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Title : SHIVERING AFTER PERIDURAL BLOCKADE DURING LABOR

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**Introduction.** Shivering occurs in 20-50% of patients following initiation of peridural blockade. (1,2) This annoys the parturient and wastes energy by increasing oxygen consumption and cardiac output. The etiology of shivering after peridural blockade is unclear. Thauer and Simon feel that shivering is a response to the effect of cold solutions introduced into the epidural space on temperature sensors located in the spinal cord. (3) To test this hypothesis in the clinical setting we observed the incidence of shivering as it relates to the temperature of local anesthetics injected into the epidural space.

**Methods.** Forty-eight ASA Class I women receiving epidural analgesia for active labor were observed. All subjects had uncomplicated obstetrical histories and were at term gestation. Fever, phenothiazine administration, or rapid infusion of crystalloid disqualified parturients from the study.

We placed subjects in the lateral position, cleansed the skin with 70% isopropyl alcohol, and identified the epidural space at L3-4 or L4-5 with an 18g Hustead needle using the loss of resistance technique with air. To initiate analgesia ten ml of 0.25% bupivacaine were injected through the needle. Random selection determined whether subjects received local anesthetic cooled to 15° C, at room temperature (20° C), or body temperature (37° C).

Following injection, an observer blinded to the temperature of the bupivacaine, monitored patients for shivering for 30 minutes. Levels of blockade were determined by pin prick and recorded at 5 minute intervals during this observation period. The unpaired t and Chi square tests were used for statistical comparisons.

**Results.** The groups of parturients receiving bupivacaine solutions of 15° C, 20° C, and 37° C were similar in age, height, weight, cervical dilatation, patient temperature, labor room temperature, levels of analgesia achieved, and the incidence of narcotic or sedative administration. Neither the incidence nor the time of onset of shivering differed significantly between groups.

When women from all three temperature categories were divided into shivering (15) and nonshivering (33) groups and compared differences in all variables but shivering remained nonsignificant.

**Discussion.** The results indicate that the incidence of shivering is independent of the temperature of local anesthetics injected peridurally. The existence of spinal cord thermal sensors fails to explain why parturients shiver when receiving epidural analgesia during labor. Our results indicate that neither active warming of analgesic solutions nor storing them in an area with higher than normal ambient temperature will improve patient comfort by decreasing the incidence of shivering accompanying epidural analgesia.

**References.**

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3. Thauer R, Simon E: Spinal cord and temperature regulation. In Ito S, Ogata K, and Yoshimura H (eds): *Advances in Climatic Physiology*. Tokyo, Ighu Sho in Ltd, 1972, pp 22-49.