UPDATE ON THE MANAGEMENT OF PERIOPERATIVE HYPOTENSION THE CANINE SPECIES

Final Degree Project – June 2023

Laia Romero Centella

FACULTAT DE VETERINÀRIA

Universitat Autònoma de Barcelona

INTRODUCTION

Blood pressure is the force exerted by the blood against the walls of the arteries and depends on cardiac ejection volume and vascular resistance. It is a vital parameter that should be monitored during perioperative period, as fluctuations can have serious consequences. A mean arterial pressure lower than 60 mmHg can result in inadequate tissue perfusion and negative consequences such as ischemia in vital organs. Monitoring and treating blood pressure during anesthesia have been shown to improve outcomes and reduce complications.

OBJECTIVES

1.Defining the current pharmacological methods for addressing and treating perioperative hypotension in veterinary medicine.

2.Defining updated action protocols regarding the management of hypotension in veterinary clinical practice within the perioperative context.

MAIN FACTORS AFFECTING BLOOD PRESSURE

VASODILATION - VASOPRESSORS DRUGS → ↓ Systemic vascular resistance

↓ Cardiac output

SEVERE BRADYCARDIA - ANTICHOLINERGIC DRUGS

CARDIAC CONTRACTILITY – POSITIVE INOTROPIC DRUGS

HYPOVOLEMIA - FLUIDOTHERAPY

→ **↓ BLOOD PRESSURE**

ACTION PROTOCOL

Adjusting the concentration of inhalation anaesthetics → **Decrease injectable anaesthetics** → **Specific treatment** → **PERIOPERATIVE HYPOTENSION CONTROL**

INITIAL CHOICE FLUIDS

FLUID	DOSE
Ringer-lactate ClNa 0,9% Glucosaline 5%	Intraoperative: 5ml/kg/h Shock: 60-90ml/kg

MAIN DRUGS FOR THE TREATMENT OF PERIOPERATIVE HYPOTENSION

DRUG	MAIN EFFECT	DOSE
Atropine	Anticholinergic	B: 0,02 a 0,04 mg/kg IV, IM, SC
Dobutamine	Positive inotrope	CRI:5-10 μg/kg/min IV
Dopamine	Positive inotrope +Vassopressor	CRI: 5-10 μg/kg/min IV
Norepinephrine		CRI: 5-10 μg/kg/min IV
Ephedrine		B: 0,01–0,25 mg/kg IV
Epinephrine		CRI: 0,05–1 μg /kg/min IV
Phenylephrine	Vassopressor	CRI: 0,05-3μg/kg/min IV B: 0,01 mg/kg IV
Vassopressin		0,8IU/kg IV

CONCLUSIONS

Hypotension being one of the most common causes of anaesthetic complications in both human and veterinary medicine, it is surprising how little research on this subject is carried out in animals, and it is the extrapolation of the research carried out in human medicine that guides the protocols and guidelines for action in cases in veterinary medicine, although we are well aware that the difference between species would justify possible differences involving the relevant research on the target species, therefore, further research is needed to determine the best strategies to treat these morbidities, as well as to develop new therapeutic strategies to make better use of current drugs. Furthermore, the current controversy in both the indication and typology of fluid therapy, as well as the choice of drugs of action, complicates a unanimous and consensual response to the treatment of perioperative hypotension. An early approach to hypotension by resting the concentration of inhalation and injectable anaesthetics and fluid perfusion allows better control of the development of hypotension and prevents its progression, although on certain occasions pharmacological treatment will be necessary to reverse the situation.