

# Comparison of 3 different continuous positive airway pressure interfaces in healthy Beagles under light anaesthesia

*C Meira, F Jörger, A Waldmann, SK Ringer, SH Böhm, S Iff, M Mosing; Association of Veterinary Anaesthetists (AVA) Spring Meeting, Lyon, France, April 20-22, 2016*

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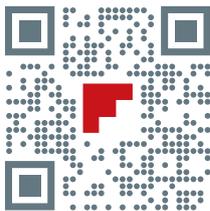
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The aim of this study was to compare the efficacy of 3 interfaces to deliver continuous positive airway pressure (CPAP) in dogs: self-made mask (M), helmet (H), and conical facemask (FM).

Ten Beagles were kept under light anaesthesia with medetomidine  $3 \mu\text{g kg}^{-1} \text{ hour}^{-1}$  and propofol  $7 \text{ mg kg}^{-1} \text{ hour}^{-1}$  IV in dorsal recumbency ( $\text{FiO}_2$  0.21). Each interface was tested in each dog in random order. Measurements were taken at  $T_0$  (no interface),  $T_1$  (interface without CPAP) and  $T_2$  (after 15 minutes of CPAP  $7 \text{ cmH}_2\text{O}$  using commercially available device). End-expiratory lung impedance changes (EELIC) using electrical impedance tomography ( $T_0$ - $T_2$ ),  $\text{PaO}_2$  and  $\text{PaCO}_2$  ( $T_1$ - $T_2$ ), inspired fraction of  $\text{CO}_2$  ( $\text{FiCO}_2$ ) ( $T_1$ ), and leak ( $T_2$ ) were measured. Mixed-effects linear regression models were used for statistical analysis ( $p \leq 0.05$ ).

The EELIC increased by 7% ( $p < 0.001$ ) between  $T_0$  and  $T_2$  without significant differences between interfaces. No significant difference was found for  $\text{PaO}_2$  between devices at  $T_2$ .  $\text{PaCO}_2$  was higher with FM compared to H (4 mmHg;  $p = 0.03$ ) and M (4 mmHg;  $p = 0.03$ ). The leak was significantly higher with M and H than with FM ( $p < 0.001$ ). At  $T_1$   $\text{FiCO}_2$  was higher with H than M (6.6 %;  $p < 0.001$ ), higher with FM than M (10.1%;  $p < 0.001$ ) and lower with H than with FM (-3.5%;  $p = 0.001$ ).

All three devices performed clinically equal regarding gas exchange. FM showed the smallest leak during CPAP, but the highest amount of rebreathing without CPAP.



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