CASE REPORT

A Case of Intrathoracic Hematoma as a Complication of Central Line Insertion in a Case of Abruption of Placenta with IUFD and Situs Invertus

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ABSTRACT

Introduction: The placement of central venous catheters (CVC) is an invasive procedure done routinely in patients undergoing surgical procedures for therapeutic and diagnostic purposes. It is associated with several documented complications either during insertion of the catheter (e.g., arterial puncture, pneumothorax, arrhythmias); and/or during maintenance of the line (e.g., infection, thrombosis, or other mechanical risks). The use of postprocedure chest radiographs to confirm the correct position of the catheter and to detect other complications, such as pneumothorax or hematoma, is a regular practice.¹ We report a case of intrapleural hematoma caused by the insertion of CVC in the right internal jugular vein (IJV).

Case description: A 32-year-old G2P1L1IUFD1 patient with abruption of the placenta presented with hypotension [blood pressure (BP) 76/50]. The coagulation profile, including bleeding time, clotting time, international normalized ratio, prothrombin time, partial thromboplastin time, platelet count, D dimers, and fibrinogen levels of the patient, was normal. The patient underwent an emergency lower-segment C-section under general anesthesia. Since it was an emergency, the patient did not undergo routine preanaesthetic investigations. The patient was managed intraoperatively with two wide-bore (18G) intravenous (IV) cannulas. The patient was transfused with 1000 mL colloid and one polypoidal choroidal vasculopathy (PCV) intraoperatively. Ionotropic supports were started intraoperatively. Intraoperative blood loss was 1300 mL, and urine output was 250 mL. The patient was not extubated and was shifted to intensive care unit (ICU) for further management. Placement of a triple lumen CVC through the right IJV was planned under ultrasound (USG) guidance to monitor postoperative central venous pressure (CVP) and to guide fluid therapy. Well-informed written consent from the patient’s relative was taken for the same. Insertion of a 7Fr triple lumen CVC was attempted through the right IJV under USG guidance using a 16G needle. Venous blood was aspirated. There was resistance felt during guidewire insertion. Hence entire assembly was removed. The second attempt was again abandoned due to failure to advance the guidewire. One more attempt was made on the right side, but there was a spurt of blood through the distal port of the triple lumen. Hence the catheter was removed, and the pressure was applied for 5 minutes. Finally, the catheter was placed through the left IJV. The patient was stable after the procedure with a heart rate of 88 beats/minute, blood pressure of 98/76 mm Hg on injection (Inj) of noradrenaline 4 mg in 50 cc at a rate of 3 mL/hour, saturation 100% on ventilatory support and CVP of 6–8 cm of H2O. As per our institutional protocol, the patient underwent a routine chest radiograph in the postoperative period. There was a well-defined radiopaque shadow in the right upper lung field. The patient also had dextrocardia, and a fundic shadow was visible on the left side. The patient was hemodynamically stable. A bedside USG chest was done, which revealed right-sided mild to moderate pleural effusion and situs inversus. The patient underwent high-resolution computed tomography (HRCT) chest, the report of which showed a fairly large hyperdense hematoma in the right pleural space of upper hemithorax with underlying compressive atelectasis of the right lung. Hypodense filling defect in the right IJV in the supraclavicular region, 5 cm in length, was seen along with near complete luminal occlusion of the vein. Dextrocardia with a right-sided aortic arch was seen. A few sections of the upper abdomen revealed a liver on the left side and a spleen on the right side, suggestive of situs inversus. A chest medicine and cardiothoracic opinion were sought. A CT angiography of the chest showed no active bleeding. Intercostal drainage (ICD) tube was inserted on the right side. The patient was transfused with six solvent/detergent-treated plasma (SDPs), four fresh-frozen plasma (FFPs), and three PCVs. The patient was weaned off the ventilatory and ionotropic supports on day 4 and extubated the next day. The patient was hemodynamically stable. ICD was removed after 15 days. The patient was discharged on the 19th postoperative day.

Conclusion: Central venous catheter (CVC) cannulation is associated with the above-mentioned complications. These complications decrease when image-guided assistance is used. However, the anatomic variation in our patient made it difficult for the guide wire to pass along smoothly. Hence the presence of such anomalies, though rare, should be kept in mind. Keeping this in mind, UV insertion, especially in emergency situations, should be performed only by an experienced anesthetist. The number of attempts on any one side should not exceed two.

Keywords: Central venous catheter catheterization, Hemothorax, Situs inversus, Ultrasound.

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A Case of Intrathoracic Hematoma as a Complication

INTRODUCTION

The placement of a CVC is an invasive procedure done in patients for surgical procedures for therapeutic as well as diagnostic purposes. It is associated with complications like arterial puncture, pneumothorax, arrhythmias, thrombus formation, or other procedural risks. Postprocedure chest X-ray is used for confirmation of the appropriate placement of the catheter, and to examine other complications has been a customary practice. We present a case of intrapleural hematoma as a result of CVC insertion through a right-sided IJV.

CASE DESCRIPTION

A 32-year-old G2P1L1IUFD1 patient with abruption of the placenta presented with hypotension (BP 76/50). Coagulation profile parameters were normal. The patient underwent an emergency lower-segment C-section under general anesthesia. Since it was an emergency, the patient did not undergo routine preanesthetic investigations. The patient was managed intraoperatively with two wide bores (18G) IV cannula. The patient was transfused with 1000 mL colloid and one PCV intraoperatively. Intraoperative blood loss is 1300 mL, and urine output is 250 mL. The patient was shifted to the ICU on ventilatory support with an endotracheal tube in situ.

Placement of 7Fr triple lumen CVC via the right IJV was performed under USG guidance for postoperative CVP monitoring and administration of fluids.

Insertion of CVC was undertaken through the right IJV under USG guidance following well-informed written consent of a relative of the patient. Following the aspiration of venous blood, resistance was encountered during guidewire insertion. The second attempt was again abandoned due to the abutment of a guidewire. Another attempt was made on the same side, but there was a spurt of blood through the distal port of the triple lumen. Hence the catheter was withdrawn completely, and the pressure over the area was given. Finally, the catheter was placed through the left IJV.

The patient maintained the vitals well postprocedure with an intraoperative blood pressure of 98/76 mm Hg on inj of noradrenaline 4 mg in 50 cc at the rate of 3 mL/hour, saturation 100% on ventilatory support, and CVP of 6–8 cm of H,O.

A postprocedure chest X-ray was performed (Fig. 1). A well-defined radiopaque shadow was seen in the right upper lung field.

The patient also had dextrocardia, and a fundic shadow was visible on the left side. The patient was hemodynamically stable. A bedside USG chest was done, which revealed right-sided mild to moderate pleural effusion and situs inversus.

High-resolution computed tomography (HRCT) chest was planned for the patient, the report of which showed a fairly large hyperdense hematoma in the right pleural space of upper hemithorax with underlying compressive atelectasis of the right lung (Fig. 2). Hypodense filling defect in the right IJV in the supravclavicular region, 5 cm in length, was seen along with near complete luminal occlusion of the vein. There was evidence of dextrocardia, and the aortic arch was seen on the right. A few sections of the upper abdomen revealed a spleen on the right side and a liver on the left side, suggestive of situs inversus.

A chest medicine and cardiothoracic opinion were sought. A CT angiography of the chest showed no active bleeding. ICD tube was inserted on the right side. The patient was transfused with six SDP, four FFP, and three PCVs. The patient was weaned off the ventilatory and ionotropic supports on day 4 and extubated the next day. The patient was hemodynamically stable. ICD was removed after 15 days. The patient was discharged on the 19th postoperative day.

DISCUSSION

A CVC insertion can be done through the subclavian vein or internal jugular. It monitors CVP and can be used as an IV route for nutritional support or giving medications, especially those that are incapable of being instilled safely through the

Fig. 1: Chest X-ray showing hematoma with dextrocardia
There are several limitations to the USG technique. Wetzel et al. reported a case of perforation of the left brachiocephalic vein by a dilator causing massive hemothorax. USG was used, and the procedure was carried out smoothly with backflow in all three ports. However, massive tension haemothorax was encountered with leakage of contrast from a left brachiocephalic vein. This case shows that cautiousness should be followed for left-sided CVC placement, as the USG technique and appropriate guidewire placement were insufficient to preclude the dilator-caused left brachiocephalic vein injury. Since our patient had dextrocardia which was found later on chest X-ray (Fig. 1), the possibility of the inability to insert the guide wire on the right side was perhaps related to the anatomic variation.

Central venous catheter (CVC) insertion should be performed or supervised by an experienced physician. The incidences of mechanical complications were reduced by half when the procedure was done by practitioners who had accomplished more than 50 CVC insertions. Additionally, the incidence of mechanical complications after three or more insertion attempts was six times that of the rate after one attempt. Hence, we recommend that no more than two attempts be made on any one side.
CONCLUSION

Central venous catheter (CVC) cannulation is associated with the above-mentioned complications. These complications decrease when image-guided assistance is used. However, the anatomic variation in our patient made it difficult for the guide wire to pass along smoothly. Hence the presence of such anomalies, though rare, should be kept in mind. Keeping this in mind, IJV insertion, especially in emergency situations, should be performed only by an experienced anesthetist. The number of attempts on any one side should not exceed two.

REFERENCES