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34. Distribution of ventilation in horses after recovery from anaesthesia

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The aim of the study was to evaluate the percentage of total tidal variation per region of interest (ROI) in horses after recovery from anaesthesia using electrical impedance tomography (EIT).

In 6 experimental horses EIT measurements of at least 2 minutes were performed 24 hours before (BL) and 1-6 (t₁-₆) and 24 hours (t₂₄) after recovery from a six-hour anaesthesia in dorsal recumbency. The EIT belt with 32 electrodes was placed caudal to the scapula after clipping a circumferential small strip to guarantee similar position of the belt between measurements. Four representative breaths were analysed for each measurement and the fraction of total tidal ventilation of four stacked ROIs were calculated (dorsal, central-dorsal, central-ventral, ventral ROI), each covering 25 % of the ventrodorsal height of the lungs. Respiratory rate and tidal volume (V₉EIT) were calculated using the impedance change of the EIT signal. Fractional polynomials were used to model the curves after BL. Cross-points between lower and upper 95 % confidence intervals were estimated.

No significant change from BL was observed for any ROIs. However, 8.8 % of the total ventilation shifted from the dorsal towards the ventral ROIs (Fig. 1). Respiratory rate was higher at t₅-₂₄, while V₉EIT did not change significantly compared to BL.

Ventilation during inspiration is distributed to the ventral regions in standing horses for at least 24 hours after anaesthesia in dorsal recumbency. Respiratory rate increases over time.

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Figure 1: Percent change from baseline (BL) of the impedance signal in the ventral (v), central-ventral (cv), central-dorsal (cd) and dorsal (d) region of interest.

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