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.

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

Biers block – intravenous regional anaesthesia (IVRA) – is frequently used in accident and emergency (A&E) departments in the United Kingdom. Some textbooks advise fasting patients beforehand. The Royal College of Anaesthetists offers no specific additional guidelines. We conducted a questionnaire survey of A&E departments, asking about their policies and complication experience.

Methods

In March 1994, our questionnaire (fig 1) was sent to each A&E director. After one month, a further copy was sent to each non-respondent. The returns were processed in a confidential manner and results were analysed using the EPI6 program.

Results

Of 282 consultants contacted, 216 replied (77% response rate); 10 replies were disregarded on account of the specialist nature of the A&E units concerned (that is, those specialising in minor injuries, ophthalmological emergencies, or paediatrics). A further four

ANAESTHETIC PROCEDURES USED IN MANIPULATION OF CLOSED FRACTURES DISTAL RADIUS		
COMMONEST TYPE OF ANAESTHETIC PROCEDURE USED:	APPROX NO. PER WEEK	
HAEMATOMA BLOCK	NO	YES
GENERAL ANAESTHETIC	NO	YES
BIERS BLOCK	NO	YES
IF BIERS BLOCK, (CITANEST)	NO	YES
OTHERS (PLEASE SPECIFY)		
IF PRILOCAINE (CITANEST) BIERS BLOCK		
IS IT PERFORMED BY:		
ANAESTHETIC STAFF	NO	YES
A & E STAFF	NO	YES
OTHERS (PLEASE SPECIFY)		
WHAT VOLUME OF ANAESTHETIC USED		
ANY SUPPLEMENTAL SEDATION / ANALGESIA USED	NO	YES
IF YES PLEASE SPECIFY		
EQUIPMENT USED:		
MANUAL CUFF (BICYCLE PUMP)	NO	YES
AUTOMATIC CUFF	NO	YES
OTHERS (PLEASE SPECIFY)		
CUFF PADDING USED		
	NO	YES
DO YOU HAVE A FASTING POLICY		
	NO	YES
IF YES IS IT	2 HOURS	4 HOURS
IS IT SPECIFIC TO A & E	NO	YES
IS IT AGREED WITH ANAESTHETICS DEPT.	NO	YES
WHAT IS YOUR MINIMUM AGE LIMIT		
WHAT ARE YOUR CUFF TIME LIMITS	MIN	MAX
HAVE YOU EVER RECORDED ANY COMPLICATIONS WITH PRILOCAINE BIERS BLOCK?		
SYSTEMIC		DETAILS PLEASE
CARDIOVASCULAR	NO	YES
RESPIRATORY	NO	YES
NEUROLOGICAL	NO	YES
ALLERGIC	NO	YES
OTHERS (PLEASE SPECIFY)		
LOCAL (RELATED TO BLOCK ITSELF)		DETAILS PLEASE
TRAUMATIC	NO	YES
VASCULAR	NO	YES
NEUROLOGICAL	NO	YES
ALLERGIC	NO	YES
OTHERS (PLEASE SPECIFY)		
EQUIPMENT FAILURE	NO	YES
BIERS BLOCK FAILURE (INADEQUATE ANALGESIA)	NO	YES

Figure 1 The questionnaire

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Table 1 Selected responses from the questionnaire

	Who does the Bier's block? (n = 122 responses)		
	A&E staff only (n = 43)	Anaesthetic staff only (n = 54)	A&E, anaesthetic staff jointly (n = 25)
Have a fasting policy (n = 71) 58%	26% (n = 11)	85% (n = 46)	56% (n = 14)
Ever had complications (n = 23) 19%	14% (n = 6)	22% (n = 12)	20% (n = 5)
Added IV sedation/analgesia (n = 21) 17%	12% (n = 5)	22% (n = 12)	16% (n = 4)

IV, intravenous.

Figure 2 Types of analgesia

questionnaires were incorrectly completed and were disregarded.

Many departments use two or more types of anaesthesia. Most commonly used are 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

Figure 3 Fasting policies

Table 2 Complications reported with Bier's block

Transient hypotension	3
"Fits"	1
Transient twitching	1
Vasovagal (emotional) presyncope	1
Radial nerve neuropraxia	3
Ulnar nerve neuropraxia	1
Cuff intolerance	4
Local swelling or bruising	7

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 popularity¹ yet produces less analgesia²⁻⁴ and a less satisfactory anatomical result after fracture manipulation.² Surprisingly, patients are often not fasted for haematoma blocks,⁵ yet potentially toxic systemic levels of local anaesthetic have been shown to occur during fracture manipulation under haematoma block.⁶

Prilocaine Bier's block is safe.^{1 3 4 7 10} While minor systemic leaks of prilocaine may occur^{11 12} 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^{13 15} advocate a strict starvation policy for Bier's block. Others^{16 17} regard it as unnecessary and some¹ question the need. Reasons cited for imposing starvation include possible pulmonary aspiration. Our study confirmed that prilocaine Bier's block is safe

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.

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