Title: A SIMPLE METHOD TO SHORTEN THE LATENT PERIOD OF ONSET OF ACTION OF BUPIVACAINE FOR EPIDURAL ANESTHESIA

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Introduction. Bupivacaine is one of the most commonly used drugs for epidural anesthesia. It provides a longer duration of action than any other drug without producing intense motor blockade. Its main disadvantage is its long, long latent period of onset of anesthesia. Numerous unsuccessful attempts have been made to shorten the latent period of action of bupivacaine, and at the same time maintain its long duration of action for epidural anesthesia. We decided to evaluate the effect of warming of bupivacaine on its latent period of action.

Methods. Bupivacaine at room temperature (temp.) and at 100°F was randomly used in 110 patients receiving epidural anesthesia for labor and delivery and in 71 patients for elective cesarean sections. All patients were adequately and uniformly prehydrated. For patients in labor, 12 ml of 0.5% bupivacaine was used while for cesarean section patients, 26 ml of 0.5% bupivacaine was used (including test dose). The time of onset of anesthesia was accurately assessed with a Rowan Anesthesiometer, Model RA 100, with a uniform setting of 14 gms. Cutaneous dermatomes T₉-T₁₂ (for cesarean section patients) and T₉-T₁₂ (for vaginal delivery patients) were checked for onset of anesthesia every minute. In patients who received epidural blocks for cesarean sections, a note was made if hypotension developed (a 10 mm Hg or greater fall in systolic pressure) and when the anesthetic effect was complete, the degree of motor block in the lower limbs was graded on a scale of I-V. Neither observer nor patient were aware of the temperature of bupivacaine and the same person studied all the cases. Exact time and dose of re-injections for laboring parturients (temp. of bupivacaine same as the original injection) were noted and inter-injection period calculated. Institutional research committee approval was obtained for the project. The unpaired t test and the Chi square test were used for statistical comparisons.

Results. Patients who received bupivacaine at room temperature were statistically similar to those who received it at 100°F, in terms of age, height, weight, parity and cervical dilatation. The time of onset of anesthesia was statistically significantly shorter with warmed bupivacaine as opposed to bupivacaine at room temp. when used for both labor and cesarean sections. The degree of motor blockade and the incidence of hypotension were similar irrespective of the temp. of bupivacaine (p>0.05). The average inter-injection interval was similar (p>0.05) irrespective of the temp. of bupivacaine, indicating that the duration of action of bupivacaine was not altered by using warmed solution.

Conclusion. Use of warmed bupivacaine (100°F at the time of administration) reduces the latent period of onset of anesthesia, but at the same time does not alter its long duration of action. The incidence of hypotension does not increase nor does the severity of the motor blockade.