

Unusual Malpositioning of the Central Venous Catheter

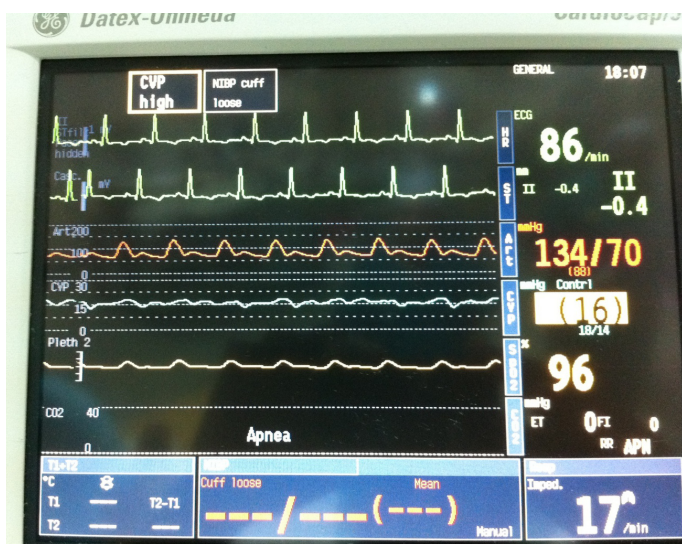
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The chest X-ray is one of the frequently used investigation modalities which is used to confirm the proper placement of the central venous catheter. The malpositioning of the central venous catheter via the internal jugular or the sub-clavian approach has been described in literature. The usual malpositioning is either directed to the sub-clavian vein via the internal jugular approach and to the internal jugular or the contralateral sub-clavian via the sub-clavian approach. The cannulation of the sub-clavian vein is associated with the highest malposition (9.1%) as compared to that of the right internal jugular vein (1.4%) [1]. The overall incidence of the malpositioning varies from 3.3%-6.7% [1-2]. Here, we are describing an unusual direction of the central venous catheter via the internal jugular approach. The consent for the publication of this article was obtained from the patient.

A 52-year female patient was posted for elective simple mastectomy for carcinoma of the breast. The patient was a diagnosed case of Adriamycin induced dilated cardiomyopathy. The pre-operative chest X-ray revealed cardiomegaly. The patient was on antifailure medications. A decision was made to monitor the patient with invasive lines, a day before her surgery. A central venous catheter was introduced via the right internal jugular vein through the central approach in the first attempt and it was connected to a transducer. The monitor did not show proper central venous pressure tracing even though blood was aspirated from both the ports [Table/Fig-1]. The chest X-ray was ordered to confirm the position of the catheter, which revealed that the catheter went to the ipsilateral subclavian and that it took a U turn again towards the internal jugular vein [Table/Fig-2,3,4]. Even though there was aspiration of blood from

both the ports, the catheter was not in the usual position, that is at the junction of the superior venacava and the right atrium. A decision was made, to replace the existing catheter and a new central venous catheter was placed on the same side, which after transducing, showed the usual central venous trace. [Table/Fig-5].

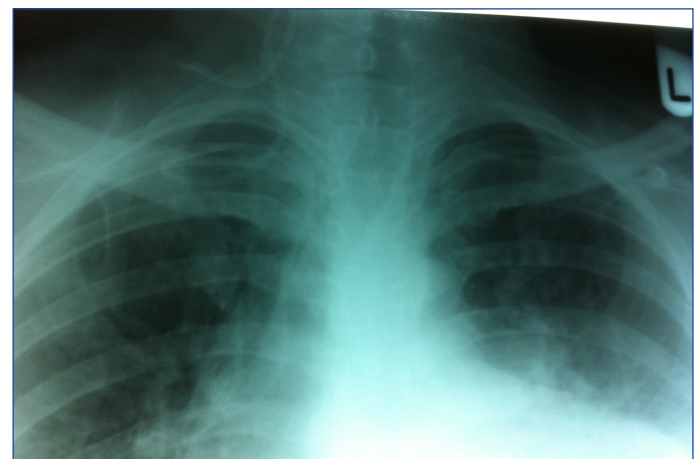
The unusual U-turn of the catheter may have occurred due to the engorged great veins of the neck due to the dilated cardiomyopathy, which might have given ample space to accommodate the U-turn of the catheter in the subclavian vein. The radiographic incidence of the central venous catheter malposition is low. A chest X-ray should be considered when the mechanical complications cannot be excluded, the aspiration of blood is not possible or when the catheter is intended to monitor the central venous pressure or the infusion of the local irritant drugs [1]. A proper positioning



[Table/Fig-1]: Monitor showing the initial venous tracing after right Internal jugular Central line cannulation



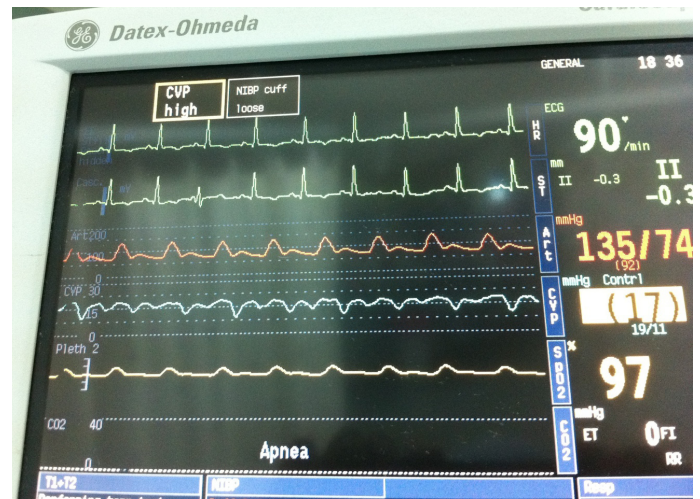
[Table/Fig-2]: Chest X-ray showing the U-turn of central venous catheter



[Table/Fig-3]: The Chest X-ray showing the Entry point of Central Venous Catheter



[Table/Fig-4]: Showing the malpositioning of central venous catheter due dilated veins



[Table/Fig-5]: Showing the central venous pressure tracing after inserting a new central venous catheter

can be best done by using ultrasound, which was not available at our institute. A venogram of the neck veins would have given a confirmatory evidence of the engorged veins, which we thought was not needed after the successful placement of the catheter in the second attempt. The clinical suspicion of the engorged veins in patients with heart failure made us think that they may be the cause for this unusual positioning of the catheters.

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- [2] Schummer W, Schummer C, Rose N, Niesen WD, Sakka SG. Mechanical complications and malpositions of central venous cannulations by experienced operators. A prospective study of 1794 catheterizations in critically ill patients. *Intensive Care Med*. 2007;33(6):1055-59.

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