Should 'fast mix' be the first choice solution for emergency caesarean section?

When topping up an epidural for an emergency caesarean, which local anaesthetic mix should you use? Two of the main options currently are either 0.5% bupivicaine, or a mixture of agents commonly known as 'fast mix' (2% lignocaine plus epinephrine and often bicarbonate). Practice and protocols vary between hospitals (Regan and O'Sullivan, 2008), but which is better?

Why use 'fast' mix?

In an emergency caesarean section, the time taken to achieve an adequate block is important. A meta-analysis indicated that fast mix was significantly faster in achieving surgical anaesthesia than bupivicane (and also ropivicaine) (Hillyard et al, 2011). The analysis concluded that there was less need for supplemental analgesia in the lignocaine group, indicating that the quality of block may also be superior.

The authors highlight multiple methodological differences between studies, including the variable addition of sodium bicarbonate, addition of opioid, assessment of block and the few trials investigating this specific issue. These differences may make conclusions and comparison difficult. One study included in the meta-analysis compared the two solutions directly (Allam et al, 2008). It showed that fast mix worked twice as quickly as bupivicaine (7 *vs* 14 minutes to achieve a T5 block), resulting in that team's routine use of this agent. Does the extra preparation time negate this effect? It has been shown that, when used by anaesthetists familiar with its preparation, the extra time involved in using fast mix is under a minute (Hemingway et al, 2008).

Having changed to using the rapid top up mixture, Malhotra et al (2012) observed a reduction in the general anaesthesia conversion rate for category 1 sections compared with previous years.

Why not use 'fast mix'?

Previous teaching, often in the elective setting, influences our choice of solution. Using a familiar agent and the ease of preparation in an emergency setting can reduce the potential for errors. There may, therefore, be an increased risk of drug errors when drawing up fast mix compared to 0.5% bupivicaine alone, perhaps increased by the small volumes used. These errors may be unreported or undetected. This is particularly relevant in the possible stress and time pressure of an emergency, often occurring out-of-hours and performed by non-consultants. Using a familiar, easy 'recipe' would seem prudent.

While 0.5% bupivicaine is readily available on all labour wards, not all of the components may be stocked if a unit is unfamiliar with fast mix solution. The bicarbonate needs to be preservative free, and the epinephrine 1:1000 concentration readily available. If all components are not packaged together, drawing up fast mix may be problematic. Some units have a box containing all the relevant agents and equipment, which are replaced after use.

It is more time consuming to use fast mix (Lucas et al, 2000) as compared to bupivacaine alone. Fast mix cannot be prepared in advance as individual components degrade once mixed (Tuleu et al, 2008), so it needs to be prepared as the emergency is taking place. There may be potential for contamination and incomplete mixing of small volumes of agents.

Discussion

As a survey of current practice showed 13 different mixes being used, this is a far from fully answered question (Regan and O'Sullivan, 2008). Choice of agent must take into account speed of onset and quality of block, but not at the expense of potential harm as a result of error or contamination. The choice of agent alone will not be the only factor affecting the delivery of fast, safe and adequate surgical anaesthesia.

That said, practicing with alternative options during elective procedures could increase familiarity with other techniques and broaden the range of potential options. **BJHM**

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