Postoperative sore throat and ketamine gargle

Editor—We investigated, in a double-blind randomized control study, the effect of a ketamine gargle to attenuate postoperative sore throat (POST) in 44 adult ASA I or II patients undergoing elective gynaecological procedures. The patients had 30 s gargling with either 20 ml of normal saline (Group C: control, n=22) or ketamine 40 mg in 20 ml normal saline (Group K: ketamine, n=22). Anaesthesia was induced with fentanyl, propofol, and rocuronium, 5–10 min after gargling. Maintenance of anaesthesia was with oxygen–air mixture and sevoflurane. Titrated boluses of morphine were given according to clinical requirements during surgery.

The same anaesthetist performed all intubations and extubations. During surgery, blood samples were collected at intervals for ketamine and norketamine analysis. At the end of the study period, serum samples from five patients in Group K, randomly selected, were assayed by liquid chromatography and mass spectrometry.

After extubation, POST was assessed at 0 (on arrival at the post-anaesthetic care unit), 2, and 24 h using a four-point grading scale (none, 0; mild, 1; moderate, 2; and severe, 3).

POST was significantly reduced in Group K compared with Group C at 2 h post-surgery but not at 24 h (P=0.498). There was significantly less moderate-to-severe POST in Group K at 0 h.

Ketamine gargle has been reported to attenuate POST for 24 h post-surgery.1 We observed significant reduction in POST at 0 and 2 h post-surgery but not at 24 h.

The reported ketamine level to relieve tourniquet pain after an i.v. bolus was >100 ng ml⁻¹.2 The analgesic effect from oral administration of ketamine was at a lower mean plasma concentration of ketamine 40 ng ml⁻¹, presumably due to the higher norketamine levels (160 ng ml⁻¹).3

In this study, blood samples were obtained during intraoperatively, but POST was assessed post-surgery when ketamine concentrations are likely to be lower. Systemic absorption and the possibility of swallowing the residual solution would contribute to the ketamine in the blood.

The highest average ketamine and norketamine concentrations, 16.16 and 11.43 ng ml⁻¹, respectively (Table 1), were detected during surgery but would have decreased after the surgery. These low levels suggested that it was unlikely that systemic absorption played a major role for the reduction of POST. A topical effect is possible.

We conclude that pre-induction ketamine gargle can attenuate POST in the early postoperative period. Drug levels detected were much lower than reported measurements for analgesia after oral and parenteral administration.

Conflict of interest

None declared.

L. Chan*
M. L. Lee
Y. L. Lo
Kuala Lumpur, Malaysia
*E-mail: lucyc@um.edu.my

3 Grant IS, Nimmo WS, Clements JA. Pharmacokinetics and analgesic effects of i.m. and oral ketamine. Br J Anaesth 1981; 53: 805–10

Cystic fibrosis patient awaiting lung transplantation ventilated with neurally adjusted ventilatory assist

Editor—We report the case of a 22 yr woman with end-stage cystic fibrosis (CF) awaiting lung transplantation who was successfully ventilated with neurally adjusted ventilatory assist (NAVA) after failure of standard pneumatic triggering pressure support.

The patient presented with infective exacerbations of the airways resulting in severe acute respiratory insufficiency. She required tracheal intubation and sedation because of severe respiratory acidosis and hypoxaemia. On recovery from her septic exacerbation, after 10 days, we proposed lung transplantation as an emergency. In order to avoid a prolonged period of diaphragmatic inactivity we decided to stop sedation.1 At that time, her level of intrinsic positive end-expiratory pressure (iPEEP) was 17 cm H₂O with a thoraco-pulmonary static compliance of 16 ml cm H₂O⁻¹. Initially, we tried pressure support ventilation (PSV) with

<table>
<thead>
<tr>
<th>Time interval (min)</th>
<th>Average serum ketamine (ng ml⁻¹)</th>
<th>Average serum norketamine (ng ml⁻¹)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 (baseline)*</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12–22</td>
<td>16.16</td>
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<td>44–60</td>
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<tr>
<td>82–103</td>
<td>8.64</td>
<td>11.43</td>
</tr>
</tbody>
</table>

Table 1 Average serum ketamine and norketamine levels from five patients in Group K. *Baseline = just before ketamine gargle

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