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Chronic Hematoma—A Complication of Percutaneous Catheterization of the Internal Jugular Vein

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Percutaneous catheterization of the internal jugular vein has become a widely accepted technique for placement of central venous catheters. Complications have been rare, and include hematoma formation, hemothorax, pneumothorax, hydrothorax, chylothorax, excessive or persistent bleeding, and cardiac arrhythmias.[1–6] Although many of these complications are potentially serious, hematoma formation has been described as rather common, benign, and without sequela. The following is a report of attempted percutaneous catheterization of the internal jugular vein resulting in the formation of a chronic hematoma, necessitating surgical removal two months later.

REPORT OF A CASE

A 56-year-old white woman with a four-year history of progressive angina pectoris and two previous myocardial infarctions was admitted for an aorto-coronary-artery–saphenous-vein bypass procedure. Past history included adult-onset diabetes mellitus, hyperlipidemia, and an abdominal hysterectomy without anesthetic difficulty. Physical examination was unremarkable with the exception of minimal obesity. Medications included digoxin, isosorbide dinitrate, nitroglycerin, and tolbutamide. Preoperative laboratory data, including results of clotting studies, were normal. An electrocardiogram revealed only nonspecific ST and T wave changes, and a roentgenogram of the chest disclosed no abnormality. Cardiac catheterization revealed diffuse three-vessel disease with total occlusion of the right coronary artery and 80–90 per cent occlusion of the left anterior descending and circumflex arteries. In view of the severity of the disease, insertion of an intra-aortic balloon pump prior to induction of anesthesia was planned to prevent cardiac decompensation. After intramuscular injection of morphine sulfate, 10 mg, hydroxyzine, 100 mg, and atropine, 0.5 mg, the patient was brought to the operating room. Peripheral venous and left radial-artery catheters were inserted percutaneously. Blood pressure, electrocardiogram, and precordial auscultation were continuously monitored. The intra-aortic balloon pump device was inserted into the left femoral artery after infiltration of 1 per cent lidocaine locally and heparin, 50 mg, iv. General anesthesia was then induced with thiopental, 325 mg, and succinyl choline, 100 mg, iv, and nasotracheal intubation performed. Maintenance anesthesia consisted of halothane, nitrous oxide, and oxygen. Due to the absence of suitable peripheral veins, percutaneous placement of a CVP catheter in the right internal jugular vein was attempted, using the method described by Vaughan with a Desere Intracath.[*1] Blood was easily aspirated through the 14-gauge needle on the first attempt; however, the 12-inch 16-gauge catheter could not be easily advanced. Upon needle removal, the catheter still could not be advanced, even though aspiration and injection were easily performed. The catheter was then withdrawn and a pressure dressing applied. No

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hematoma was evident. Heparinization was completed with an additional 155 mg, iv, prior to establishment of extracorporeal circulation. Protamine sulfate, 215 mg, was administered iv to reverse heparinization at the conclusion of extracorporeal circulation. Swelling of the neck was not present upon removal of the compressive dressing at the end of the procedure. Shortly after transport of the patient to the intensive care unit, a hematoma was seen in the right supraclavicular area. During the following ten days of convalescence, the hematoma was treated symptomatically with warm moist dressings. Its size decreased, and the patient was discharged without discomfort. However, a week later the patient experienced the sudden onset of neck pain and felt that the hematoma had enlarged. Examination revealed a painful 6 × 8 cm hematoma of the right supraclavicular area. There was no thrill, bruit, or fluctuation. Needle aspiration was unsuccessful. The hematoma decreased in size following treatment with warm soaks in the hospital for ten days. Four weeks later, the patient again felt that the hematoma had enlarged. Examination at this time revealed a 9 × 10 cm mass (fig. 1). The patient was hospitalized and underwent right neck exploration, at which time an 80 ml organized hematoma was removed. No injury to the carotid artery, internal jugular vein, or ascending cervical artery could be found. Pathologic examination confirmed a well-organized hematoma. The patient experienced a benign postoperative course without further complication.

FIG. 1. Lateral view of cervical hematoma.

DISCUSSION

Monitoring central venous pressure of seriously ill patients during anesthesia can be extremely useful by enabling the relationship between blood volume, right ventricular performance, and venous tone to be assessed.[1] It also provides a route for obtaining venous blood samples and detecting superior vena caval obstruction.

The internal jugular technique offers several advantages over other methods of central venous catheter placement. It provides a straighter course into the superior vena cava, more definite anatomic landmarks, a more superficial location in obese patients, a lesser incidence of pneumothorax, and better accessibility to the anesthesiologist at the head of the operating table.[6]

The safety, reliability, and high success rate of internal jugular vein catheterization have been described.[3] Persistent bleeding and hematoma formation have been the most common complications. Persistant bleeding due to injury to the ascending cervical artery has led to hemothorax and death.[2] Hematoma formation, although increased in patients receiving anticoagulants or when the catheter has failed to thread, has been benign.[3,4] No hematoma has required treatment other than a pressure dressing.[3] In our patient the hematoma persisted for two months and required surgical removal. Although the percutaneous internal jugular CVP catheter enjoys wide popularity, this procedure is not without potential for serious complications.

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