Occlusion of an Epidural Catheter Secondary to Osteoarthritis

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This report describes an unusual technical complication of continuous epidural anesthesia.

REPORT OF A CASE

A 73-year-old woman had marked pitting edema of the lower extremities and an infected necrotic ulcer on the right heel. Angiography revealed very good aorto-iliac vessels, but several areas of severe stenosis in the right superficial femoral artery. The patient agreed to femoral–popliteal bypass with continuous epidural anesthesia.

The patient was placed in the right lateral decubitus position for administration of anesthesia. A 17-gauge (Travenol) Tuohy needle was inserted in the midline of the L4–L5 interspace. The epidural space was identified using a loss-of-resistance technique and a (Deseret) catheter was inserted cephalad 3 cm before withdrawing the needle. With the patient still flexed in the decubitus position, a small amount of saline solution was easily injected through the catheter.

The catheter was taped in place, the patient placed in the supine position, and injection of a test dose attempted. Because of resistance to injection, the patient was returned to the lateral decubitus position to allow manipulation of the catheter. Initially the catheter was firmly fixed in her back, and only after flexing the patient was it possible to withdraw the catheter approximately 1 cm. A 3-ml test dose of lidocaine, 1.5 per cent, was injected, the catheter retaped, and the patient placed supine.

Again, injection of additional local anesthetic was impossible, and only after the patient was flexed was it possible to inject 15 ml of 2:1 mixture of bupivacaine (0.75 per cent, with epinephrine, 1:200,000) and chloroprocaine (3 per cent). This produced excellent anesthesia.

In the recovery room removal of the catheter was attempted but it was again found to be firmly fixed in the back, and could be removed only with the patient maximally flexed. Examination of the catheter revealed that it was severely crushed, and almost severed (fig. 1).

DISCUSSION

X-rays of the lumbar spine (fig. 2) revealed marked osteoarthritic formations. The spines manifested areas of sclerosis indicating narrowing of interspinous spaces and contact of the spines ("kissing spines").

A search of the literature1-9 failed to reveal a report of a crushed catheter. In more

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Fig. 1. The catheter that sustained crush damage (above) and an unused catheter.
than 3,232 continuous epidural anesthetics (some authors did not specify the sizes of their series), the most frequently reported complication was shearing of epidural catheters by the needle. Discussion of problems with geriatric patients included difficult needle insertion secondary to arthritic changes, but no mention was made of catheter damage resulting from these changes.

Comparison of the actual catheter and the lumbar spine x-rays clearly demonstrated that the length of the crushed portion of the catheter coincided with the areas of sclerosis of the spinous processes. Consideration of the depth of the needle insertion and catheter advancement affirmed the orientation of the catheter with respect to the x-rays.

The widespread application of continuous epidural anesthesia makes even an infrequent complication important. Patients who have degenerative arthritis are exposed to increased risk of shearing of continuous epidural catheters inserted by the midline approach. When a patient who has severe osteoarthritic disease needs epidural or spinal catheter placement, it might be wise to consider a paramedian approach to the epidural or subdural space.

REFERENCES

Cardiovascular Effects of Diazepam and Droperidol during Morphine Anesthesia

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Although large doses (0.5–3.0 mg/kg, iv) of morphine plus oxygen have little effect on cardiovascular dynamics in critically ill patients undergoing open-heart or other major operative procedures, incomplete amnesia and awareness are not infrequent complications of this technique.1 Use of nitrous oxide as a supplement during morphine anesthesia prevents awareness but results in significant cardiovascular depression.2,3 Diazepam and droperidol have also been employed as supplements during morphine anesthesia to prevent awareness. However, the cardiovascular effects of these drugs after large doses of morphine have not been investigated. This study was undertaken to determine the hemodynamic effects of two 5-mg doses of diazepam or two 2.5-mg doses of droperidol in patients receiving 1.5–2.3 mg/kg morphine for open-heart or major vascular operations.

METHODS

The study was approved by the Human Experimentation Committee of the University of Utah Medical Center. Twenty-nine patients, average age 56 ± 9 (S.D.) years, about to undergo mitral or aortic valve replacement, coronary-artery–vein bypass, or abdominal aortic replacement operations were studied. None was receiving beta-adrenergic receptor blocking drugs, but 16 were taking digitalis preparations. Premedication included morphine (5–10 mg), pentobarbital (60–100 mg), and atropine (0.3–0.5 mg), im, 90 minutes before the scheduled operation. Prior to anesthesia an intravenous line was started in an upper extremity, a central venous pressure catheter was placed percutaneously into the right atrium from the antecubital fossa or neck, and a radial- or brachial-artery catheter was inserted percutaneously and threaded 30–72 cm into the central aorta. The aortic pressure catheter was attached via an arterial pressure transducer to a central digital computer substation in the operating room. Warner’s method of analyzing the central aortic pulse-pressure curve was used to determine cardiac output, stroke volume, arterial blood pressure and peripheral arterial resistance.4

With the patient breathing 100 per cent oxygen, morphine sulfate was administered intravenously at a rate of 5–15 mg/min. Respirations were first assisted and later controlled to maintain PaCO₂, as measured in aortic blood every 15–30 minutes, between 30 and 35 torr. A semiclosed circle system provided CO₂ absorption and a total fresh gas inflow of 5–6 l/min. When patients became