PRACTICAL TECHNIQUES IN DEVELOPING COUNTRIES

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Subarachnoid Saddle Block using Pethidine

Pethidine (Meperidine) is a synthetic phenylpiperidine derivative opioid agent with local anaesthetic and anticholinergic properties, and high lipid solubility. It is presented as a 5% solution (50mg/ml), which is slightly hyperbaric with respect to cerebrospinal fluid (specific gravity 1.026) [1]. These properties make it an ideal agent to use for subarachnoid anaesthesia if local anaesthetic agents are not readily available.

With the patient in the sitting position, a dose of 0.01 ml per kg body weight 5% preservative-free pethidine (i.e.0.5mg/kg) is diluted up to 2ml with sterile water or saline, and is slowly injected without barbotage into the subarachnoid space at the L3/4 level. The patient is kept in the sitting position for 5 minutes, then lies supine. This will give a satisfactory sensory block from S2 - S5 with an onset time of 4 - 8 minutes and duration of 1.5 - 2 hours; adequate for perineal surgery. Due to the action on spinal opiate receptors, there is good postoperative analgesia lasting for up to 5 hours; and motor block is of limited extent, facilitating early ambulation [2]. The cost per operation using pethidine is cheaper than heavy bupivacaine (100mg pethidine: 60 cents (US); 4ml 0.5% heavy bupivacaine: $1.60 (US) [3].

The potential side effects of intrathecal pethidine are related to its modes of action; namely local anaesthetic effects (motor & sympathetic blockade, hypotension, bradycardia), and opioid effects (sedation, respiratory depression, pruritis, nausea and vomiting) [4,5,6,7]. Dose related respiratory depression may occur with doses of >1mg/kg, and it is therefore recommended that premedication and perioperative administration of sedative drugs such as benzodiazepines should be avoided. Late onset respiratory depression is a risk of intrathecal opioid administration, and may occur several hours postoperatively. Although this is a well documented complication of intrathecal morphine administration, this problem has not been reported with pethidine due to the greater lipid solubility and hence reduced rostral spread of the latter agent [7]. However, it remains a potential complication, and therefore close monitoring in the postoperative period is mandatory, even though the patient may have full recovery of sensory and motor function. It is essential that only preservative free pethidine and diluents are used, as preservatives may cause arachnoiditis and irreversible neurological damage.

Larger doses of pethidine (up to 1 mg/kg) have been used to achieve higher levels of subarachnoid blockade up to T5 for urological, orthopaedic and gynaecological surgery [1,6,7], but the incidence of adverse effects is markedly increased. Positioning the patient supine without waiting for 5 minutes in the sitting position for the block to “fix” can lead to a higher and more variable level of block with increased adverse effects [6,7].

As with any subarachnoid block, blood pressure, heart rate, respiration and level of consciousness should be monitored continuously; and emergency drugs (fluids, atropine, vasopressors, naloxone) and equipment for intubation should be immediately available.

With these caveats in mind, saddle block using intrathecal pethidine is a cheap, safe and effective

alternative technique if local anaesthetic agents are unavailable or in short supply.

References:

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