Mediastinal Malposition of Catheter after Venous Cut down

Imran Nasir1, Rekha Gupta2, Sanjay Gupta1 and AK Attri1
1Department of Surgery, Government Medical College and Hospital, Chandigarh, India
2Department of Radiodiagnosis, Government Medical College and Hospital, Chandigarh, India

Abstract

Central venous catheterization is one of the very essential tools of modern intensive care. Apart from monitoring the critically ill patient, it helps in administration of antibiotics, parenteral nutrition, chemotherapy, fluids and drug delivery. Peripheral inserted central catheter (PICC) by surgically isolating basilic vein or venous cut down, is considered one of the safe technique to access central veins. The advantage of this procedure is that traumatic complications like pneumothorax, hemothorax and arterial puncture are less as compared to directly placing central catheters. Malposition (intracaval or extracaval) is one of the commonly encountered complications associated with central venous catheterization. Extracaval is rarely encountered and there are isolated case reports in the literature where catheter tip is found outside the central vein into the surrounding structures. Knowledge of such complications is important else these remain unrecognized resulting in delayed treatment and poor outcome. Here, we report a unique case, wherein tip of infant feeding tube inserted from basilica vein was found in anterior mediastinum resulting bilateral hemothorax and pleural effusion.

Keywords: Central venous catheterization; Pneumothorax; Hemothorax; Basilica vein; Post-operative day

Case Report

A 58-year female, diagnosed as a case of mucinous cystadenoma of the pancreatic body and tail underwent distal pancreatectomy with splenectomy. On post-operative day (POD) 2, patient had tachypnea, tachycardia for which she was shifted to ICU. On auscultation there were bilateral crepitations. Chest X ray revealed bilateral pleural effusion. Compression Doppler was also done to rule out deep vein thrombosis and was found to be negative. Fluid overload was suspected, and she was managed accordingly [1]. As patient condition did not improve, right basilic venesection was done on POD 3, using infant feeding tube 8 Fr, for central venous pressure monitoring and fluid and drugs administration. On POD 5, CXR showed bilateral moderate pleural effusion (Figure 1). To alleviate respiratory symptoms of the patient, an intercostal drainage tube (ICD) was put on right side which drained 1000 mL serous fluid on insertion and a total of 1350 mL in 24 hours. After this, respiratory distress improved, and pleural effusion decreased. Patient again developed shortness of breath on POD 7 and repeat CXR showed significant effusion, now on left side, hence another ICD was put (Figure 2). On POD 8, right and left ICDs drained 830 mL and 700 mL fluid, respectively. The ICDs kept draining large amounts of serous fluid bilaterally and condition of patient further deteriorated. On POD 10, patient was given plasma and packed cells as hemoglobin level was low (9 g/dL on POD 7) thinking that fluid loss could be because of hypoproteinemia. On POD 11, ICDs started draining serosanguinous fluid from bilateral chest tubes. Contrast enhanced CT of chest and abdomen was therefore, done to evaluate the cause of bleeding. Intravenous contrast was injected from venesection site was found to be spilling into the anterior mediastinum (Figures 3 and 4). Venesection catheter was blocked and left as such. It was not removed because of unstable condition of the patient and fear of bleed from puncture site. Despite best efforts, patient died on POD 13, probably because of ongoing mediastinitis [2].

Discussion

To establish central venous access, both basilic venesection and direct central line insertion are widely used techniques with their own complications; cutdown being limb threatening while central line

Figure 1: Bilateral pleural effusion (R>L) (POD 5).

Figure 2: Left pleural effusion and ICD on right side (POD 7).

*Corresponding author: Dr. Imran Nasir, Department of Surgery, Government Medical College and Hospital Chandigarh, India, Tel: 01722601023; E-mail: imran9594@gmail.com

Received December 21, 2017; Accepted February 19, 2018; Published February 26, 2018


Copyright: © 2018 Nasir I, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.
of the guidewire, inadvertent entry of guide to other vein and use of excessive force during manipulation of guide wire or catheter [3]. In our patient because the feeding tube was advanced from the basilic vein to the SVC, injury to the SVC during manipulation of the catheter may have resulted in malpositioning of the tip in the mediastinal space. Hemothorax and pleural infusions may have resulted from infusion of fluid and blood through the catheter.

Despite extensive search of English literature, we could find only a few case reports where misplaced catheter tip is found in anterior mediastinum or pleura. Turi et al. [7] found accidental placement of catheter in anterior mediastinum on routine postoperative head computed tomography scan. Kosmadakis et al. [8] reported a case of bilateral pleural effusion with mediastinal hematoma following misplaced tip of hemodialysis catheter in anterior mediastinum. Leang [9] and Kumar et al. [10] reported misplaced catheter in the pleural space. We could not find any report of mediastinal placement of feeding tube through basilic vein.

To ensure correct placement of catheter tip several techniques have been advised like ultrasound or fluoroscopic guided cannulation, continuous electrocardiographic monitoring of shape and size of P wave as the catheter is advanced, central venous pressure tracing, routine chest radiography before catheter use. One should also suspect misplacement of catheter if there is absence of low pressure, non-pulsatile, dark, deoxygenated blood aspirate from all the lumens of the catheter. However, none of these can absolutely rule out misplacement. High degree of suspicion is therefore required to detect misplacement of catheter and to avoid its associated complications. Cross sectional CT is the best imaging modality to identify the site of central catheters [4,5,11].

**Conclusion**

Although central venous catheters are increasingly used in routine practice for various indication, it is associated with significant risk of complications like misplacement, which can be life threatening. High degree of suspicion is required to detect such complications. CT should be immediately performed if there is slightest change in clinical condition of the patient after catheter insertion.

**References**

