

BLOOD PRESSURE MONITORING UNDER GENERAL ANESTHESIA IN THE DOG: COMPARATIVE STUDY BETWEEN INVASIVE AND NON-INVASIVE METHOD

Cecilia Vullo, Eleonora Bonacucina, Angela Palumbo Piccionello, Alessandro Fruganti,
Fabrizio Dini, Alberto Salvaggio, Anna Rita Attili and Adolfo Maria Tambella

Camerino University, Italy

Hypotension is a common complication during anaesthesia and it has been hypothesized that monitoring of cardiovascular and respiratory function may reduce anaesthetic related mortality. Perfusion of vital organs is the key function of the cardiovascular system. Aortic pressure measurement is an important indicator of organ perfusion. Peripheral arterial blood pressure is commonly used to assess cardiovascular status in clinical practice, although it differs from the central blood pressure and it is not considered a completely reliable indicator of tissue perfusion. Invasive, direct, arterial pressure monitoring via cannulation of a peripheral artery (IBP) is considered more accurate than non-invasive, indirect, oscillometric method (NIBP) in both awake and anesthetized animals, and allows for continuous measurements instead of intermittent values obtainable with NIBP.

The aim of the study was to compare IBP and NIBP detected simultaneously in dogs during general anaesthesia.

Fifteen ASA I (American Society of Anaesthesiologists) female dogs, aged between 11 months and 4 years, with an average weight of 31.7 kg (range: 19 to 41 kg), 5 mix-breed and 10 pure-breed dogs (among which German and Belgian Shepherd, Labrador and Golden Retriever, Bernese Mountain Dog), undergoing elective laparotomic ovariectomy, were utilized to perform the study. Both IBP and NIBP were measured simultaneously during general anaesthesia, in the same dogs, every 2 minutes for a total of 30 minutes, using multiparametric BeneView 8 anesthetic monitor (Shenzhen Mindray Bio-Medical Electronics Co., Ltd). IBP measurements were obtained using a catheter placed in the dorsal pedal artery and an electronic pressure transducer. NIBP measurements were obtained using an appropriately sized cuff placed around the contralateral metatarsal region. Systolic (SAP), diastolic (DAP) and mean (MAP) arterial pressures measured in each dog, in each study time, with NIBP and with IBP were compared using a Student t-

182

LXX Convegno S.I.S.Vet.

XVI Convegno S.I.C.V. - XIV Convegno S.I.R.A.

XIII Convegno A.I.P.Vet. - XIII Giornata studio So.Fi.Vet. - III Convegno R.N.I.V.

test. All data were analysed with statistical software (STATA Software, Version 13.1 SE, College Station, Texas, USA).

All dogs completed the study. The mean±sd SAP obtained using NIBP (98.65±21.70 mmHg) and IBP (101.21±17.90 mmHg) were almost superimposable [$P>0.05$], while mean±sd DAP and MAP obtained using NIBP (DAP: 58.55±18.17; MAP: 68.55±19.58 mmHg) and IBP (MAP: 66.81±15.89; DAP: 75.07±15.20 mmHg) presented no statistically significant discrepancies [$P>0.05$]. The trend of NIBP values was lower than that of the IBP values providing interesting ideas for further study.

The results obtained in this study suggest that both methods are accurate and reliable in dogs during general anaesthesia. Non-invasive method seems to be almost as valid as the invasive method for the assessment of the cardiovascular system, in relation to the characteristics of the monitor used.

1. Brodbelt D et al., Veterinary Anaesthesia and Analgesia, 2008.
2. MacFarlane PD et al., Veterinary Research Communication, 2010.
3. Thiele RH, Durieux ME, Anesthesia and Analgesia, 2011.
4. Rysnik MK et al., Veterinary Anaesthesia and Analgesia, 2013.