A 56-year-old man with metastatic prostatic carcinoma underwent placement of a Hickman catheter. Approximately two months after the procedure, he was admitted to the hospital with hemoptysis and in respiratory distress. A contrast computed tomographic (CT) scan confirmed the diagnosis of a cava-bronchial fistula. The fistula was surgically repaired, and the patient made a satisfactory recovery. (Ches 1992; 102:1285-86)

Silastic central vein catheters generally have been found to be safe from complications. Their flexibility, ease of insertion, and relative inertness have led to their popularity for long-term central venous use. Erosion of polyvinyl chloride catheters has been recognized more frequently, although still quite rare. These generally result in a hemothorax or tamponade. Hemoptysis following erosion of a catheter into a bronchus with either type, however, is exceedingly rare.

**CASE REPORT**

A 56-year-old man with a history of metastatic prostatic cancer had a Hickman line placed into his right superior vena cava via left subclavian approach for infusional chemotherapy with fluorouracil. Six weeks later, he developed a productive cough and hoarseness. On examination, breath sounds were normal. Although both vocal cords moved normally, inflammation was noted. Chest roentgenogram showed a small right effusion with an elevated right hemidiaphragm. He was placed on a regimen of amoxicillin.

Two weeks later, the patient was feeling better but had noted blood-flecked sputum on occasion. Two days later, he presented to the emergency department with severe dyspnea. On examination, he was tachypneic and tachycardiac. Breath sounds were diminished on his right side. Chest roentgenogram showed a large effusion on his right with an elevated right hemidiaphragm. A computed tomographic (CT) scan of his chest demonstrated no mediastinal or hilar adenopathy. With intravenous (IV) contrast, the patient began coughing. Subsequent images revealed contrast layering in his trachea (Fig 1).

The patient was taken to the operating room for repair of a cava-bronchial fistula. He underwent bronchoscopy following intubation. Fresh blood was noted in his right main bronchus and the bronchus was occluded with clot and inflammatory debris.

Following a right thoracotomy, his right lung was totally atelectatic surrounded by several hundred milliliters of serous fluid. A fistula was identified from his superior vena cava to his right proximal main bronchus. This was opened, and with the catheter removed, divided and oversewn. Percicaldial fat was interposed between the cava and bronchus.

Rigid bronchoscopy removed the inflammatory exudate that

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**Unusual Cause of Hemoptysis**

**Hickman-Induced Cava-Bronchial Fistula**

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**Figure 1.** Computed tomographic scan with intravenous contrast at level of transverse aorta. Note contrast layering in trachea.
occluded his right main bronchus revealing patent distal bronchi.

The patient was subsequently extubated and completed an uneventful postoperative course.

**DISCUSSION**

Since the description of subclavian cannulation by Aubaniac, central line catheters have become indispensable in medical care. Catheter-related risks are legion, but serious sequelae fortunately are rare. Most of the structures surrounding the central vein have been involved with complications. However, a cava-bronchial fistula has not been reported in a computerized search of the Medline database. Central vein perforation has occurred with polyvinyl catheters, although modifications of their tips may reduce the incidence. Silicone rubber catheters with their pliability and softness have even a lower incidence of catheter erosion. In this case, several features may have worked in tandem to produce this potentially lethal complication. First, the catheter tip, although placed appropriately in the superior vena cava, was cut at a taper. Studies have shown, despite fixation of the catheter, that the tip may still move, as much as several centimeters. Second, with a tapered tip and infusion of an irritating substance (flourouracil), continued contact with the central vein wall may have led to erosion.

In management of this unusual fistula, the diagnosis was confirmed by intracatheter contrast injection. Bronchoscopy was helpful once the airway was stabilized to confirm the probable location and also to place an endobronchial blocker. With thoracotomy, control of the vessel can be assured and the fistula divided. Healing in general should not be a difficult problem as there is only inflammatory tissue and no epithelialized fistulous tract. The placement of additional tissue to separate the vessels may help reduce any potential recurrence.

Central lines will continue to produce complications. Most present shortly after the procedure and can be treated appropriately with minimal delay in diagnosis. Rarely will complications present months later. In this situation, their temporal relationship with the placement of the catheter is obscured and the diagnosis may be more difficult. Nevertheless, when patients with indwelling central catheters develop hemoptysis, catheter-related bronchial perforation should be considered as a possible cause.

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**Ventilatory Dysfunction in Severe Anorexia Nervosa**

C. Francis Ryan, M.B., F.C.C.P.; J Scott Whittaker, M.D.; and Jeremy D. Road, M.D.

A 25-year-old woman suffering from chronic anorexia nervosa lost more than 50 percent of her body weight and presented with generalized muscle weakness. Pulmonary function tests showed a severe restrictive defect, and she had marked impairment of respiratory muscle strength and endurance, peripheral muscle function, and hypercapnic ventilatory responses, all of which improved following refeeding. The interaction and response to treatment of these effects on respiratory function are discussed.

(Chest 1992; 102:1286-88)

**VENTILATORY DYSFUNCTION IN SEVERE ANOREXIA NERVOSA**

A norexia nervosa can cause severe malnutrition resulting in significant morbidity and mortality. Malnutrition has important adverse effects on the respiratory system, particularly on respiratory muscle function, that may predispose to pulmonary complications. We describe the effects of severe malnutrition on respiratory and peripheral muscle function and control of breathing in a patient with anorexia nervosa.

**CASE REPORT**

A 25-year-old woman was admitted for management of severe malnutrition resulting from chronic anorexia nervosa of 8 years' duration. She complained of profound fatigue and inability to maintain a seated position because of weakness. She had restricted her food intake severely but denied diuretic, laxative, or ipecac abuse. She had had secondary amenorrhea for six years, and bone densitometry one year previously had shown osteopenia. There was no history of chest infection.

On examination the patient was markedly cachectic, with reduced secondary sexual characteristics and bilateral parotid swelling. She weighed 25 kg (46 percent of ideal body weight), and her height was 160 cm. The heart rate was 48 beats per minute, supine blood pressure was 80/40 mm Hg, and the respiratory rate was 10/min, with regular and shallow respiration. She had bilateral pitting ankle edema. The breath sounds were normal. The patient had marked proximal muscle weakness and was unable to raise her head from the bed when supine or perform more than three squats from a standing position. The results of laboratory investigations were as follows: hemoglobin, 8.9 g/dl; leukocyte count, 4,700/cu mm; sodium, 135 mEq/L; chloride, 98 mEq/L; potassium, 4.5 mEq/L; bicarbonate, 26 mEq/L; urea, 33 mg/dl; creatinine, 0.4 mg/dl; calcium, 8.7 mg/dl; phosphate, 1.8 mg/dl; magnesium, 1.88 mg/dl; total protein, 4.9 g/dl; and albumin, 3.0 g/dl. An electrocardiogram showed sinus bradycardia, and a chest roentgenogram was normal.

After the patient had given informed consent, the following investigations were performed before and after a period of refeeding.

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