TITLE: THE EFFECT OF THE VOLUME OF HYPERBARIC TETRACAINE ON THE LEVEL OF SPINAL ANESTHESIA

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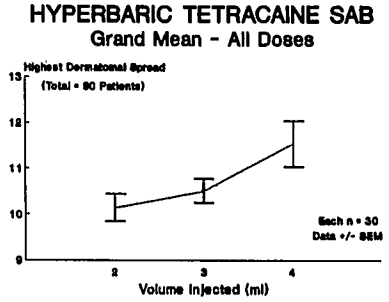
The selection of a volume of hyperbaric tetracaine for spinal anesthesia is empiric, usually 1-4 ml. Our clinical impression has been that larger volumes are associated with higher dermatomal spread of sensory anesthesia, being most pronounced with 4 ml. We evaluated the effect of changing volume at a fixed milligram dose of hyperbaric tetracaine. Volumes of 2, 3, and 4 ml were examined.

Following approval of the Human Use Committee, and after obtaining informed consent, 90 adult patients undergoing elective surgery with operative sites below the T-10 dermatome were prospectively randomized to receive a height-determined dose of hyperbaric tetracaine mixed with D10W to a volume of 2, 3, or 4 ml. The anesthesiologist managing the case was blinded to the volume injected. Addition of 0.2 mg epinephrine was at the discretion of the anesthesiologist. Maximum sensory dermatomal spread was determined by pin-prick testing.

Three equal groups were examined. A two-tailed Student's t-test showed no statistically significant effect of epinephrine on the spread of sensory anesthesia. A similar t-test demonstrated that epinephrine significantly prolonged the time for two dermatome regression of sensory anesthesia. Two-way analysis of variance in both a 3 x 3 and 3 x 2 design confirmed that doses were equivalent for height, and demonstrated no statistically significant difference between 2 or 3 ml volumes. However, there was a statistically significant difference between 4 ml and other groups, but this was less than two sensory dermatomes and is probably clinically insignificant. Mean maximal sensory dermatomal spread ± SEM for each volume is graphically presented.

We conclude that with hyperbaric tetracaine spinal anesthesia, the use of either 2 or 3 ml volume does not affect the spread of sensory anesthesia, but that a 4 ml volume is associated with a significantly greater spread. This additional spread is minor (less than two sensory dermatomes) and does not warrant using the larger volume of 4 ml to enhance the spread of sensory dermatomal anesthesia with hyperbaric tetracaine solutions.



TITLE: EFFECT OF EPIDURAL ADMINISTRATION OF BUPRENORPHINE AND MORPHINE ON CENTRAL VERVOUS SYSTEM AND MINIMUM ALVEOLAR CONCENTRATION IN MAN

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Morphine(M) is one of the most popular opioid which is administered spinally or epidurally for pain relief. Buprenorphine(BPN) is considered an alternative opioid with both agonistic and antagonistic properties[1]. The study was carried out to compare to analgesic property and side effect between epidural injected BPN and M. We also assessed the effects of both drugs on central nervous system and minimum alveolar concentration(MAC) of halothane.

Fifty patients undergoing orthopedic or gynecological operations(with informed consent and approved by Human Research Committee, NDMC Hospital, Saitama)were studied. Studied population was divided into five groups as the following: G-1(control); 20ml of 2% lidocaine(L), G-II; 20ml of L with 80μg/kg M, G-III; 20ml of L with 4μg/kg BPN, G-IV ; 20ml of L with 6μg/kg BPN, G-V; 20ml of L with 8μg/kg BPN. Respiratory function, duration of analgesia, analgesic effect, and side effect were observed. EEG was recorded and computer analysis was performed with compressed spectral array program. The measurement of MAC was done by the method[2]. The results were analyzed with student's t-test (paired or unpaired test).

The initial changes of EEG finding with a decrease of voltage and of numbers of alpha wave were observed at 5 to 10 min in G-III, G-IV, and G-V after the injection of BPN, but in G-II the same finding appeared at 20 min after the injection of M. Alpha wave was replaced by beta wave in all studied groups except G-I after 30 to 60 min.Rapid CSF uptake and quick blood absorption of BPN reflected rapid onset of action and fast appearance of central nervous effect on EEG. BPN and M reduced the MAC of halothane by 23 %($p<0.05$) compared to G-I. The dose required analgesic drug was reduced by 65%($p<0.05$) and the duration of analgesia was prolonged by 55%($p<0.05$).

We concluded that epidural administration of 8μg/kg BPN has provided a good analgesia with faster onset of action and less side effects compared with that of M.

References
1. Anaesthesia 38: 74-75, 1983
2. Anesthesiology 26: 756-763, 1965