Misplacement of central venous catheters: Was excessive length of the guide wire responsible?

Sir,

Central venous access is required in chronic kidney disease patients for short-term hemodialysis access and during renal transplant surgery. Catheter misplacement in these patients may lead to complications such as recirculation during hemodialysis or erroneous measurement of central venous pressure apart from other problems.

Reported here are two interesting cases of misplacement in such patients. All cannulations were undertaken using aseptic precaution under local anesthesia and routine monitoring along with ultrasound guidance.

Case I: Right internal jugular vein cannulation was performed with a 12-French hemodialysis catheter (Trilyse-cath, Vygon, Aachen, Germany) in a 40-year-old male [Figure 1]. Postprocedure chest radiograph showed the hemodialysis catheter in the right internal jugular vein with its tip pointing cephalad.

Case II: A 40-year-old male was posted for renal transplant surgery. Left internal jugular vein cannulation was performed for perioperative management (Certofix® B Braun Melsungen AG, Melsungen, Germany). Postprocedure chest radiograph revealed the central venous catheter tip facing right subclavian vein [Figure 1].

Both the patients were hemodynamically stable and did not complain of any pain. There was no history of previous catheterization through the same vein. The patients were transferred to the cardiac catheterization laboratory for evaluation and possible repositioning of the catheter.

Venography under image intensifier showed a quick caudad run off of the dye and revealed no supracardiac venous anatomical anomaly. Repositioning was done using Seldinger guidewire under image guidance. Both the catheters were used uneventfully thereafter.

The misplacement of the central catheter often follows that of the guidewire whose J-tip direction determines its ultimate path.[1] We also know that the guidewire J-tip may get deflected by an obstruction like the junction of vessels, during its insertion.[2] We took help of the catheterization laboratory facility to evaluate what caused the guidewires’ misplacements. Our main concern was that some anatomical anomaly like a persistent left superior vena cava might have caused a deflection of the guidewire. The use of contrast before and after repositioning ruled out any obvious anomaly. Repositioning without proper evaluation can be catastrophic.[3]

We feel that an excessive length of the guidewire was introduced initially, which contributed to these unusual misplacements. We speculate that j-tip of the guidewire got deflected by hitting the vessel wall at the junctions and assumed their final positions. The catheters were introduced over these misplaced guidewires to lie in the same position.

We suggest not to insert excessive length of the guidewire as it may lead to misplacement apart from causing other problems like cardiac arrhythmia. Repositioning of such misplacement should be undertaken only after proper evaluation of the supracardiac venous anatomy. However, the use of radiocontrast material should be undertaken with caution in this group of patients.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

Prakash K. Dubey, Chandra K. Prasad, Nishant Tripathi
Departments of Anesthesiology and Cardiology, Indira Gandhi Institute of Medical Sciences, Patna, Bihar, India

Address for correspondence:
Dr. Prakash K. Dubey,
E®, Indira Gandhi Institute of Medical Sciences Campus, Patna - 800 014, Bihar, India.
E-mail: pkdubey@hotmail.com
Dear Editor,

We would like to share a promising result of flexible fiberoptic cystoscope in unanticipated difficult airway when we had no choice of using flexible fiberoptic bronchoscope, the most popular device in anesthesia practice due to its malfunction. It was an adult male patient planned for elective cardiopulmonary bypass grafting surgery. The patient was anesthetized with etomidate, fentanyl, and atracurium. Bag-mask ventilation was carried out for 3 min and then laryngoscopy was performed. On laryngoscopy, epiglottis was not visible. Three attempts were made by a senior anesthesiologist with direct laryngoscopy for tracheal intubation but failed. The patient had a great concern of ischemic heart disease with poor ejection fraction. Hence, further direct laryngoscopy was not warranted. Laryngeal mask airway (LMA) was inserted. On LMA, the patient was ventilated with mixture of isoflurane, nitrous oxide, and oxygen with no difficulty. At the moment we planned to secure the airway through fiberoptic bronchoscope, unfortunately, it was found to be out of order. Therefore, we decided to attempt the endotracheal intubation with flexible fiberoptic cystoscope. Previously, it has been used for the airway management.[1] The fiberoptic cystoscope is always readily available in urology theater, and our cardiac operating room is in the vicinity of urology theater. Hence, with the help of flexible fiberoptic cystoscope, we pass guidewire through LMA and then railroaded the endotracheal tube over it. The patient was successfully intubated with endotracheal tube size of 8.0 mm ID with the help of fiberoptic cystoscope while the patient was still anesthetized. The patient remained hemodynamically stable throughout the procedure without any episode of hypoxia. The flexible endoscope used in these instances was the Karlz Storz-Endoskope 11272 C which features deflection of distal tip from 140° to 210°, angle of view 110°, working length 37 cm, and sheath size 15.5 Fr. Its high-resolution optics with a wide angle lens system and an angulation system that allows easy orientation and detailed observation. Its main specifications suggest that it can be easily adopted to perform flexible laryngoscopy and tracheal intubation in most adults. There is a case series reporting the use of flexible fiberoptic cystoscope for tracheal intubation in anticipated difficult airway.[1] In our reported case, it has been used in a scenario of unanticipated difficult airway while the situation had turned to be semiemergent. Flexible cystoscope can be an appropriate alternative in an extreme situation where flexible fiberoptic is unavailable due to many other reasons. Flexible cystoscopes are readily available in the urology operation theater for different procedures and can be recruited as an aid for difficult intubation. The limitation with this device in comparison to bronchoscope is relatively small field of vision and rough images. It can be of great help in the hospitals where there are no fiberoptic bronchoscope available and caught in difficult airway scenario.

References

1. Tripathi M, Dubey PK, Ambesh SP. Direction of the J-tip of the guidewire, in seldinger technique, is a significant factor in misplacement of subclavian vein catheter: A randomized, controlled study. Anesth Analg 2005;100:21-4.
2. Dubey PK. Beware of the twisted guidewire. J Clin Anesth 2008;20:70-1.
3. Schummer W, Schummer C, Fröber R. Persistent left superior vena cava and central venous catheter position: Clinical impact illustrated by four cases. Surg Radiol Anat 2003;25:315-21.

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

How to cite this article: Dubey PK, Prasad CK, Tripathi N. Misplacement of central venous catheters: Was excessive length of the guide wire responsible?. Saudi J Anaesth 2018;12:157-8.

© 2018 Saudi Journal of Anesthesia | Published by Wolters Kluwer - Medknow