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Contralateral Hydrothorax: An Unusual Complication of Central Venous Catheter Placement

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Central venous catherization has become increasingly popular since its introduction in 1945. Although many major complications have been reported with insertion of central venous catheters, few have been described with the external jugular approach.[1–4] We observed a contralateral hydrothorax secondary to a traverse of the mediastinum by a central venous catheter inserted via the external jugular venous approach.

REPORT OF A CASE

An 81-year-old woman was admitted because of multiple medical problems, including uncontrolled seizures, severe atherosclerotic vascular disease with gangrene of the right leg, hypertension, and hypothyroidism. Her medical problems were treated, and 9 days after admission, under spinal anesthesia, a right above-the-knee amputation was performed. In the operating room, a central venous line was inserted in the left external jugular vein, using a Blitt CVP Monitoring Kit® (Argon Medical Corporation). No complications of the procedure or surgery were noted. Four days after surgery, acute dyspnea and chest pain developed. She was transferred to the Coronary Care Unit, where she sustained a respiratory arrest. Her trachea was intubated and ventilation controlled. An infusion of 5% dextrose in water was begun through the left external jugular vein catheter. The ECG showed an acute myocardial infarction. Chest radiographs were obtained before and immediately after a pulmonary artery catheter was placed via a right subclavian approach. Both radiographs revealed a right pleural effusion, and in the second radiograph the previously placed central venous catheter was noted to cross the mediastinum from the left neck to the right pleural space (fig. 1). A right thoracentesis yielded 1,500 ml of bloody fluid with a red blood cell count of 310,000/mm^3, a glucose concentration of 1,200 mg/dl, protein 0.7 g/dl, and *p*H 8.0, and a concomitant serum glucose was 100 mg/dl. The catheter was removed without incident, and the patient's condition stabilized. She was discharged from the hospital several weeks later.

DISCUSSION

This is the first description of mediastinal traverse by a central venous catheter inserted by the external jugular approach with development of a contralateral hydrothorax. We are unable to determine from this patient's course the exact time at which mediastinal traverse by the catheter occurred. When the catheter was inserted, good venous return was obtained but the catheter subsequently was advanced, during which the vein may

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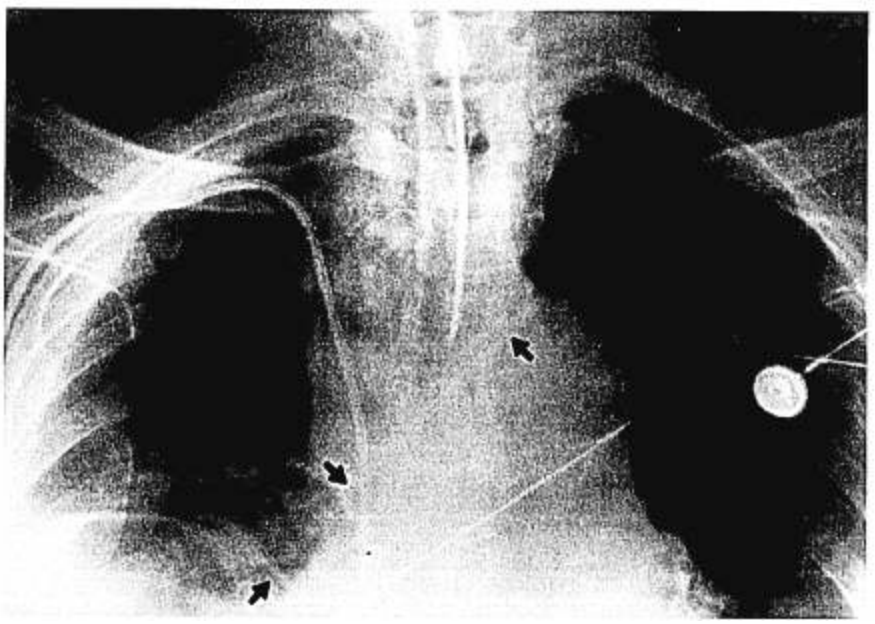

FIG. 1. Patient after placement of Swan-Ganz® catheter; A-P, semi-recumbent film. Note catheter tip plainly in right hemothorax. The arrows were inserted to visually aid in identification of the catheter.

have been exited. We think it is more likely that the catheter was inserted correctly and later eroded through the vein and entered the right hemithorax. The lack of symptoms until 4 days after catheter placement would make the later erosion secondary to motion of the head and neck highly suspect. Her iv infusion had been kept at a rate of approximately 1.0 l/day of normal saline prior to her respiratory arrest, which may not have greatly exceeded the absorptive capacity of the pleural surface; however, accumulation of fluid in the chest must have contributed to her respiratory compromise. She had no other iv lines in place, and fortunately no medication had been given iv. The amount of fluid visible in the right chest in figure 1 was detectable on physical examination immediately before the first radiograph was obtained, but the chart failed to document examinations during the postoperative period. The composition of the pleural fluid is compatible with a mixture of normal saline infused before transfer to the medical service, approximately 300 ml of 5% dextrose in water infused after transfer but before the second radiograph was obtained, and blood (the ratio of red blood cells in pleural fluid to blood is equal to the ratio of pleural fluid protein to serum protein).

In summary, insertion of a central venous line by any technique, including external jugular cannulation, can result in significant complications. The clinician should be alert for any malfunctions in the catheter (especially lack of venous return) and review roentgenographs taken for any purpose for proper catheter placement. In addition, clinical evaluation, which should have detected the complication prior to respiratory arrest, is part of the daily care of the patient.

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Aseptic Meningitis Following Spinal Anesthesia—A Complication of the Past?

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Meningitis following well-conducted spinal anesthesia is a rare but serious complication. Major surveys of regional anesthesia have reported thousands of spinal anesthetics free of this complication.[1,2] Aseptic meningitis is a clinical syndrome whose acute onset and clinical symptoms mimic septic meningitis. Its differential diagnosis from bacterial meningitis can be critical in light of the rapid progression and often fatal course of an untreated septic meningitis.

In the earlier years of spinal anesthesia, aseptic meningitis was a not uncommon and well-reported complication following spinal anesthesia. By 1947 Thorsen[3] referenced more than 100 reported cases in the medical literature and Orkin (as quoted by Goldman and Sanford[4]) noted an incidence of 0.26% of aseptic meningitis in a summary report on approximately 46,000 spinal anesthetics. As a readily appreciated syndrome following spinal anesthesia, purulent sterile meningitis has all but been lost to a generation of anesthesiologists, with the last reported case in 1970.[5] The following is a case report and a discussion of the decline in the incidence of aseptic meningitis.

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Report of a Case

A 32-year-old man came to the operating room for a repair of a ruptured left Achille's tendon. His medical history was unremarkable. He was afebrile, 188 cm tall, and had no evidence of localized infection in his lower back area. Laboratory results included a white blood cell count of 8,000/mm^3 with normal white blood cell differential count and a negative urinalysis.

The patient requested a regional anesthetic, and after premedication with diazepam 7.5 mg iv he was placed in the left lateral decubitus position. The skin of the lumbar area was prepped with three washes