Is fasting necessary before prilocaine Bier's block?

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Abstract
Objective—To determine whether fasting is necessary before intravenous regional anaesthesia (Bier's block).
Methods—A questionnaire study was carried out to assess accident and emergency (A&E) departments’ policies and opinions in relation to Bier's block anaesthesia. Questionnaires were sent to 282 A&E consultants, of whom 216 replied (77% response rate).
Results—About 5000 Bier's block procedures are carried out each year in the United Kingdom. Intravenous regional anaesthesia appears safe. Over one third of units did not fast their patients. The complication rate was similar in fasted and unfasted groups.
Conclusions—Starvation of the patient before intravenous regional anaesthesia is not necessary and should be abandoned.

Key terms: Bier's block; fasting; prilocaine; complication rate

Figure 1 The questionnaire
Table 1  Selected responses from the questionnaire

<table>
<thead>
<tr>
<th>Who does the Bier’s block? (n = 122 responses)</th>
<th>A&amp;E staff only (n = 41)</th>
<th>Anaesthetic staff only (n = 54)</th>
<th>A&amp;E, anaesthetic staff jointly (n = 25)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have a fasting policy (n = 71) 58%</td>
<td>26% (n = 11)</td>
<td>85% (n = 46)</td>
<td>56% (n = 14)</td>
</tr>
<tr>
<td>Ever had complications (n = 23) 19%</td>
<td>14% (n = 6)</td>
<td>22% (n = 12)</td>
<td>20% (n = 5)</td>
</tr>
<tr>
<td>Added IV sedation/analgesia (n = 21) 17%</td>
<td>12% (n = 5)</td>
<td>23% (n = 12)</td>
<td>16% (n = 4)</td>
</tr>
</tbody>
</table>

IV, intravenous.

Table 2  Complications reported with Bier’s block

<table>
<thead>
<tr>
<th>Complication</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transient hypotension</td>
<td>3</td>
</tr>
<tr>
<td>Transient twitching</td>
<td>1</td>
</tr>
<tr>
<td>Vasovagal (emotional) presyncope</td>
<td>1</td>
</tr>
<tr>
<td>Radial nerve neuropraxia</td>
<td>3</td>
</tr>
<tr>
<td>Ulnar nerve neuropraxia</td>
<td>1</td>
</tr>
<tr>
<td>Cuff intolerance</td>
<td>4</td>
</tr>
<tr>
<td>Local swelling or bruising</td>
<td>7</td>
</tr>
</tbody>
</table>

Figure 2  Types of analgesia

Bier’s block 122
Haematoma block 111
General anaesthesia 97
IV sedation/analgesia 23
 Plexus blocks 9
HB + chinese fingers 1
Nitrous oxide 1
Ketamine 1

Several questionnaires were incorrectly completed and were disregarded.

Many departments use two or more types of anaesthesia. Most commonly used is a Bier’s block in 60% and haematoma block in 56%. General anaesthesia is used in 47%. Other techniques include intravenous (IV) sedation with or without opiates in 7%, and brachial or axillary plexus blocks in 4-5% (fig. 2).

From the replies relating to approximate number of procedures per week, we made a conservative estimate that 5000 Bier’s blocks are carried out each year. Three units use lignocaine, the rest (98%) use prilocaine. The anaesthetic is given by anaesthetic staff in 43% of departments, A&E staff in 36%, and shared jointly in 21% (table 1).

Fasting policy varies: 42% do not fast their patients; of the others, 46% fast for six or more hours, 45% for four hours, and two units starve for two hours (fig. 3). Where anaesthetists do the IVRA, 87% starve the patients. Where A&E staff perform the IVRA, 26% impose a fast (table 1). Complications were recorded in 22% of departments which did have a fasting policy, and in 14% of those that did not. None was related to inhalation problems.

Twenty one per cent of anaesthetic staff use additional sedation or analgesia, as do 12% of A&E staff (table 1). Agents include opiates, benzodiazepines, mefenamic acid, and nitrous oxide.

Nineteen per cent of respondents noted complications at some time (table 2). Of these, two thirds were regarded as local or minor. No fatalities with prilocaine Bier’s block were reported. Six complications occurred in units where A&E staff give the IVRA. Twelve occurred where anaesthetists perform the block. Thus the relative complication risk was 22% when the prilocaine was given by anaesthetists and 14% when given by A&E staff. The incidence of potentially serious complications was similar in both groups.

Equipment failure was recorded in 19%. Eighteen of these 23 replies mentioned some form of cuff leak.

Discussion

Bier’s block is frequently employed in A&E departments. It provides good analgesia and has the advantage of speedy progress and early discharge unless the patient is fasted. Haematoma block has been gaining popularity yet produces less analgesia and a less satisfactory anatomical result after fracture manipulation. Surprisingly, patients are often not fasted for haematoma blocks, yet potentially toxic systemic levels of local anaesthetic have been shown to occur during fracture manipulation under haematoma block.

Prilocaine Bier’s block is safe. While minor systemic leaks of prilocaine may occur and our study recorded 18 reported cuff leaks, no prilocaine associated deaths have ever been reported to the Committee on Safety of Medicines.

Some users advocate a strict starvation policy for Bier’s block. Others regard it as unnecessary and some question the need. Reasons cited for imposing starvation include possible pulmonary aspiration. Our study confirmed that prilocaine Bier’s block is safe...
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and showed that non-fasting does not incur any increased risk of complications. Those complications which have been reported did not include any airway risk.

We found that A&E staff achieve similar analgesia yet are less likely to fast their patients than their anaesthetist colleagues. A&E staff are also less likely to use supplemental sedation or analgesia and are less likely to experience complications. This may reflect the fact that the IVRA is usually performed by more senior A&E staff, who are more familiar with the procedure than the anaesthetic staff, who are often senior house officers new to the technique.

CONCLUSION

Prilocaine intravenous regional anaesthesia should be conducted by doctors experienced in the technique and in the recognition, prevention, and treatment of systemic local anaesthetic toxicity.

We believe that Bier’s block is a safe procedure, to be carried out by experienced staff, without previous starvation of the patient.

We would like to thank all those who replied to our questionnaire and the audit department of Kent and Canterbury Hospital for their assistance.


