

Correspondence

Does fentanyl-induced cough justify pre-treatment with iv lidocaine 2 mg·kg⁻¹

To the Editor:

We read with great interest the study by Lin *et al.*¹ suggesting that *iv* lidocaine with 2 mg·kg⁻¹ or ephedrine 5 mg suppress fentanyl-induced cough. We appreciate the brief review on the hypotheses explaining the mechanism of fentanyl-induced cough, as very little is known on this frequent adverse event. However, daily clinical routine also shows that the slow *iv* administration of fentanyl prevents fentanyl-induced coughing and, therefore, clinicians try to prolong administration, as recommended also by Lin *et al.* Unfortunately no data confirm that prolonged administration has fewer side effects. Therefore, we wonder whether we should rely on clinical experience and administer fentanyl slowly or add yet another drug during induction of anesthesia.

We would have concerns to administer, for example, lidocaine 150 mg *iv* to otherwise healthy ASA status I and II patients just to suppress a side effect elicited by the rapid administration of fentanyl. Intravenous lidocaine 2 mg·kg⁻¹ is more than the recommended dose (1–1.5 mg·kg⁻¹) for resuscitation of ventricular fibrillation. As an antiarrhythmic drug it may have some arrhythmogenic effects and its vasodilatory effects could even augment the cardiovascular depression seen after most induction agents. However, the pre-administration of ephedrine 5 mg *iv* seems to be a promising idea, as induction of general anesthesia often goes along with a relevant drop in blood pressure and pre-administration of such a small dose of ephedrine could be an acceptable alternative in clinical practice.

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Reference

- 1 Lin CS, Sun WZ, Chan WH, Lin CJ, Yeh HM, Mok MS. Intravenous lidocaine and ephedrine, but not propofol, suppress fentanyl-induced cough. *Can J Anesth* 2004; 51: 654–9.

Variation of "pulse amplitude" measured by a pulse oximeter may help predict intravascular volume

To the Editor:

We non-invasively investigated the relationship between waveform variation determined by pulse oximetry and the diameter of the inferior vena cava (IVC) determined by ultrasound imaging, the diameter of the IVC directly reflecting intravascular volume.¹

Twenty ASA physical status I or II adult patients who required general anesthesia were enrolled in this study. After tracheal intubation, anesthesia was maintained with 1% sevoflurane and nitrous oxide (1 L·min⁻¹)/oxygen (1 L·min⁻¹). Ventilation was controlled with a ventilatory rate of 10 min⁻¹ (durations of inspiratory and expiratory periods were two and four seconds, respectively) with an inspiratory pressure of +15 cm H₂O. Under stable anesthesia but before surgery, "pulse amplitude (PA)" and diameter of the IVC were measured by a pulse oximeter (NELLCOR N-595™; Tyco Healthcare, Pleasanton, CA, USA) attached on the left second finger tip and by a simple-minded ultrasound imaging system M2430A (OptiGo™; Philips, Eindhoven, the Netherlands), respectively. PA was measured automatically as a relative PA (alternating current component) to a background light absorption (direct current component); thus, PA is defined as $(\max - \min) \cdot 1/2 (\max + \min)^{-1} \times 100$ (\max and \min = maximal and minimal light absorption intensities). This variable was recorded automatically at two-second intervals in a personal computer with SatCollector version 2.2 software (NELLCOR). The diameter of the IVC was measured longitudinally with an OptiGo™ probe (2.5 MHz sector transducer) from a window below the xiphoid process by an independent expert. Maximal and minimal values of the IVC diameter were recorded over the mechanical positive-pressure respiratory cycle.²

The relationship between the respiratory-dependent variations of the PA and IVC diameter is shown in the Figure. Mean (\pm SD) percent variations of PA and IVC diameter were 10.7% \pm 4.8% and 7.4% \pm 3.3%, respectively. There was a significant linear correlation between these variables ($r = 0.82$, $n = 20$, $P < 0.01$). Rescue ephedrine was administered in patients with a higher variation (indicated by an asterisk; 15.8%