

## Dexmedetomidine infusion as part of anaesthetic management in a dog with atrial fibrillation and heart failure undergoing patent ductus arteriosus closure

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Patent ductus arteriosus (PDA) may result in progressive left-sided volume overload and congestive heart failure (1). Chronic atrial enlargement can predispose to atrial fibrillation (AF), further reducing cardiac output and increasing anaesthetic risk (2). A 7-year-old, spayed female German Shepherd with left-to-right PDA, rapid AF and previously decompensated left-sided congestive heart failure was scheduled for transarterial occlusion using an Amplatz Canine Duct Occluder. The patient was classified as American Society of Anaesthesiologists (ASA) physical status IV. Following medical stabilisation (furosemide, diltiazem, pimobendan, digoxin), premedication consisted of methadone IM ( $0.3 \text{ mg kg}^{-1}$ ). A dexmedetomidine constant rate infusion (CRI) was initiated at  $3 \mu\text{g kg}^{-1} \text{ hour}^{-1}$  IV without loading dose, and then decreased to  $2 \mu\text{g kg}^{-1} \text{ hour}^{-1}$ , until sedation and reduction in HR (from 140 to 100 beats  $\text{minute}^{-1}$ ) were observed. Anaesthesia was induced with lidocaine ( $1 \text{ mg kg}^{-1}$  IV), midazolam ( $0.2 \text{ mg kg}^{-1}$  IV) and propofol ( $2 \text{ mg kg}^{-1}$  IV) and maintained with isoflurane (end-tidal 0.6–1.1%) in oxygen. Dexmedetomidine CRI was continued during anaesthesia and titrated between 0.5 and  $2 \mu\text{g kg}^{-1} \text{ hour}^{-1}$  according to HR, MAP and anaesthetic depth. Hypotension (MAP  $< 60 \text{ mmHg}$ ) was observed after induction and corrected with a crystalloid bolus and dobutamine infusion ( $2\text{--}3 \mu\text{g kg}^{-1} \text{ minute}^{-1}$ ). During PDA occlusion, increased arterial pressure and reflex bradycardia were observed, consistent with a Branham reflex; dexmedetomidine and dobutamine were discontinued, and HR normalised without additional pharmacological intervention. Recovery was calm and uneventful, with no evidence of recurrent pulmonary oedema during hospitalisation. This case illustrates that a titrated dexmedetomidine infusion without loading dose can provide sedation and reduction in ventricular response in a dog with AF undergoing PDA occlusion. Close haemodynamic monitoring and dose adjustments appear essential when incorporating  $\alpha_2$ -agonists into balanced anaesthesia in high-risk cardiac patients (3). Further research is warranted to confirm these results.

### References

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