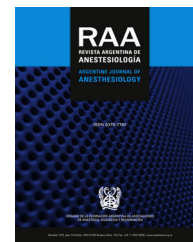




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CLINICAL CASE

Encountering the unexpected: A left behind part of ICD leads causing difficulty in insertion of guidewire of central venous catheter[☆]



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KEYWORDS

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Abstract The insertion of central venous catheters (central venous catheter or vascath) is a very common practice in intensive care units to administrate vasoactive drugs or renal replacement therapy. But these vascular catheters are also source of infection if they are kept unnecessarily for long periods or proper nursing care is not taken. Replacement of such lines is indicated if they are suspected to be source of infection. The most recent practice is to insert a new line on alternate sites using Seldinger technique under real-time ultrasound guidance. Sometimes unexpected difficulties are encountered due to anomalies in the veins or the body anatomy. But rarely, some left out part of leads from previously inserted cardiac devices can present extreme difficulty in threading the guidewire. We hereby report a case where we faced extreme difficulty in threading the guidewire during central venous access in a patient with previously implanted cardio-verter defibrillator, which was removed after heart transplant.

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PALABRAS CLAVE

Pieza olvidada de
cables ICD;
Postrasplante
cardíaco;
Dificultad de
inserción de un CVC

Encontrando lo inesperado: una pieza olvidada de cables CDI dificulta la inserción de la guía del catéter venoso central

Resumen La inserción de catéteres venosos centrales (catéter venoso central o vascath) es una práctica muy común en unidades de cuidados intensivos, para la administración de fármacos vasoactivos o terapia renal sustitutiva. Pero estos catéteres vasculares también son fuente de infecciones si se mantienen innecesariamente por períodos más prolongados, o si no se realizan

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los cuidados propios indicados. La sustitución de tales vías es indicada si se sospecha que pueden ser fuente de infecciones.

La práctica más reciente es insertar una nueva línea en sitios alternativos, utilizando la técnica Seldinger bajo la guía de ultrasonido en tiempo real. A veces, se encuentran dificultades inesperadas debido a anomalías en las venas o la anatomía corporal. Pero raramente alguna pieza olvidada de cables de dispositivos cardíacos previamente insertados puede presentar una extrema dificultad para enhebrar la guía.

Presentamos un caso en donde enfrentamos dificultades extremas para enhebrar la guía durante el acceso venoso central en un paciente con un cardiodesfibrilador implantable colocado previamente, el cual fue removido luego de un trasplante cardíaco.

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Introduction

The insertion of vascular catheters like central venous catheter (CVC) or vascath is a very common procedure in intensive care units (ICU) to administrate vasoactive drugs or renal replacement therapy.^{1,2} But these vascular catheters are also important source of infection if they are kept if they are kept unnecessarily for long periods or proper nursing care is not taken, which can lead to increased morbidity and mortality, hospital cost and length of stay.² Thus replacement of such offending catheter is indicated if they are suspected to be source of infection and should be removed as soon as possible if they are no longer needed.^{1,2} The most recent practice is to insert a new line on alternate sites using Seldinger technique under real-time ultrasound guidance if CVC is suspected to be source of infection.¹⁻³ Sometimes, unexpected difficulties are encountered due to anomalies in the veins or the body anatomy other than usually reported problems. Some left out part of the leads from previously inserted cardiac devices can rarely present extreme difficulty in threading the guidewire. We hereby report a case where we faced extreme difficulty in threading the guidewire during central venous access in a patient with previously implanted cardioverter defibrillator, which was removed after heart transplant one year back.

Case report

One of the authors was called to reinsert CVC and place a new vascath in an ICU patient as the line was more than ten days and the patient was spiking temperature with rising leukocyte count and C-reactive protein. He (a 64 years old and 63 kg male patient) was admitted in our ICU with sepsis of abdominal origin. He received a heart transplant in 2014 for ischemic cardiomyopathy and was under immunosuppressive therapy. He was also diagnosed with chronic kidney disease (CKD) stage III and depression. His post-transplant course was complicated with multiple admissions for neutropenic sepsis. This time, he developed abdominal pain complicated with sepsis and acute kidney injury (AKI). Computerized tomographic scan of abdomen revealed features of colitis. He got treated with standard treatment for sepsis. In due course he was tracheostomized and was in the process of weaning from ventilator.

At the time of procedure, he was hemodynamically stable and was on antibiotic (Piperacillin + Tazobactam). The intensivist proceeded with the insertion of CVC and vascath under real-time ultrasound guidance after ruling out any anatomical anomaly and physical constraints in the site. Patient was given bolus of intravenous propofol and morphine, which he was already on. As the existing CVC was on right internal jugular vein (IJV), the operator opted for left IJV. After antiseptic cleaning and draping, localization of left IJV was done under ultrasound guidance and the introducer needle was inserted under local anesthesia with lignocaine. After having aspirated the blood, the operator proceeded with insertion of guidewire but encountered a problem in advancing it after going for some distance as the guidewire was bending without any further advancement. This happened several times and finally the guidewire could be inserted with difficulty. The same problem was encountered again during insertion of guidewire for vascath and again it could be inserted after several failed attempts. Finally both CVC and vascath were threaded over the guidewires. As per protocol chest X-ray was done to confirm the position of the lines. In chest X-ray a white shadow extending from left subclavian vein to superior vena cava was seen (Fig. 1). Then full history of the patient was inquired and it was found that the patient had an

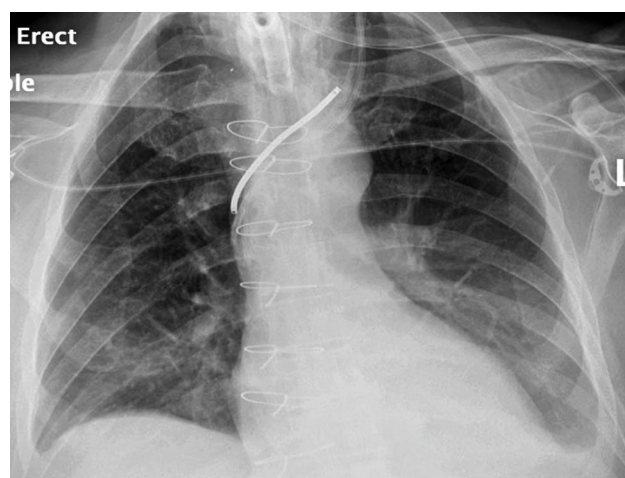


Figure 1 Chest X-ray after insertion of the vascular catheters.



Figure 2 Chest X-ray before the current admission.

implantable cardio-verter defibrillator (ICD) inserted in the left subclavian area, which was removed subsequently after he received heart transplant. But the portion of the leads was left inside after he received heart transplant (Fig. 2). This made us realize the cause behind the problem with threading of the guidewire.

Discussion

Insertion of CVC lines is very common in intensive care units for administering vasoactive drugs, parenteral nutrition, providing vascular access in difficult peripheral access and for regular blood sampling.^{1,2} Nowadays, the majority of these CVC insertions are done under real-time ultrasound guidance to improve the safety and reduce complications.³ Though real-time ultrasound guidance reduces arterial puncture to a considerable extent, it cannot eliminate problems or unexpected obstacles in the venous path down the line where ultrasound access is very much limited by thoracic bony cage. Real-time fluoroscopic guidance is rarely used for routine CVC insertion. Chest X-ray is mostly used for final confirmation of position of inserted CVC.⁴

Many cardiac patients require assistance of cardiac devices (pacemaker, ICD). But their necessity may end after heart transplant. Those who receive heart transplant for cardiac pathology will necessitate removal of leads of those cardiac devices as well as the generators.⁵ Sometimes parts of the leads are left behind if they are not amenable to be removed with simple traction.⁵ The patient may not know this or may not pass on this information to the caregivers in following admission for concurrent illness, as happened in our case. Such left out portion of the leads can cause extreme difficulties in threading guidewire for insertion of CVC, as the guidewire can get obstructed on the passage. Intensivist unaware of such situation may also not enquire about this during intercurrent change of CVC. We usually take precautions to prevent lead dislodgement or entanglement in patients who are already on pacemaker or ICD, but we may not take such precautions in patients who do not have such devices in place. This experience taught us that we should be careful with patients with cardiac transplant who might be on assisted cardiac devices before transplant.

Thus it is recommended to take a detailed medical history of use of any previous pacemaker or ICD and chest X-ray should be reviewed. If such left out part of leads is found inside the vein, it will be better to use alternate site for CVC access. To our best knowledge we have not come across any case report till date.

Conclusion

This case taught us that we should always pay a look at the medical history/records about some previously inserted ICD or pacemaker in patients who have received a heart transplant to prevent such unexpected problem.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors declare that no patient data appear in this article.

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No funding involved in performing the case as well as writing the report.

Contribution of the authors

1. **Dr. Pradipta Bhakta:** Was involved in conducting and managing the case, collection of data and writing the report.
2. **Dr. Vikash Singh:** Was involved in writing as well as correcting the manuscript.
3. **Dr. Ashfaq Hussain:** Was involved in writing as well as correcting the manuscript.
4. **Mrs. Edyta Zietak:** Was involved in writing as well as correcting the manuscript.

Conflict of interest

Authors report no conflict of interest. Authors have not received any grant or fund from any source, which may influence the case report.

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