

Fatal mediastinal hematoma following right internal jugular vein cannulation

Sir,

The insertion of central venous catheters (CVCs) is an invasive procedure associated with complications like pneumothorax, carotid artery puncture, dysrhythmias, infection, and thrombosis. We report a case of mediastinal hematoma caused by insertion of CVC in the right internal jugular vein (IJV).

A 50-year-old, American Society of Anesthesiologists class II, male patient, diagnosed case of intestinal perforation with pulse rate 130/min, blood pressure 100/60 mm Hg, and respiratory rate 28/min presented for emergency laparotomy under general anesthesia. Right IJV cannulation was attempted

by using a 24 G finder needle but the carotid artery was punctured, needle was withdrawn, and compression applied for 5 min. On second attempt, IJV was punctured and then cannulated using 16 G needle with seldinger's technique. Slight resistance to guide wire insertion was encountered which was corrected by slightly withdrawing it. The CVC was easily advanced up to 12 cm and secured. Opening central venous pressure (CVP) was 10 mm of Hg. During the intraoperative period, the hemodynamic parameters of the patient deteriorated to a heart rate of 120 bpm; intra arterial blood pressure - 80/40 mm Hg; and SpO₂ 99%. Dopamine infusion was started at 5 µg/kg/min. After around 20 min, the arterial oxygen saturation gradually decreased to 94% at a FiO₂ of 1.0. Air entry was decreased bilaterally and more so on the right side. Suspecting pneumothorax a right-sided intercostal drain was inserted and the hemodynamics improved. After about 10-15 min intra- arterial blood pressure fell again to 80/40 mm Hg and the SpO₂ hovered around 90%-94% on a FiO₂ of 1. Another chest drain was inserted posteriorly on the right side and 20-30 mL of blood drained out. Chest radiograph showed widened mediastinum with the right lung being pushed to the ipsilateral side and the tip of catheter lying in the midline at the level of fifth thoracic vertebra [Figure 1]. Patient was transferred to intensive care unit and volume resuscitation achieved using peripheral cannulae. Transthoracic echocardiography revealed minimal pericardial effusion; however, a computed tomography scan could not be carried out as the patient was hemodynamically unstable. Percutaneous thoracostomy was done and approximately 200 mL of blood drained and the patient showed transient signs of improvement. However, the patient deteriorated again and expired after a few hours despite high-quality resuscitation.

Carotid artery trauma has been reported in 6%-25% of patients, following landmark-based internal jugular venous



Figure 1: Post central line X Ray chest with (R) Inter-costal drains in situ

cannulations.^[1-4] In our case, it is likely that the carotid artery was punctured by the finder needle, which might have led to mediastinal hematoma, due to the coexisting risk factors viz., severe dehydration, emergency surgery, operator inexperience, and coagulopathy.^[5] Another mechanism of the hematoma formation could be ascribed to the guide wire insertion in which we faced slight resistance. It might have penetrated the vessel wall/atrial wall and subsequent leakage of blood led to the mediastinal hematoma. A delay in diagnosis occurred due to confounding differentials like pneumothorax, hypovolemia, and so on.

In conclusion, the best way to prevent complications like arterial perforations is to use ultrasonography or Doppler guidance.

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