reduction of HR and prolongation of diastole. On the basis of these findings, a continuous infusion of esmolol was added to the ongoing levosimendan infusion.

With this treatment, from day 0 to day 3 (Table 1), we observed an improvement in EF, the diastolic phase, haemodynamics, and BNP concentration. The patient’s trachea was extubated on day 1 and he was weaned from IABP on day 3. An oral beta-blocker was started to wean the patient from esmolol on day 2.

Administration of beta-adrenergic agents results in increased MVO2 and can worsen myocardial ischaemia. They also impair diastolic relaxation and increase the HR, further exacerbating ischaemia. In contrast, levosimendan does not increase MVO2 nor impair the diastolic phase, and appears also to improve diastolic relaxation and increase the HR, further worsening the diastolic phase and myocardial ischaemia. They also impair diastolic relaxation and increase the HR, further exacerbating ischaemia.

The concurrent systolic and diastolic impairment precluded the administration of beta-agonists so as to avoid further worsening the diastolic phase and myocardial injury in our patient. The calcium sensitiser-dependent effect of levosimendan allowed us to use this drug in conjunction with a beta-blocking agent: after 2 h of continuous infusion of remifentanil. A fully deflated and lubricated size-4 SLMA was inserted at the initial attempt to make the correct diagnosis, target the ventricular abnormalities, and check the effectiveness of therapy.

In this case of cardiogenic shock complicating AMI, the combination of continuous administration of levosimendan and esmolol led to improved cardiac output, increased coronary flow, and shock recovery.

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1 Task Force for Diagnosis and Treatment of Acute and Chronic Heart Failure 2008 of European Society of Cardiology. ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure 2008. Eur Heart J 2008; 19: 2388–442

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Table 1 Clinical course from day 0 to day 4

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Day 0</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR (beats min⁻¹)</td>
<td>140</td>
<td>63</td>
<td>65</td>
<td>60</td>
</tr>
<tr>
<td>AP (mm Hg)</td>
<td>70/40</td>
<td>110/68</td>
<td>120/65</td>
<td>125/60</td>
</tr>
<tr>
<td>CVP (mm Hg)</td>
<td>16</td>
<td>11</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>CI (litre min⁻¹ m⁻²)</td>
<td>1.8</td>
<td>2.4</td>
<td>2.7</td>
<td>2.8</td>
</tr>
<tr>
<td>BNP (pg ml⁻¹)</td>
<td>1240</td>
<td>750</td>
<td>480</td>
<td>320</td>
</tr>
<tr>
<td>EF (%)</td>
<td>&lt;20</td>
<td>36</td>
<td>40</td>
<td>42</td>
</tr>
<tr>
<td>Levosimendan i.v. (µg kg⁻¹ h⁻¹)</td>
<td>13</td>
<td>9</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Norepinephrine (µg kg⁻¹ h⁻¹)</td>
<td>0.3</td>
<td>End</td>
<td>End</td>
<td>End</td>
</tr>
<tr>
<td>Esmolol i.v.</td>
<td>Bolus+c.i.</td>
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<td>End</td>
<td></td>
</tr>
<tr>
<td>Bisoprolol oral (mg)</td>
<td>6.25 b.i.d.</td>
<td>Continue</td>
<td>Continue</td>
<td></td>
</tr>
</tbody>
</table>

Laryngeal mask airway Supreme™ for asleep–awake–asleep craniotomy

Editor—The asleep–awake–asleep technique with airway protection using laryngeal mask airway (LMA) has been proved safe for the anaesthetic management of awake craniotomies. However, re-insertion of LMA after awake test in a fixed neck position may sometimes be difficult. LMA Supreme™ (SLMA; Laryngeal Mask Company, Singapore) is a new disposable LMA with gastric access and pre-curved shape of the airway integrated with bite block that combines the desirable features of the LMA Unique™, LMA ProCeal™ (PLMA), and intubating LMA Fastrach™ (ILMA). We report a successful use of SLMA for ‘asleep–awake–asleep’ craniotomy.

A 65-yr-old man (168 cm, 65 kg) was undergoing awake craniotomy for the removal of a frontotemporal glioma. When the patient arrived in the operating theatre, he was positioned with the neck slightly to the right in preparation for craniotomy. Anaesthesia was induced with target-controlled infusion of propofol and continuous infusion of remifentanil. A fully deflated and lubricated size-4 SLMA was inserted at the initial attempt without any excessive insertion force using a single-handed rotational technique like the ILMA by an anaesthetist standing at the patient’s right side with downward jaw traction and jaw thrust by another anaesthetist. This procedure was set to simulate re-insertion of SLMA after an awake test. Oropharyngeal leak pressure >30 cm H₂O was achieved when the cuff was inflated with 25 ml of air. The vocal cords were visible through an endoscope from the distal end of the SLMA. A well-lubricated 14 Fr size gastric tube was inserted.
successfully through the drain tube at the first attempt, and its position was confirmed by epigastric auscultation. The patient’s head was fixed with pins after scalp nerve blockade and local infiltration with a 1:1 mixture of lidocaine 0.5% and ropivacaine 0.375%. At the awake test, propofol and remifentanil were discontinued, and the patient became conscious within 10 min. After the removal of SLMA, the neurological testing was performed with patient cooperation and no sedation. The patient did not complain of pain or discomfort during the awake phase. After the awake test, the re-positioning of SLMA was achieved with the same procedure as the previous insertion and succeeded at the initial attempt. At the end of the surgery, no blood was observed on the SLMA, and there was no trauma of lip, tongue, or mouth. The patient did not have a sore throat, dysphagia, or dysphonia after operation. The patient recalled events of the awake test, but expressed satisfaction with the anaesthetic management.

One of the main concerns for anaesthetists during awake craniotomy is airway management. LMA can reduce the respiratory problems during the asleep phase of asleep–awake–asleep craniotomy. However, it is sometimes difficult to re-insert an LMA because of the patient’s fixed neck position and the anaesthetist cannot stand behind the patient’s head. SLMA is a new extraglottic airway device which has both features of PLMA, which has high seal cuff, gastric access, and integral bite block—to facilitate ventilation, airway protection from gastric reflex and airway obstruction, and ILMA, which has fixed curve tube and guiding handle—to facilitate insertion and fixation, and may have advantages when there is restricted access in situations like awake craniotomy. The SLMA does not require sniffing position for adequate insertion, and the semi-sniffing position is recommended for successful insertion. Although the neutral position may make the SLMA hard to get around the back of the tongue, we were able to insert the SLMA without excessive force by using downward jaw traction and jaw thrust. Slightly distorted neck did not affect SLMA insertion. Although the steeper curvature of ILMA may have advantages with a fixed head position, it is associated with higher airway morbidity, perhaps due to high mucosal pressure. No airway morbidity was reported in early studies of the SLMA, presumably because of its flatter and softer characteristics. Gastric drainage can decrease inadvertent aspiration during surgery. The oropharyngeal leak pressure of the SLMA is similar to that of the PLMA. These characteristics lead us to conclude that the SLMA is a useful airway device for asleep–awake–asleep craniotomy.

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