LETTER TO THE EDITOR

Guidewire Entrapped in the Right Ventricle: A Rare Complication of Hemodialysis Catheter Insertion

Ankur Verma[1], Varun Chitransh[2], Sanjay Jaiswal[3], Amit Vishen[4], Wasil Rasool Sheikh[5], Meghna Haldar[6], Rinkey Ahuja[7], Abhishek Snehy[8]

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A 70-year-old male was brought to our emergency department (ED) with complaints of shortness of breath and generalized weakness and reduced urine output. In the initial blood gas analysis, the patient showed low strong ion difference (SID) metabolic acidosis with hyperkalemia. Antihyperkalemic measures were started. On further evaluation, he was diagnosed with acute renal failure with a serum creatinine of 8.64 mg/dL, serum urea of 114.2 mg/dL, serum potassium of 6.02 mmol/L, and serum sodium of 123.3 mmol/L. He was reviewed by a nephrologist in the ED, who advised for urgent dialytic support post hemodialysis (HD) catheter insertion. After receiving consent from the family, a double lumen HD catheter insertion procedure was initiated under all aseptic precautions by an emergency medicine senior resident. After cleaning and draping of the patient, prick was taken under ultrasound visualization of the internal jugular vein. When the vein was found and the backflow in the syringe was smooth, the ultrasound probe was removed and the guidewire was introduced smoothly. Subsequently the first dilator was used to dilate the vein; but when the second dilator was used, it could not be introduced beyond 3–4 cm. Anticipating some complication, no further dilatation was attempted and the guidewire was attempted to be withdrawn lightly. Unfortunately the guidewire could not be withdrawn and was stuck. Suspecting the guidewire to be entrapped a 2-dimensional echocardiography (2D Echo) was ordered to look for the position of the guidewire. It was seen that the J-tip guidewire had passed through the tricuspid valve and the tip was entrapped in the right ventricle. Cardiothoracic surgeons were informed about the complication. An emergency medicine consultant manipulated the guidewire under visualization of real-time 2D Echo. The guidewire was rotated anticlockwise with simultaneous soft pulls coinciding with the cardiac cycle. The guidewire was successfully and safely removed under 2D Echo guidance. A fresh 2D Echo was done after 15 minutes, which did not reveal any abnormalities such as punctures/lacerations, any apparent clots, vegetation, or pericardial effusion. The HD catheter was subsequently inserted into the left internal jugular vein and the patient underwent HD without any complications (Fig. 1).

Central venous access is commonly performed in the care of the critically ill patients, for a number of indications and is routinely taken up in the EDs, intensive care units and operation theaters (OTs). In 1953, Seldinger described a simple, over a guidewire, approach for catheter insertion.[1] Reported complications associated with the central venous catheters and HD catheters are infection, failure to place the catheter, arterial puncture, improper catheter position, pneumothorax, hematoma, hemothorax, asystolic cardiac arrest of unknown etiology, and inferior vena cava (IVC) trauma.[2]

[1–8]Department of Emergency Medicine, Max Super Speciality Hospital, Patparganj, Delhi, India

Corresponding Author: Ankur Verma, Department of Emergency Medicine, Max Super Speciality Hospital, Patparganj, Delhi, India, Phone: +91 9971779998, e-mail: anksv25@gmail.com

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Infection is the most common complication in subclavian vein route; though arrhythmias and air embolism can occur.[3] Reported central venous guidewire complications are dysrhythmias, conduction abnormalities, perforation of vessels, kinking or looping of guidewire, entanglement of previous intravascular devices, breakage of tip leading to embolization, and complete loss of guidewire in the vascular system.[4]

In our patient, a rare complication occurred as the J-guidewire got entrapped in the right ventricle. It would be prudent for the clinicians to be aware of this rare yet avoidable complication. Overzealous insertion of the guidewire without watching the monitor may lead to such complications. The physician must have patience while inserting the guidewire and watch for any

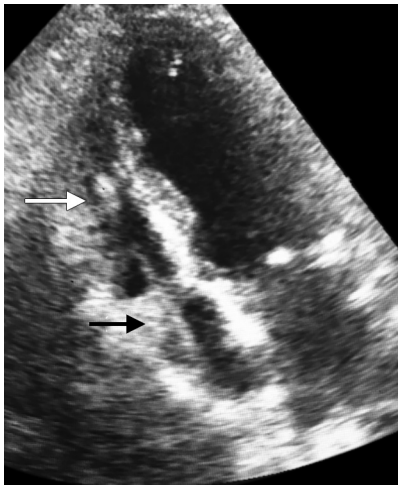

Fig. 1: 2D Echo showing J-Tip guidewire entrapped in the right ventricle

dysrhythmias or difficulty in passing the guidewire. We recommend urgent 2D-echocardiography or X-ray to look for the complication. An entrapped guidewire may be removed slowly by the experienced clinicians under echocardiography guidance. Specialist surgical backup should be on standby before attempting to remove the guidewire manually postentrapment.

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Contributors

Ankur Verma is the principal author. All coauthors have contributed toward the manuscript equally.

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