Inadvertent Epidural Administration of Penicillin G

Abstract Type: Case Report/Case Series
Lisa K. Wong, M.D.; Mary J. Im, M.D.
Drexel University College of Medicine

Introduction: Errors in drug administration via the epidural route are a serious concern. In most reported cases, patients have recovered fully; a few patients, however, have had sustained neurologic insults. Here we present the case of a patient who inadvertently received a penicillin G solution through her epidural catheter.

Case Report: A 19-year-old woman presented in labor, requesting epidural analgesia. An epidural catheter was placed between the L3-4 interspaces using sterile technique. Ostensibly, a continuous epidural infusion of 0.0625% of bupivacaine, 1.5 µg/mL of fentanyl, and 1:700,000 epinephrine in 100 mL NaCl solution was administered at a rate of 6 mL/h. Over the next 6 hours, the patient reported inadequate analgesia despite the continuous epidural infusion, requiring bolus doses of 10 mL of 0.25% bupivacaine epidurally approximately every 2 hours. Reassessment for inadequate epidural analgesia revealed that the patient had been receiving penicillin G solution epidurally instead of the intended bupivacaine-fentanyl-epinephrine solution. The total amount of penicillin G was 900,000 units, which contained 1.5 mEq of KCl.

After the error was recognized, the correct medication was administered through the epidural catheter. The patient was closely monitored for the next 48 hours for neurologic deterioration. The patient delivered a viable male infant without complications. On postpartum day 3, the patient and infant were discharged home in stable condition.

Discussion: Penicillin G is an antibiotic commonly administered intravenously to prevent perinatal group B Streptococcus infection during the intrapartum period. At our institution, prefilled local anesthetic solutions for continuous epidural infusion and premixed penicillin G solutions were prepared in same-sized containers (the Partial Additive Bag, B. Braun Medical, Inc., Bethlehem, PA). We were initially concerned that the patient might develop seizures or paraplegia, as such cases have been documented in patients who received large intrathecally administered doses of penicillin G or epidurally administered potassium chloride.1,2

We suggest safety precautions to guard against such errors, including 1) the use of epidural tubing incompatible with intravenous administration systems; 2) dedicated epidural infusion pumps; and 3) separate preparation and storage areas for medications for intravenous and epidural administration. However, although analysis of root causes and system changes can help prevent such errors, ultimately there is no substitute for vigilance.

References