Back Pain after Epidural Anesthesia with Chloroprocaine

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Background: Chloroprocaine has been associated with severe back pain after epidural anesthesia. Factors proposed to contribute to this problem are: 1) the preservative disodium ethylenediaminetetraacetic acid (EDTA), 2) large volumes of chloroprocaine, 3) low pH of chloroprocaine, and 4) local infiltration with chloroprocaine.

Methods: Using a prospective, balanced, randomized study design, 100 patients aged 18–65 years who were undergoing outpatient knee surgery during continuous epidural anesthesia received one of five local anesthetics (all containing epinephrine 1:200,000). Group I received a bolus of 30 ml 2% lidocaine, followed by 10 ml every 45 min. Group II received 15 ml of 3% chloroprocaine (containing EDTA), plus 5 ml every 45 min. Group III received 30 ml of 3% chloroprocaine plus 10 ml every 45 min. Group IV received 30 ml of 6% chloroprocaine (containing metabsulfite as the preservative but no EDTA) plus 10 ml every 45 min. Group V received 30 ml of 3% chloroprocaine with the pH adjusted to 7.3, plus 10 ml every 45 min. After the anesthesia dissipated and before any analgesics were given, the patients were asked to rank maximum knee and back pain on a visual analog scale (0–10) and to give a description of back pain. A telephone interview was conducted 24 h after surgery to determine if back pain returned. Back pain scoring was assessed using a verbal analog scale.

Results: After dissipation of anesthesia, the back pain reported by patients fell into two distinct categories. Type 1 pain was described commonly as superficial and localized to the site of needle insertion. There was no difference among groups in incidence of type 1 pain. Type 2 pain was described as deep, aching, burning, and poorly localized in the lumbar region (5% of the patients in group I, 10% in groups II and IV, 50% in group III, and 25% in group V). The incidence of type 2 pain was significantly greater in group III than in groups I, II, or IV. Group III also had a significantly greater mean visual analog scale pain score (types 1 and 2) than all other groups.

Conclusions: Large doses (≥ 40 ml) of chloroprocaine containing EDTA resulted in a greater incidence of deep burning lumbar back pain. Using 25 ml or less of the same solution resulted in an incidence of both types 1 and 2 postepidural anesthesia back pain similar to that in the lidocaine control group. (Key words: Anesthesia techniques: epidural. Anesthetics, local: chloroprocaine, lidocaine. Complications: back pain.)

BACK pain after epidural anesthesia with chloroprocaine (Nesacaine MPF, Astra Pharmaceuticals, Westborough, MA) recently has been reported in two studies of unmedicated healthy young volunteers. Back pain occurred immediately after regression of the epidural anesthesia. It was reported to be a dull ache, confined to the lower back, sometimes severe, necessitating opioid analgesia to relieve the pain. No demonstrable spasm of paraspinal muscles was reported in either of these studies. There also have been several case reports of patients complaining of severe lower back pain after regression of chloroprocaine epidural anesthesia. Astra Pharmaceuticals, the manufacturer of Nesacaine MPF, issued a physician advisory to anesthesiologists in 1988, advising against the use of chloroprocaine to infiltrate skin and against the use of large volumes of chloroprocaine for epidural anesthesia.

Despite recognition of this syndrome of back pain after chloroprocaine epidural anesthesia since 1988, there is no general agreement as to its cause. Factors proposed as possible contributors to this problem include disodium ethylenediaminetetraacetic acid (EDTA) preservative, the large volumes of chloroprocaine injected into the epidural space, the low pH

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One final factor not controlled in this study was the postoperative use of analgesic agents after the patients were discharged from the hospital. Given that our study population consisted of outpatients, controlling this factor would have been difficult. However, initial data were collected in the recovery room, during the first 2 h after dissipation of the epidural block and before any analgesic medications were administered. Most available published reports indicated that postepidural back pain with chloroprocaine occurred almost immediately after dissipation of epidural anesthesia.1,2,6 There is no evidence that this was a phenomenon that begins several hours after dissipation of the epidural block.

Our results agree with those from other recent reports of back pain after epidural anesthesia. Both Hynson et al.2 and Levy et al.4 reported a greater incidence of back pain in patients receiving epidural anesthesia with Nesacaine-MPF compared with preservative-free lidocaine HCl. In an uncontrolled volunteer study, Stevens et al.1 found that either a larger injection volume or an increasing cumulative dose of Nesacaine-MPF was associated with increasingly severe back pain. The results of the current study confirm that increasing the volume of chloroprocaine containing EDTA is associated with a higher incidence and greater severity of deep burning lumbar pain after dissipation of epidural anesthesia.

Epidural fentanyl was an effective but transient treatment for postepidural anesthesia back pain. In general, 100–150 μg provided approximately 200–400 min of pain relief. This is consistent with the published duration of action of epidural fentanyl.8 Interestingly, the duration of action was longer in group I than in the chloroprocaine groups whose medication contained EDTA and was not pH adjusted, i.e., groups II and III. This observation is not surprising because back pain was less severe in the lidocaine group (and may represent a different type of pain than that which occurs after chloroprocaine) and in light of the results of other studies, which reported partial antagonism of epidural fentanyl analgesia after epidural anesthesia with chloroprocaine.9–11

This study demonstrated a high incidence of postepidural anesthesia back pain in healthy outpatients after minor knee surgery. Disodium EDTA used as a preservative in commercial preparations of chloroprocaine and the total injected volume were both important factors influencing the character, incidence, and severity of postanesthesia back pain. The pH of the local anesthetic solution by itself did not appear to be a factor in this study, although alkalizing chloroprocaine containing disodium EDTA resulted in a slight decrease in the severity of back pain. If the total dose of chloroprocaine is limited to 25 ml or less, a similar incidence and severity of back pain to that after epidural anesthesia with lidocaine can be expected based on our results. The mechanism of back pain after chloroprocaine epidural anesthesia has yet to be elucidated.

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