

## Measurement of combined oximetry and cutaneous capnography during flexible bronchoscopy

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The aim of the present study was to assess the feasibility of measuring combined arterial oxygen saturation measured by pulse oximetry ( $Sp,O_2$ ) and cutaneous carbon dioxide tension ( $Pc,CO_2$ ) to monitor ventilation and quantify change in  $Pc,CO_2$  during bronchoscopy. Combined  $Sp,O_2$  and  $Pc,CO_2$  were measured at the ear lobe in 114 patients. In four patients, the ear-clip slipped and they were excluded. In total, 11 patients had artefacts with  $Sp,O_2$  recordings, thus,  $Sp,O_2$  was analysed in 99 patients. Spirometry data were available in 77 patients. Multivariate analysis of covariance and logistic regression were used for statistical analyses. Mean baseline  $Pc,CO_2$  was  $4.78\pm 1.06$  kPa ( $36\pm 8$  mmHg) and mean rise in the  $Pc,CO_2$  during bronchoscopy was  $1.26\pm 0.70$  kPa ( $9.5\pm 5.3$  mmHg), while mean  $Pc,CO_2$  at the end of bronchoscopy was  $5.85\pm 1.19$  kPa ( $44\pm 9$  mmHg). Baseline  $Pc,CO_2$  and the lowest  $Sp,O_2$  were significantly associated with peak  $Pc,CO_2$  and the change in  $Pc,CO_2$  during bronchoscopy. Risk of significant hypoxaemia ( $Sp,O_2\leq 90\%$ ) was lower for a higher baseline  $Sp,O_2$ . Peak  $Pc,CO_2$  was directly associated with significant hypoxaemia. There was no significant association in the baseline  $Pc,CO_2$ , peak  $Pc,CO_2$ , baseline  $Sp,O_2$  or the lowest  $Sp,O_2$  comparing patients with and without chronic obstructive pulmonary disease. In conclusion, it is feasible to measure combined pulse oximetry and cutaneous carbon dioxide tension effectively to monitor ventilation during flexible bronchoscopy.

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