Hazard from Left External Jugular Vein Catheterization Revisited

To the Editor:—We read with interest the report by Eichold and Berryman of a patient with a right hydrothorax secondary to perforation of the superior vena cava by a central venous catheter inserted via the left external jugular vein. We have previously reported in ANESTHESIOLOGY four cases in which a right hydrothorax had resulted after catheterization of the left external jugular vein, and we have made suggestions to prevent this complication. In our series of patients, it appeared that the catheter tip eroded the right lateral wall of the superior vena cava. Most likely, this occurred when a 6-inch catheter was inserted from the left external jugular vein because the catheter remained in a transverse position in the innominate vein with the tip abutting against the wall of the superior vena cava. In our previous report, we suggested the use of an eight-inch catheter and showed a radiograph demonstrating that, with the additional length, the catheter tip can turn caudally and does not impinge directly on the venous wall. In our series, hydrothorax occurred after the catheter had been in place for more than 24 h, and we suggested that hydrothorax from vascular perforation be considered as a cause of respiratory distress in patients who appear hypovolemic in spite of a normal or increased central venous pressure.

In the most recent case report, a 6-inch catheter was inserted via the left external jugular vein and the chest roentgenograph published as figure 1 demonstrated the catheter to be in a transverse position. Respiratory distress and the finding of a right hydrothorax occurred 4 days after the insertion of the central venous catheter. These findings are all consistent with those reported in our patients. Based on the patients we observed and the current report, we must again recommend that an 8-inch catheter be used in adults when the left external jugular vein is cannulated for access to the central circulation and that a chest roentgenograph should be taken to ensure that the catheter tip is directed caudally. Satisfactory position of the catheter should be checked periodically by the free aspiration of blood before the infusion of fluids. Eichold and Berryman used the catheter that comes with the Blitt CVP Monitoring Kit® (Argon Medical Corporation). This catheter has two side orifices ¼ inch proximal to the distal end in addition to the orifice at the tip of the catheter. Therefore, it is possible that, although the catheter tip is outside the lumen of the vein, blood could be aspirated through the proximal side orifice. Also, if this was the position of the catheter, blood could enter a side orifice and pass through the lumen of the distal end of the catheter into the pleural space. This may have been the cause of the bloody fluid obtained by thoracentesis in the patient in the current case report.

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An Esophageal Stethoscope Cuff Torn by K-wire

To the Editor:—Although the benefits of using an esophageal stethoscope are well recognized, there are associated potential hazards. Detachment of the entire esophageal stethoscope cuff has been previously reported. The following describes the occurrence of an esophageal stethoscope cuff tear in an oral surgical patient secondary to the insertion of K-wires.

A 57-year-old man underwent a mandibular vestibuloplasty with a palatal split-thickness mucosal graft and fixation of maxillary denture with K-wires. Following induction of general anesthesia, a nasotracheal tube was inserted through the right nostril. An 18-French esophageal stethoscope (NCC Division, Mallinckrodt Company) was placed through the left nares without difficulty. The operation was uneventful. Removal of the esophageal stethoscope met with some resistance but was successful.
Evaluation of the tip revealed a tear in the cuff and a portion missing. The nasopharynx and left nasal cavity were examined, and it was discovered that one of the K-wires had inadvertently pierced the left nasal cavity. The cuff may have been caught and torn by the K-wire during the process of removal. The remainder of the cuff was retrieved from the nasopharynx. The patient was extubated in the operating room without complications.

The primary concern in this case was in noticing and recovering the torn portion of the stethoscope cuff quickly prior to possible aspiration into the airway. Several recommendations can be made in regard to this problem: 1) surgeons should direct the K-wires away from the nasal airway; 2) if the monitoring device does meet resistance during removal, the surgeons should be notified to rule out the possibility of the K-wire piercing the nasal cavity; 3) at the termination of anesthesia, the esophageal stethoscope should be removed before extubation, and examined carefully, and any missing part should be recovered immediately; 4) placement of a radiopaque marker on the cuff could be useful in locating and retrieving a missing part.

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Potential Effects of an Unknown Gas on Mass Spectrometer Readings

To the Editor:—In their Clinical Report “Misleading Mass Spectrometer Readings Caused by Aerosol Propellant,” the authors demonstrate what happens when an unknown, unmeasured gas is introduced into a fixed collector mass spectrometer. I would like to comment further on this problem and offer some additional information.

As mentioned by the authors, an unknown, unmeasured gas introduced into a fixed collector mass spectrometer will cause erroneous readings if ionized fragments from that gas hit one or more of the standard collectors. In addition, the sum of the observed partial pressures can be driven greater than the local barometric pressure.

The Perkin-Elmer® mass spectrometer uses three separate collectors for the three anesthetic agents so that one can be differentiated from the other. As a result, the propellants, a combination of chlorofluoro-hydrocarbons, similar in chemical composition to the anesthetic agents, were detected by the instrument.

A more important problem, however, is the fact that when an unknown, unmeasured gas is introduced into any fixed collector mass spectrometer that computes the percentage or partial pressure of each gas by referencing it to the sum of all gases measured, all the gas readings will be in error. They will be too high because the total volume of gas has not been considered. (The referenced Chemetron SARA® and Perkin-Elmer® mass spectrometers are both fixed collector instruments.)

It is not known what the absolute concentration of the propellant was when the author’s readings were taken but we assume that the instantaneous value of the aerosol in the circuit could be quite high when first administered. Table 1 illustrates the actual concentrations that would

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