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Case report

Massive hydrothorax with malpositioned central venous catheter – Ultrasound detection☆

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Abstract Radioimaging is the gold standard for confirmation of the position of central venous catheter as well as its related complications. Use of ultrasound has been proven in guiding central venous cannulations, and it can also be used in detecting related complications. We report a case of a 2 year old child with hydrothorax causing desaturation due to malpositioned central venous catheter diagnosed by ultrasound in the delay for getting a radiograph.

1. Introduction

Central venous catheterization (CVC) is used extensively in neurosurgical patients for perioperative haemodynamic monitoring and guiding fluid therapy. Hydrothorax due to intrapleural pouring of fluids requiring intercostal drain has been rarely reported [1–4]. We successfully managed a case of massive pleural effusion caused by malpositioned CVC, detected with the help of ultrasound.

2. Case report

A 2 year old child weighing 10 kg was shifted to Intensive Care Unit after being operated for subdural haematoma. Endotracheal tube, 4.5 Fr double lumen Right IJV (Internal Juglar Vein) catheter and foleys catheter were insitu. Patient was put on ventilator on SIMV mode with tidal volume 80 ml, respiratory rate of 18/min, PEEP of 3 cm H_2O and FiO_2 of 50%. On attaching monitors, the SpO_2 indicated 88%. FiO_2 was increased to 80%, and anaesthesia resident accompanying the patient was asked about the intraoperative course. He mentioned that initially all went well, and Right IJV was cannulated with double lumen 4.5 Fr catheter with help of ultrasound using seldinger technique and fixed at 9 cm. Back flow was present in both the ports. After an acute blood loss of about 150 ml, saturation started to decrease so FiO_2 was increased to 100% and 200 ml crystalloid was rushed. But saturation continued to drop to be maintained at 96%. Airway pressures also increased from 12 to 16 cm H_2O. After completion of surgery, bilateral air entry did not reveal any significant difference. Amount of fluid given through the central catheter was enquired upon and found to be 600 ml. Saturation started

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to dwindle again up to 88% even on FiO_2 of 100%. Urgent request for Chest X-ray was sent, but we were informed that it would take at least 30 min for the same. Ultrasound was set up and to our astonishment we detected massive pleural effusion (Fig. 1). Immediately chest drain was inserted and around 400 ml clear fluid was drained over 2 h (Fig. 2). Similar colour fluid was aspirated from the CVC port. Saturation improved to 100% in around 10 min of intercostal chest drain (ICD) insertion. Airway pressures also decreased to 12 cm H_2O again.

3. Discussion

Central venous catheterization is an imperative tool in perioperative neurosurgery patients for assessing volume status and administering fluids. Complications related to central venous catheters range from immediate to remote complications. Immediate complications are usually mechanical such as pneumothorax, haemothorax, arterial puncture and wire embolus [1]. Remote complications are mostly either due to infections or due to thrombosis. Delayed presentations can occur in the form of pleural effusion, pericardial effusion and pericardial tamponade [2].

Here we describe a case of iatrogenic massive pleural effusion caused by malpositioned CVC. Although Chest X-ray has been the standard of care in diagnosing such conditions, but due to the lack of time and patient's deteriorating saturation ultrasound came to our rescue. Had we waited for the Chest X-ray, diagnosis could be delayed and could have had catastrophic consequences. Careful insertion techniques and continued attention to the correct position and function of central catheters are important to prevent serious consequences.

Figure 1 Massive Pleural effusion seen with displaced and collapsed lung tissue.

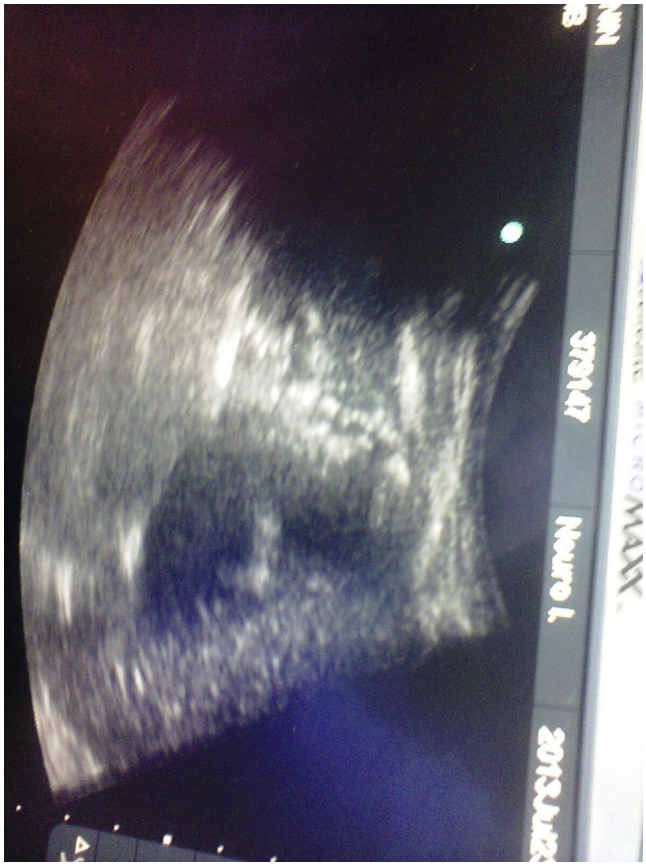

Figure 2 Expansion of lung tissue after drainaige of 400 ml pleural fluid.

Ultrasound can become a third hand for the anaesthetist, if erudite can help not only in guiding nerve blocks and central venous catheter insertions but also in diagnosing critical complications such as pneumothorax, pleural effusion, and cardiac tamponade so that immediate action can be taken and consequences can be managed.

Clear colour of fluid aspirated from intercostal tube, and amount almost equal to that administered through the CVC confirmed intrapleural pouring of fluids administered. Similar complications have been described previously by Ciment et al.; however, the central catheter was subclavian and effusion was contralateral [3]. Contralateral effusions are due to mediastinal leaking rather than direct intrapleural location. A similar case report is completed by Omar et al. following subclavian catheterization but there was negative aspiration at the time of insertion which could have prognosticated them [4].

4. Conclusion

This case report is intended to create awareness among anaesthetists and intensivists to this complication and importance of immediate postinsertion Chest X-ray. Ultrasound should be used as a cornerstone in diagnosing complications rather than waiting for Chest X-ray if it seems to take time.

Conflict of interest

None.

References

[1] Deogaonkar K, Shokrollahi K, Dickson WA. Haemothorax: a potentially fatal complication – a case report. Resuscitation 2007;72:161–3.

[2] Lee YM, Kim HJ, Song JH, Lee MK, Ahn SH. Cardiac tamponade following insertion of an internal juglar vein catheter for hemodialysis. Clin Nephrol 2009;72:220–3.

[3] Ciment LM, Rotbart A, Galbut RN. Contralateral effusions secondary to subclavian venous catheters. Report of two cases. Chest 1983;83:926–8.

[4] Omar HR, Fathy A, Elghonemy M, Rashad R, Helal E, Mangar D, et al. Massive hydrothorax following subclavian vein catheterisation. Int Arch Med 2010;3:32–5.