

Comparison of Ultralight Patient-Controlled versus Continuous Infusion Epidural Analgesia in Labor

C. LaToya Mason, M.D., Erik W. Felton, M.D., Maya S. Suresh, M.D.

Division of Obstetric Anesthesia, Department of Anesthesiology
Baylor College of Medicine, Houston, Texas



Abstract

Introduction:

Patient-controlled epidural analgesia (PCEA) offers many advantages over continuous epidural infusions (CIEA) for maintenance of labor analgesia. Advantages include increased patient satisfaction and reductions in the number of unscheduled clinician interventions, the amount of drug administered, and the degree of lower extremity motor block.¹ The purpose of this study is to compare PCEA to CIEA for maintenance of labor analgesia using "ultralight" (<0.125% bupivacaine) local anesthetic solutions as all previous studies to date utilized 0.125% bupivacaine and there are no outcome studies utilizing ultralight solutions.

Methods:

Following IRB approval, a double-blinded, randomized study was commenced to include term nulliparous parturients of ASA I-II status in active labor and requesting epidural analgesia. Fifty-seven patients are needed in each group to demonstrate statistical significance. A combined spinal-epidural (CSE) is placed in all patients. Epidural infusion is initiated 30 minutes later with 0.0625% bupivacaine + 2mcg/mL fentanyl. The CIEA group receives 14mL/hr. The PCEA group receives an 8mL/hr background infusion, 5mL demand bolus, 5 minute lockout interval, and hourly limit of 26mL. Primary outcomes (drug amount used, Apgar scores, umbilical artery (UA) blood gas analysis) and continuous outcomes (pain scores, motor block) are recorded during the labor period.

Results:

Data has been collected on thirty patients (CIEA group, n=15; PCEA group, n=15). Two patients were dropped due to catheter dislodgement and noncompliance with the study protocol. The T-Test was used to compare the average amount of drug used per hour of labor and UA pH. The average amount of drug administered in the PCEA group was 12.39 ml/hr versus 14 ml/hr in the CIEA group (p=0.17). UA pH scores were 7.2475 in the CIEA group versus 7.2323 in the PCEA group (p=0.66). Pain scores and Apgar scores were compared using the Kruskal-Wallis test. Pain scores using the Visual Analgesia Scale at 1, 2, 4, 6, and 8 hours were compared and no statistical differences were determined. Apgar scores were compared and also revealed no significant difference between the two groups. Additional observations include the following: No patients exhibited any degree of motor block. Three patients required bolus interventions (2 PCEA, 1 CIEA). The mode of delivery was spontaneous vaginal delivery for 24 patients and cesarean section for 4 patients (2 PCEA, 2 CIEA).

Discussion:

Preliminary data reveal no statistically significant differences in Apgar scores, UA gases, or pain scores between the two groups. The PCEA group averaged 12.39 ml/hr versus 14 ml/hr in the control group, a difference which may become significant after achieving sufficient power. Complete data collection is necessary to confirm these observations.

References:

1. Van der Vyver M et al. PCEA vs. CI for labor analgesia: a meta-analysis. Br J Anaesth 2002; 89(3): 459-465.

Introduction

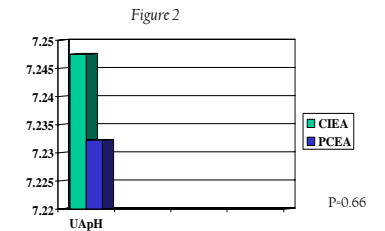
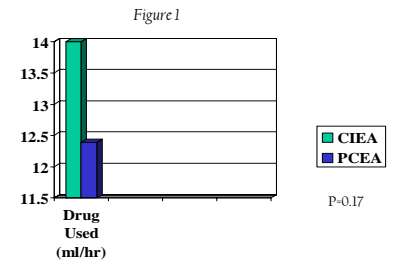
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Methods

A double-blinded, randomized study was designed and is presently being conducted to include term nulliparous parturients of ASA I-II status in active labor and requesting epidural analgesia. Fifty-seven patients are needed in each group to demonstrate statistical significance. A combined spinal-epidural (CSE) is placed in all patients. The intrathecal dose given is bupivacaine 1.25mg + fentanyl 15mcg. Epidural infusion is initiated 30 minutes thereafter with 0.0625% bupivacaine + 2mcg/mL fentanyl. The CIEA group receives 14mL/hr. The PCEA group receives an 8mL/hr background infusion, 5mL demand bolus, 5 minute lockout interval, and hourly limit of 26mL. Primary outcomes (drug amount used, Apgar scores, umbilical artery blood analysis) and continuous outcomes (pain scores, motor block) are recorded during the labor period.

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References

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