World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

(CASE REPORT)

Check for updates

Right atrial thrombus secondary to internal jugular central venous catheter: A case report

M. El Abbadi *, H. Tobi, M. Lekhlit, S. Jidane, T. Nebhani, N. Chouaib and A. Belkouch

Medical-Surgical Emergency Department, Mohammed V Military Teaching Hospital, Rabat, Morocco.

World Journal of Advanced Research and Reviews, 2026, 29(03), 826-828

Publication history: Received on 27 January 2026; revised on 09 March 2026; accepted on 10 March 2026

Article DOI: https://doi.org/10.30574/wjarr.2026.29.3.0592

Abstract

Central venous catheters (CVC) are frequently used in emergency and intensive care units. Although generally safe, they may be associated with thrombotic complications including intracardiac thrombosis. We report the case of an 80-year-old patient who developed a large right atrial thrombus five days after placement of an internal jugular central venous catheter inserted during the management of septic shock. The thrombus was discovered after the patient returned to the emergency department with hemodynamic instability two days after hospital discharge. Transthoracic echocardiography revealed a large intracardiac thrombus impairing right ventricular filling. This case highlights the importance of early recognition of catheter-related intracardiac thrombosis and discusses its physiopathology, diagnosis and management.

Keywords: Right atrial thrombus; Central venous catheter; Obstructive shock; Echocardiography; Catheter-related thrombosis

1. Introduction

Central venous catheterization is widely performed in critically ill patients for hemodynamic monitoring, administration of vasoactive drugs and difficult venous access. Despite its benefits, several complications may occur including infection, vascular injury and thrombosis. Catheter-related thrombosis can involve the central veins or extend into the cardiac chambers. Right atrial thrombus associated with central venous catheters is uncommon but potentially life-threatening because of the risk of pulmonary embolism or obstructive shock [1–3].

2. Case presentation

An 80-year-old man with a history of hypertension, type 2 diabetes mellitus, colon cancer with hepatic metastases and renal cancer with extension to the inferior vena cava was initially hospitalized in the intensive care unit for septic shock of urinary origin. Management required vasopressor therapy and placement of an internal jugular central venous catheter.

The clinical evolution was initially favorable with resolution of septic shock and the patient was discharged home. Two days later he presented again to the emergency department with altered general condition and severe hemodynamic instability.

On admission his blood pressure was 64/35 mmHg, heart rate 102 bpm and oxygen saturation 94% on room air. Echocardiography revealed a large echogenic mass in the right atrium measuring approximately 38×38 mm compatible

* Corresponding author: M. El Abbadi

with a thrombus causing impaired right ventricular filling and low cardiac output. Laboratory tests showed severe anemia (Hb 7.5 g/dL), thrombocytopenia (35 000/mm^3) and elevated inflammatory markers.

Because of the high bleeding risk, thrombolysis was contraindicated and the patient was transferred to the intensive care unit. A multidisciplinary discussion with cardiovascular surgeons was initiated.

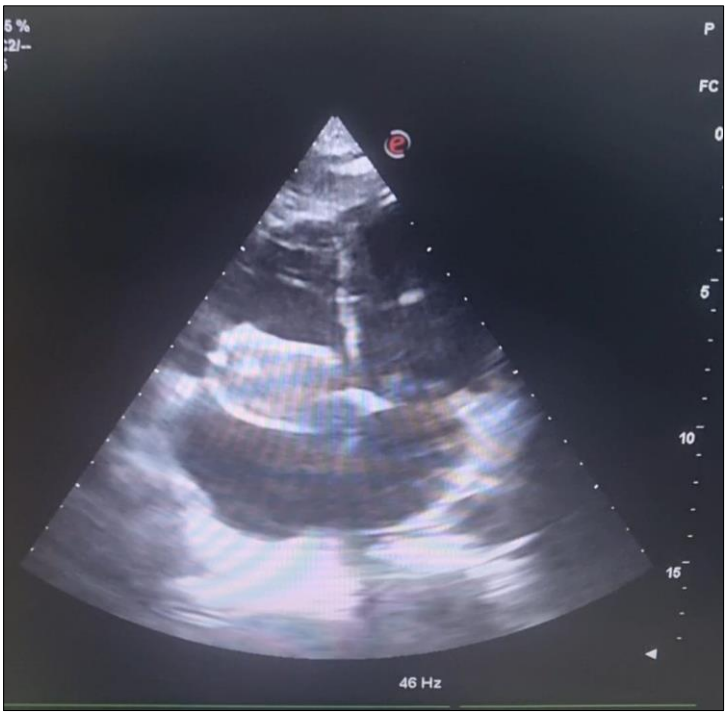

Figure 1 Transthoracic echocardiography (apical four-chamber view) showing a large echogenic mass in the right atrium compatible with a thrombus

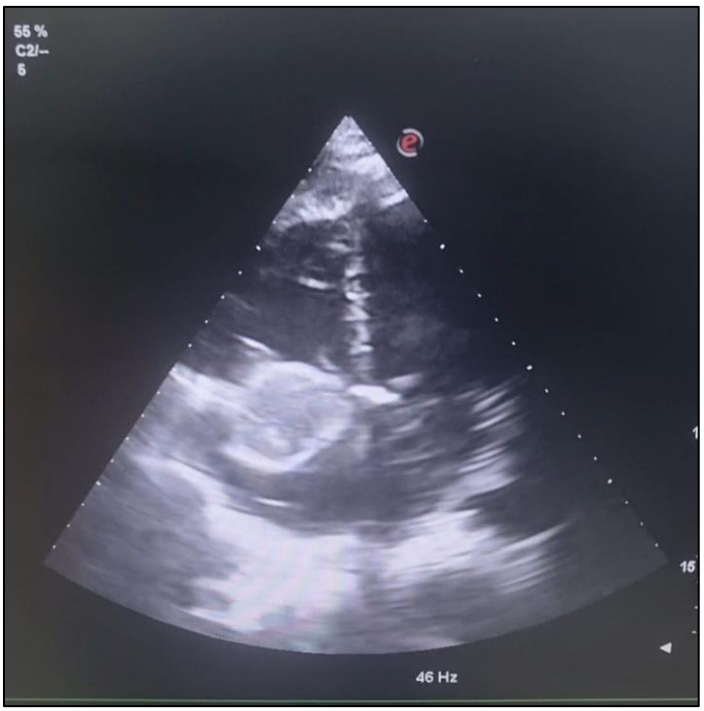

Figure 2 Echocardiographic view demonstrating a mobile right atrial thrombus

3. Pathophysiology

The development of thrombus after central venous catheter placement is mainly explained by Virchow's triad: endothelial injury, venous stasis and hypercoagulability [4]. Mechanical irritation of the atrial endocardium by the catheter tip may cause endothelial damage and activate platelet aggregation. The catheter itself acts as a foreign surface favoring fibrin deposition. In addition, critically ill patients frequently present a hypercoagulable state related to infection, inflammation or malignancy, which further increases the risk of thrombosis [5–7]. When the catheter tip is positioned within the right atrium, repetitive cardiac motion can promote progressive thrombus formation.

4. Discussion

Catheter-related intracardiac thrombosis is rare but well described in critically ill patients. The reported incidence ranges between 2% and 26% depending on the diagnostic method and patient population [3,8]. Risk factors include prolonged catheterization, catheter malposition with the tip inside the right atrium, malignancy, sepsis and hypercoagulable states [6,9].

Echocardiography is the imaging modality of choice for diagnosis. Transthoracic echocardiography can rapidly identify large thrombi at the bedside, while transesophageal echocardiography provides higher sensitivity when the diagnosis is uncertain [2].

The management of right atrial thrombus remains controversial and may include catheter removal, systemic anticoagulation, thrombolysis or surgical thrombectomy depending on thrombus size, mobility and bleeding risk. Early recognition is essential because untreated intracardiac thrombi may lead to pulmonary embolism or obstructive shock [10].

5. Conclusion

Right atrial thrombus is a rare but serious complication of central venous catheterization. Clinicians should suspect this diagnosis in patients presenting with unexplained hemodynamic instability after catheter placement. Echocardiography plays a key role in early diagnosis and management.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

[1] McGee DC, Gould MK. Preventing complications of central venous catheterization. N Engl J Med. 2003.

[2] Pierre-Justin G, Pierard LA. Management of mobile right heart thrombi. Eur Heart J. 2005.

[3] Gilon D et al. Right atrial thrombi associated with central venous catheters. Chest. 1998.

[4] Virchow R. Thrombosis and embolism theory.

[5] Verso M, Agnelli G. Venous thromboembolism associated with central venous catheters. J Thromb Haemost. 2003.

[6] Stavroulopoulos A et al. Right atrial thrombus associated with central venous catheters. Am J Kidney Dis. 2012.

[7] Lee AY. Thrombosis in cancer patients. Blood. 2009.

[8] Krishnan S et al. Catheter-related right atrial thrombus. Clin Cardiol. 2010.

[9] Raad I et al. Catheter-related infections and thrombosis. Lancet. 2007.

[10] European Society of Cardiology Guidelines on thromboembolism. 2019.