one bitch was classified as ASA V E. There were three deaths, two in ASA IV patients and one in ASA V patient, probably related to the severity of the disease. In this way, the mortality rate reached 9.375%.

Citation: *Ana Maria Quessada, Nhirneyla Marques Rodrigues, Sávio Soares Barbosa Dantas, Talita Bianchin Borges, Luan Vinícius Tezzei Maia, Kamal Hani Hussein and Alysson Ramalhais.* "Anesthetic risk and perioperative mortality in bitches with pyometra*", International Journal of Development Research*, 11, (12), 52689-52690.

INTRODUCTION

Pyometra, which is an intrauterine accumulation of purulent content (Baithalu *et al*., 2010; Karnezi *et al*., 2020) is a life-threatening disease. The prevalence of the disease is high in countries where surgical sterilization of pets is not routinely performed (Hagman, 2017). This condition is a potentially fatal medical emergency (Fieni *et al*., 2014). The treatment of choice for pyometra is ovariohysterectomy (OH) (Fieni *et al*., 2014; Karnezi *et al*., 2020), preventing recurrence (Baithalu *et al*., 2010). For the classification of the patient's physical state and its anesthetic risk, the stratification carried out by the American Society of Anesthesiologists (ASA, 2019) is recommended, allowing the anesthesiologist to estimate the degree of inherent risks to certain anesthetic and surgical procedures, and the prognosis for the patient (Portier and Ida, 2018). The aim of the present study was to evaluate and classify bitches affected by pyometra submitted to surgical procedures in a Teaching Veterinary Hospital (TVH), according to the classification of the physical state and anesthetic risk established by ASA (2019), as well as the mortality rate of the disease in dogs in the service analyzed.

MATERIAL AND METHODS

The study was approved by the animal experiment ethics committee of the institution where it was conducted with the protocol no. 063/11. A total of 32 bitches with pyometra were included in the present study. The diagnosis was performed by means of ultrasonography, combined with history, clinical examination and laboratory tests. The preanesthetic evaluation of all bitches carrying the disease was performed, and the animals were referred for surgical procedure (ovariohysterectomy). This evaluation was performed by a single evaluator. Based on the information obtained, the patients were classified according to physical status and ASA anesthetic risk category (ASA, 2019). The E qualifier (emergency) was added, when necessary, in each group of the classification (Table 1). General anesthesia was used in all surgeries.

RESULTS AND DISCUSSION

Most of the bitches with pyometra included in the present study (96.87%, 31/32) were classified as ASA IV, receiving the emergency

classifier (E). Such classification was due to the fact that the patients had a severe systemic disease with a constant threat to life (ASA, 2019). The emergency qualifier was added by the fact that pyometra is a disease that has an emergency character and needs clinical stabilization to increase survival (Trautwein *et al*, 2018; Karnezi *et al*., 2020). Only one bitch was classified as ASA V. This category refers to dying patients, with no expectation of survival without surgery (ASA, 2019). The bitch thus classified showed severe morbidity with intense degree of dehydration, increased levels of urea (479,6 mg/dl) and creatinine (4,98 mg/dl) and clinical signs of septic shock (Figure 1). The bitch died during the trans-operative period, demonstrating that the ASA classification can be used in the prognosis of patients who need to undergo surgical procedures. The literature confirms that most deaths occur from grade III onwards and in emergency patients (Rodrigues *et al*., 2018) as is the case of the bitch in question.

Table 1. Categories of anesthetic risk and physical state according to the American Society of Anesthesiologists (ASA, 2019)

Classification	Characteristics
ASA I	Normal and healthy patient
ASA II	Patient with mild grade systemic disease
ASA III	Patient with severe systemic disease
ASA IV	Patient with severe systemic disease that is a constant threat to life
ASA V	Patient dying, with no expectation of survival without surgery
ASA VI	Patient with brain death whose organs will be removed for donation purposes
E: Emergency qualifier	

Source: ASA (2019)

Among all bitches submitted to OH due to pyometra (32), three deaths occurred, two in ASA IV patients and one in ASA V patient. In this way, the mortality rate of pyometra in this study was 9.375%. The literature places the mortality of pyometra between 10% and 13.33% (Jitpean *et al*., 2014; Trautwein *et al*., 2018). Two deaths occurred in the postoperative period, being the most critical period for mortality in anesthetic-surgical procedures in dogs (Rodrigues *et al*., 2018).It is probable that the deaths were due to the severity of the disease. It is important to highlight that mortality in this study is similar to that of other authors who studied pyometra in bitches (Jitpean *et al*., 2014; Trautwein *et al*., 2018).

Figure 1. Bitch, Mongrel, 8 years old, diagnosed with pyometra, presenting prostration, lethargy and dehydration (demonstrated by the retraction of the eyeball)

The ASA classification is very useful in selecting the drugs to be used (Guzel, 2018). Therefore, the selection of the anesthetic protocol must be careful. In the bitches of the study, the anesthetic protocol consisted of preanesthetic medication with midazolam (0.1 mg/kg IM), induction with propofol (4 mg/kg intravenously) and maintenance with is oflurane. During the intraoperative period, fluid therapy with lactated ringer was given at a dose of 10 ml/kg/hour. Midazolam and propofol are drugs considered safe for use in dogs (Dinesh et al., 2018). The use of inhalational anesthesia with isoflurane was due to the fact that this type of anestesia is easily reversible. The safest approach in the anesthesia of critical patients is to select drugs whose effects are easily reversible (Guzel, 2018). All bitches affected by pyometra in this study were classified as ASA IV and V, with an emergency qualifier. In this study, pyometra in bitches presented high mortality, with the postoperative period being the most critical.

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