Title: HYPERBARIC INTRATHecal MORPHINE FOR THE RELIEF OF LABOR PAIN


Affiliation: Departments of Anesthesia, University of Southern California, Los Angeles, CA 90033, and the University of California, San Francisco, CA 94143

Introduction. Intrathecal administration of 1-2 mg of morphine in normal saline has been reported to provide excellent analgesia during labor. We investigated whether 0.5 or 1.0 mg in hyperbaric dextrose would be effective and whether adverse effects would occur.

Methods. Approval from the committee on human research and informed consent were obtained. Twelve and 18 patients received 0.5 mg and 1.0 mg preservative-free morphine sulfate, respectively, in 7.5% dextrose when the cervix was dilated 4-8 cm. Morphine was injected through a 25-gauge spinal needle with the patient in the lateral Fowler's position. Following intrathecal injection, the patient labored with her head elevated 30°. Uterine activity and fetal heart rate were monitored continuously. During labor, the patient evaluated the intensity of pain by marking a visual linear analog scale. Also, an investigator independently assessed the intensity of pain and its relief. These assessments were made just before injection, every 15 min for one hour, every half hour for the next 7 hours, and then every hour until delivery. Maternal vital signs were observed at these intervals for a total of 24 hr after intrathecal injection of morphine. Maternal venous blood gases were obtained before injection, every 4 hr after injection for 24 hr, and at delivery. The condition of the infant was evaluated by Apgar scores at 1 and 5 min, time-to-sustained respirations (TSR), umbilical venous and arterial blood gases, and a neurobehavioral exam at 15 min, 2 hr, and 24 hr after birth.

Results. Both doses of intrathecal morphine provided excellent pain relief for labor (graph). The independent investigator also rated pain relief as being good to excellent in 92% of patients receiving 0.5 mg and in 83% of patients receiving 1.0 mg. For both groups, the interval between injection of morphine and delivery was approximately 7.5 hr. Thirty-three per cent of patients receiving 0.5 mg and 50% of patients receiving 1.0 mg also had oxytocin augmentation. Fifty per cent of patients had spontaneous vaginal delivery, 10% delivered by cesarean section, and 40% delivered by forceps. For vaginal delivery, 18% required no additional analgesia. The rest had local anesthesia, pudendal block, epidural anesthesia, or inhalation analgesia. Intrathecal morphine did not adversely affect Apgar or neurobehavioral scores, TSR, or acid-base status of umbilical cord blood. There were no significant differences between the two groups in the incidence of adverse side effects. Seventy-three per cent of patients had pruritis, 60% had nausea and/or vomiting, 17% had urinary retention after delivery, and 40% were drowsy during the first stage of labor. One patient had a mild, transient postpartum headache. For one patient respiratory rate fell to 7 breaths/min 14 hr after injection of 1.0 mg. However, PCO₂ was never higher than 37 torr and she was not treated. All other patients had no significant change in vital signs.

Discussion. Both 0.5 and 1.0 mg of hyperbaric intrathecal morphine provided satisfactory pain relief for labor. However, in these doses intrathecal morphine alone was not adequate for operative vaginal delivery. Side effects included pruritis, drowsiness, nausea and/or vomiting, and urinary retention.