

## Late migration of subclavian venous catheter after initial correct placement

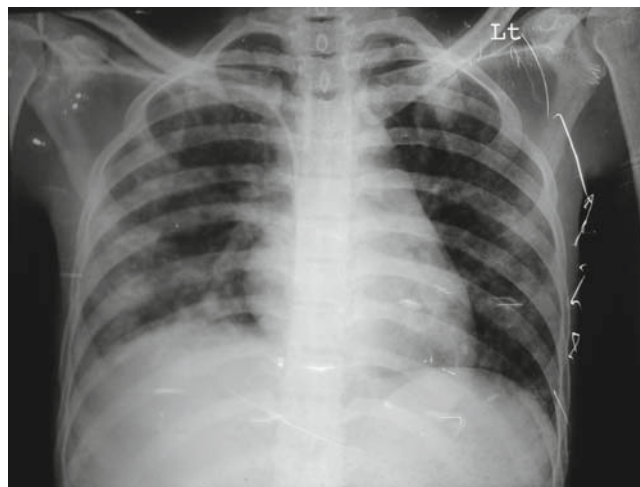
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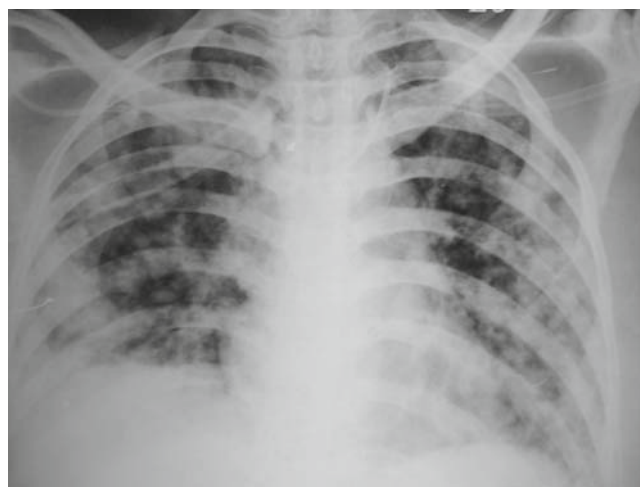
*To the editor:* Central venous catheters (CVCs) are important for long-term venous access and for the measurement of central venous pressure (CVP). However, the catheter tip can be commonly misplaced at multiple sites, increasing the risk of cardiac arrhythmias, chemical or bacterial thrombophlebitis, vascular erosion, and impaired CVP measurement [1,2]. The incidence of misplaced CVC through the right infraclavicular subclavian vein approach is 5.5%–24% [1–3].

We report a case of CVC migration after initial correct placement in a 25-year-old woman diagnosed with choriocarcinoma with hemangiomas in the liver, along with metastasis in liver and lungs. The patient had respiratory distress and her trachea was intubated. Her respiration was supported with continuous positive airway pressure of 10 cmH<sub>2</sub>O along with an inspired oxygen concentration (F<sub>I</sub>O<sub>2</sub>) of 0.4. Following the placement of a right subclavian double-lumen CVC, chest X-ray confirmed placement of the tip of the CVC in the right atrium, with no evidence of pneumothorax or cardiac tamponade (Fig. 1). On day 3, the patient developed pulmonary edema for which the ventilator settings were switched to synchronized intermittent mechanical ventilation (SIMV) mode, with positive end-expiratory pressure (PEEP) of 12 cmH<sub>2</sub>O. Chest X-ray showed no change in the placement of the tip of the CVC. On day 6, there was no backflow through either of the lumens of the CVC and on chest X-ray showed pulmonary edema, as well as showing that the tip of the CVC had spontaneously migrated to the contralateral internal jugular vein (IJV) (Fig. 2), although no manipulation of the CVC was done during this period.

According to our review of the literature, this is the first report of late migration of a subclavian CVC to the contralateral IJV after initial correct placement. This catheter displacement can hardly be explained by movements of the chest or the arms. The “jet-effect” of drug injections through a soft catheter may cause movement of the catheter tip, but this would have been very unlikely with a catheter of the length and caliber used in the present patient [4]. The late migration of the CVC was possibly due to the medially placed percutaneous subclavian catheter which was impinged between the clavicle and the first rib, and the scissor-like motion of the clavicle against the first rib would have acted as a fulcrum [4]. This effect, along with upward forces on the distal catheter



**Fig. 1.** On day 1, chest X-ray confirmed the placement of the tip of the central venous catheter (CVC) in the right atrium, with no evidence of pneumothorax or cardiac tamponade. Lt, Left



**Fig. 2.** On day 6, chest X-ray showed pulmonary edema, as well as showing that the tip of the CVC had spontaneously migrated to the contralateral internal jugular vein

due to increased intrathoracic pressure (positive pressure ventilation and PEEP) and increased intraabdominal pressure (hemangioma of liver), may have led to the malpositioning of the catheter into the contralateral IJV. It is possible that intravascular pressure changes caused by intermittent positive pressure ventilation (IPPV), congestive heart failure, strain-

ing, coughing, or sighing may also play a role in the malpositioning of a CVC [5]. Though initial confirmation by chest radiography still remains the gold standard, follow up with serial chest X-rays is equally important. If migration is found, these catheters should be removed and a new catheter placed more laterally [4]. Migration of the CVC must be kept in mind when we observe any malfunctioning of CVCs.

## References

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