

Title: BLOOD CONCENTRATION OF MEPERIDINE FOLLOWING EPIDURAL ADMINISTRATION

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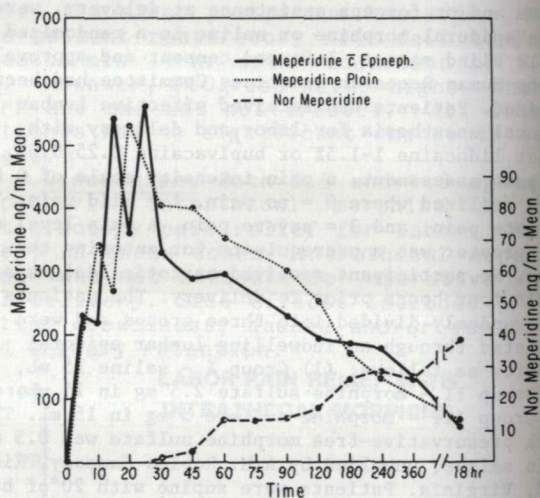
**INTRODUCTION.** Epidural narcotic administration has been suggested and reported for labor analgesia. Meperidine, often used for systemic administration in the laboring patient, may be a reasonable choice in view of latency and duration on epidural injection. Blood concentrations of meperidine following epidural administration is of obvious interest.

**METHODS.** Institutional review board approval and informed consent of each patient was obtained. Cesarean section with continuous epidural anesthesia utilizing local anesthetics had been completed satisfactorily. With the appearance of pain, 75 or 80mg of preservative free meperidine in normal saline, to a volume of 11 to 15ml was administered via the previously placed epidural catheter. One-half, (10) of the patients were randomly selected to have epinephrine 1:200,000 added to the injected solution. Venous blood samples were obtained from an indwelling cannula before injection (control) and at varying intervals thereafter to total 8 samples per patient. The samples were centrifuged after clotting, the serum removed and frozen until analysis. Plasma meperidine and normeperidine concentrations were determined by gas chromatography (3% OV-17/5% OV-210, 205°C) thermionic (nitrogen/phosphorous) selective detection following a forward-back-forward solvent extraction procedure. A structural analog of meperidine was used as an internal standard. The limit of detection is 2ng meperidine and 4ng normeperidine based upon an assayed plasma volume of 1ml.

**RESULTS.** Mean blood concentrations of meperidine and normeperidine are shown in Fig.1, with grouping of meperidine into without and with epinephrine 1:200,000. Means of meperidine blood concentrations peaked at 20 to 30 minutes, and showed no statistical difference between groups in either time or concentration. Normeperidine concentrations were not significantly different between the two groups, and are considered together, the mean blood concentrations shown. Normeperidine began to appear as early as 30 minutes, and peaked at 2 to 3 hours.

**DISCUSSION.** The timing of the appearance and the mean peak of blood concentrations of epidural meperidine is quite similar to that seen with local anesthetics.<sup>1,2</sup> The addition of epinephrine did not significantly reduce the mean blood concentrations however, analgesia is significantly prolonged. The

curves of blood level with time are similar to those reported for intramuscular administration, although mean levels are slightly lower.<sup>3</sup> The concentrations achieved tend to refute the contention that the analgesia is secondary to vascular uptake and central effect, as the levels are approximately 60% of those reported necessary for analgesia by systemic administration.<sup>3</sup> Uptake and elimination tend to follow first order kinetics. The data does not fit specifically one, two, or three compartment models.



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#### REFERENCES.

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