EMERGENCY FEMORAL CENTRAL VENOUS CATHETERIZATION IN AN ELDERLY PATIENT COMPLICATED BY DISTAL GUIDEWIRE MIGRATION

Chien-Cheng Huang1,2*, Chia-Meng Chan1,2, Jiann-Hwa Chen1,2, Wei-Lung Chen1,2, Yung-Lung Wu1,2
1Department of Emergency Medicine, Cathay General Hospital, and
2Fu Jen Catholic University School of Medicine, Taipei, Taiwan.

SUMMARY

Central line placement is a common technique in emergency and critical care. Although it is not a very difficult procedure, severe complications sometimes occur. We present a very rare complication of distal guidewire migration to the superior vena cava while performing femoral venous catheterization in an elderly patient. The problems of human errors are discussed and precautions are proposed. [International Journal of Gerontology 2008; 2(3): 133–135]

Key Words: central venous catheterization, complication, elderly, emergency department, femoral vein, guidewire

Introduction

Although rare, loss of a guidewire during percutaneous central catheterization has been reported1–5. Most cases have involved cannulation of the internal jugular or subclavian vein with migration into the right ventricle1–5. In the present case, distal guidewire migration to the superior vena cava occurred accidentally while performing femoral venous catheterization, which is considered to be a central line placement procedure associated with fewer fatal complications.

Case Report

A 78-year-old man presented to our emergency department with drowsiness. Our initial impression was of hollow-organ perforation with septic shock, and an emergency laparotomy was planned. Before surgery, an emergency physician with 1 year of training cannulated the right femoral vein to monitor the patient’s fluid status. An experienced attending physician supervised the procedure. However, information about other

*Correspondence to: Dr Chien-Cheng Huang, Department of Emergency Medicine, Cathay General Hospital, 280, Section 4, Jen Ai Road, Taipei, Taiwan.
E-mail: chienchenghuang@yahoo.com.tw
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Figure 1. Chest radiography shows distal migration of the guidewire to the superior vena cava (arrowhead).
critical patients distracted them from holding onto the guidewire, and it was lost during catheterization.

Chest radiography showed that the guidewire was in the superior and inferior vena cava (Figure 1). No resistance to injection in the distal lumen was noted. Other than initial abdominal tenderness due to peritonitis, the patient was asymptomatic. A cardiovascular surgeon, a cardiologist and a general surgeon were consulted and decided to delay the guidewire retrieval until after the life-saving laparotomy, which revealed a perforated peptic ulcer. After 7 days, a cardiologist retrieved the guidewire uneventfully. Granulation tissue was found on the guidewire (Figure 2). The patient recovered well.

Discussion

The complication rate of catheterization may be as high as 12%6,7; the loss of a guidewire is one of the vital complications6,7. Signs of guidewire loss include resistance to injection through or poor venous backflow from the distal lumen and a visible guidewire on radiographs, although most patients, like our case, are asymptomatic2,8,9. The consequences include embolism due to catheter or guidewire fragments, which can be fatal in up to 20% of patients10. Retained foreign bodies can cause arrhythmia, vascular damage, thrombosis, and embolism11. Therefore, guidewires should be removed as quickly and completely as possible.

Lost catheters, guidewires or fragments can be removed during interventional radiology, surgery or cardiology12. The guidewire is usually caught using a gooseneck snare through the femoral vein under radiographic guidance12. Use of endovascular forceps or a Dormier basket increases the risk of endovascular trauma13. If the guidewire is half the size of the vascular sheath, it may be withdrawn through the sheath12,13.

Risk factors for guidewire loss include inattention, inexperienced or fatigued operators, and inadequate supervision of trainees2. Several precautions should be emphasized1–3,10–12. First, the wire should be visualized at the proximal end before advancing the catheter. Second, the catheter should be passed over the guidewire into the vein while holding the wire, and the catheter and wire should not be pushed together into the vein. Third, complete removal of the wire should be confirmed after the procedure. Fourth, the wire should be held at all times until it is removed. Fifth, the guidewire should be checked in the catheter tray. Sixth, a chest radiograph should be obtained to ascertain the positioning of the catheter and diagnose possible complications arising from the insertion.

Percutaneous central venous puncture requires advanced surgical skills, expert supervision, and meticulous attention to detail1,2,10–12. Given the dangers of adverse conditions, we can help prevent guidewire loss by educating staff and meticulously following standard operating procedures.

References

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Figure 2. Granulation tissues are found on the surface of the retrieved guidewire (arrowheads).


