was defined as a systolic arterial pressure of <100 mm Hg. If this occurred, it was treated with i.v. ephedrine. The overall hypotension rate was 41% (137/331). The rate was twice as high for patients not in labour (61%) (61/100) than those in labour (33%) (76/231) (P<0.05). The hypotension rate for patients receiving epidural anaesthesia (39%) (97/247) was not significantly different from those receiving spinal anaesthesia (48%) (40/84) (P>0.05). The mean weight of the patients was 80 kg. Thirty-eight of the 331 patients weighed more than 100 kg. The mean volume of fluid administered before the block took effect was 2453 ml.

Since the genesis of the study was to investigate whether ruptured membranes played a part in hypotension, thus reducing caval compression, patients in labour were further evaluated. Of the 231 patients in labour, 179 had ruptured membranes and 52 did not. The hypotension rate for those in labour with ruptured membranes was 32% (57/179). The hypotension rate for those in labour, with intact membranes, was 38% (20/52) (P>0.05). Thus, it appears that ruptured membranes and decreased uterine volume play little or no part in explaining why patients in labour are less likely to become hypotensive. The autotransfusion hypothesis appears to be the most likely explanation.

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1 Clark RB, Thompson DS, Thompson CH. Prevention of spinal hypotension associated with Cesarean section. Anesthesiology 1976; 45: 670–4

doi:10.1093/bja/aen305

Low-cost cardioversion

Editor—In addition to more sophisticated and expensive procedures, I thought useful to report here a simple, cheap, and safe means to effectively terminate a rapid atrial fibrillation (AF).

A 57-yr-old man was undergoing an electrical cardioversion of recurrent rapid AF, with an onset <24 h. He had three previous electrical cardioversions in the past and was on oral anticoagulant therapy. After evaluation by the anaesthetist in charge, a short general anaesthetic with face mask oxygenation was decided on. However, on the way to the intervention room, the anaesthetist missed the wide entrance and hit the door frame heavily with the bed. Before he had time to apologize, he was warmly congratulated by the patient. An ECG confirmed the regular sinus rhythm.

Instead of an electrical cardioversion under general anesthesia, the patient got an awake mechanical cardioversion. Using the kinetic energy formula (E=1/2 mV^2) and considering a total mass of 200 kg (bed and patient) and a speed of 1 m s^-1, the total energy is estimated to 100 J. As a non-elastic shock, half is absorbed by the wall, one-quarter by the bed, and one-quarter by the patient, that is to say 25 J. This energy corresponds approximately to the one produced by the precordial thump, indicated for witnessed ventricular fibrillation. In our case, the energy was indirectly transmitted to the patient, avoiding a direct shock.

In 1988, McKnight and colleagues^1 reported several ingenious methods developed by a farmer to stop his supraventricular tachycardia: jumping off a ladder or in a cold water tank, firing a 12 bore shotgun, or grasping a 6 V electric cattle fence. Those techniques are unfortunately not suitable for in-hospital use. Of course, propelling patients against a wall is a little extreme for standard medical teaching, but you may consider this next time you are faced with an unstable patient who you are hesitant to put asleep for an electrical cardioversion!

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doi:10.1093/bja/aen306

Effects of inhalation anaesthetics on human sperm motility and vitality in vitro

Editor—In recent years, inhalation anaesthetics have been found to have affected human reproduction^1 and have genotoxicity in human,^2 but these studies have concentrated on the effects of chronic exposure to halogenated anaesthetics. Whether a short exposure to halogenated anaesthetics can cause a tissue or organic hazards is still unknown. We have assessed the effect of short exposure to isoflurane on human sperm.

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Effects of inhalation anaesthetics on human sperm motility and vitality in vitro

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Normal semen samples (with >100 x 10^6 spermatozoa and >50%, 2+ grade motility) were collected from healthy donors after a 3 day period of abstinence. Samples (n=10) were collected and were allowed to liquefy at room temperature before evaluation of sperm concentration and percentage motility. Spermatozoa were washed and resuspended in HAM’s F-10 medium (Irvine Scientific, Irvine, CA, USA) by centrifugation at 300 g for 8 min. The washed human sperm suspension was divided into 25 0.1 ml aliquots each containing 20 x 10^6 spermatozoa, then the 25 aliquots were allocated to five equal groups (Groups A–E). The assays were performed in sealed 9 cm culture capsules in a total reaction volume of 100 μl. Isoflurane was added (no contact with semen) into the culture capsules after the addition of 0.1 ml semen, and immediately the culture capsules were sealed with paraffin oil. Isoflurane was delivered to the reaction culture capsules by transfer-pettor from saturated solutions. The assay was performed at 25 C. The five aliquots of each group were exposed to 0 (as control), 5, 10, 15, and 20 μl isoflurane individually (the vol% of isoflurane is 0, 1.4, 2.8, 4.2, and 5.6). The motility and vitality of sperm was analysed by computer-assisted sperm analysis at 0.5, 1, 2, 3, and 4 h for Groups A–E, respectively. They were analysed again 1 h after isoflurane was removed by opening the cover of culture capsules in Groups A and B.

A significant increase in percentage motility and vitality of spermatozoa was observed after between 0.5 and 4 h exposure to isoflurane at the concentrations ranging from 1.4 to 5.6 vol% (Table 1). The human sperm motility and vitality returned to control level on removal of isoflurane for 1 h. We repeated the above study protocol with sevoflurane and no such effect was observed.

In summary, these data show that isoflurane increased reversibly the apparent motility and vitality of human sperm at the concentrations of 1.4–5.6 vol%. Sevoflurane had little effect on motility and viability of human sperm at the same concentrations. These results are beyond our expectation that isoflurane and sevoflurane may impair the motor function of human sperm. Further study is required to establish the mechanism of the effect of isoflurane and sevoflurane on human sperm.

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Table 1 The effects of isoflurane on human sperm motility at clinical concentration [x̄(SD), %]. Compared with the control group, *P<0.05

<table>
<thead>
<tr>
<th>Incubation time (h)</th>
<th>Parameter</th>
<th>Concentration of isoflurane (vol %)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>0.5</td>
<td>Mot (%)</td>
<td>65.8 (11.8)</td>
</tr>
<tr>
<td></td>
<td>Vit (%)</td>
<td>49.6 (11.8)</td>
</tr>
<tr>
<td>1</td>
<td>Mot (%)</td>
<td>68.9 (15.7)</td>
</tr>
<tr>
<td></td>
<td>Vit (%)</td>
<td>51.2 (14.0)</td>
</tr>
<tr>
<td>2</td>
<td>Mot (%)</td>
<td>63.4 (19.1)</td>
</tr>
<tr>
<td></td>
<td>Vit (%)</td>
<td>46.9 (15.5)</td>
</tr>
<tr>
<td>3</td>
<td>Mot (%)</td>
<td>51.4 (15.3)</td>
</tr>
<tr>
<td></td>
<td>Vit (%)</td>
<td>38.7 (11.9)</td>
</tr>
<tr>
<td>4</td>
<td>Mot (%)</td>
<td>46.9 (16.3)</td>
</tr>
<tr>
<td></td>
<td>Vit (%)</td>
<td>33.7 (11.3)</td>
</tr>
</tbody>
</table>

1 Boivin JF. Risk of spontaneous abortion in women occupationally exposed to anaesthetic gases: a meta-analysis. Occup Environ Med 1997; 54: 541–8

doi:10.1093/bja/aen307