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Stent Embolization Mimicking Acute Myocardial Infarction

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Abstract

Venous thromboembolism is associated with significant morbidity and mortality if left untreated. Anticoagulation is the cornerstone of treatment. Venous stents are a relatively newer entity that are increasingly being used to treat venous stenosis/occlusion. It is a safe procedure, but complications include vein rupture, arterial puncture, retroperitoneal bleeding, and in-stent thrombosis. Stent migration is a rare but potentially fatal complication. We present a case of venous stent embolization to the heart that presented as a non-ST segment elevation myocardial infarction.

Keywords

deep vein thrombosis, venous stent embolization, NSTEMI, cardiac surgery

Introduction

Venous thromboembolism (VTE) is a significant but preventable cause of morbidity and mortality. The incidence rate of VTE is about 1 in 1000 people. Deep vein thrombosis (DVT), a subgroup of VTE, makes up to two thirds of these cases. Pulmonary embolism (PE) occurs in approximately two thirds of cases of DVT and is the main cause of mortality.[1,2] Anticoagulation is the mainstay of treatment and prevents thrombus extension, PE, recurrence, and death but up to 50% of patients develop post-thrombotic syndrome, characterized by leg pain, swelling, and venous ulcers.[2] Venous stents are increasingly being used for the treatment of acute and chronic venous occlusions.[3] There is substantial heterogeneity in data assessing the efficacy of this procedure.[4] Periprocedural complications include vein rupture, arterial puncture, retroperitoneal bleeding, and in-stent thrombosis. Stent migration is a rare but potentially fatal complication.

Case Presentation

A 32-year-old male with a past medical history of seizure disorder, Tourette's syndrome, recurrent lower extremity DVTs, chronic venous insufficiency, and May-Thurner syndrome presented with sudden-onset right-sided chest pain that was radiating to the right shoulder, associated with diaphoresis and dyspnea.

One month earlier, he had a computed tomography of the abdomen with intravenous contrast for workup of his chronic abdominal pain that was highly suspicious for right iliac vein stenosis. Given his history of recurrent DVTs and chronic venous insufficiency, he was referred to vascular surgery for further investigation where he underwent bilateral lower extremity venography using digital subtraction angiography and intravenous ultrasonography (IVUS) imaging 2 days prior to this admission. The left iliac venous system was patent; however, IVUS of the right side revealed a 75% stenosis of the right external iliac vein due to extrinsic compression that was treated with a 14 mm × 80 mm Venovo venous stent (BD/Bard; Figure 1) and balloon dilation after deployment. Post procedure IVUS showed well-apposed stent.

The patient had a comprehensive hypercoagulability workup in the past that was negative, and he was currently on warfarin for recurrent DVTs. On presentation, his vital signs were a blood pressure of 134/91 mm Hg, heart rate of 84 beats per minute, respiratory rate of 18 breaths per minute, and saturating 100% at room air. Cardiac examination

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revealed a regular rate and rhythm without any murmurs and lungs were clear to auscultation bilaterally. Pertinent laboratory findings included Troponin I 1.03 ng/mL (0.0-0.1 ng/mL). An electrocardiogram showed a new right bundle branch block with nondiagnostic Q waves in the inferior leads.

The patient was diagnosed with a non-ST segment elevation myocardial infarction (NSTEMI) and started on a low-dose heparin infusion. He was also loaded with aspirin and clopidogrel. An echocardiogram (Figure 2) was done, which showed an echodensity in the right atrium with mild tricuspid regurgitation indicative of embolization of the venous stent. There was no regional wall motion abnormality. His heparin infusion was stopped, and he was transferred to our hospital for further management. On arrival, an unsuccessful attempt was made by interventional radiology to retrieve the stent percutaneously. He was then taken to the operating room and the stent was removed surgically. The patient had an uneventful recovery and was discharged to inpatient rehabilitation.

Figure 1. Pelvic venogram shows a 14 mm × 80 mm Venovo venous stent (red arrow) in the right external iliac vein.

Discussion

Iliac vein compression syndrome is caused by compression of the iliac vein and/or the presence of luminal adhesion that leads to venous stasis, increasing the risk of DVTs.[5] According to one study, more than 50% of patients with iliofemoral DVT suffer from venous stasis.[6] Venous stenting is becoming the treatment of choice iliofemoral venous occlusion given its high success rate and is effective in restoring and maintain patency of the venous flow.

Venous stenting is relatively a safe procedure with low complication rates. Periprocedural complications include bleeding, early thrombosis, and PE.[4] Stent migration is potentially fatal and its incidence ranges between 0.3% and 6%. Once the stent is displaced, it usually stays in the venous system but can rarely migrate centrally into the heart or lungs. Possible causes of stent embolization include undersizing of the stent, balloon failure, and poor insertion technique.[7]

Asymptomatic patients with stent migration can be managed conservatively with serial imaging and echocardiogram. Patients with more concerning presentations should undergo stent retrieval either through an endovascular or surgical route.[8] Early recognition of this complication and timely intervention can be lifesaving.

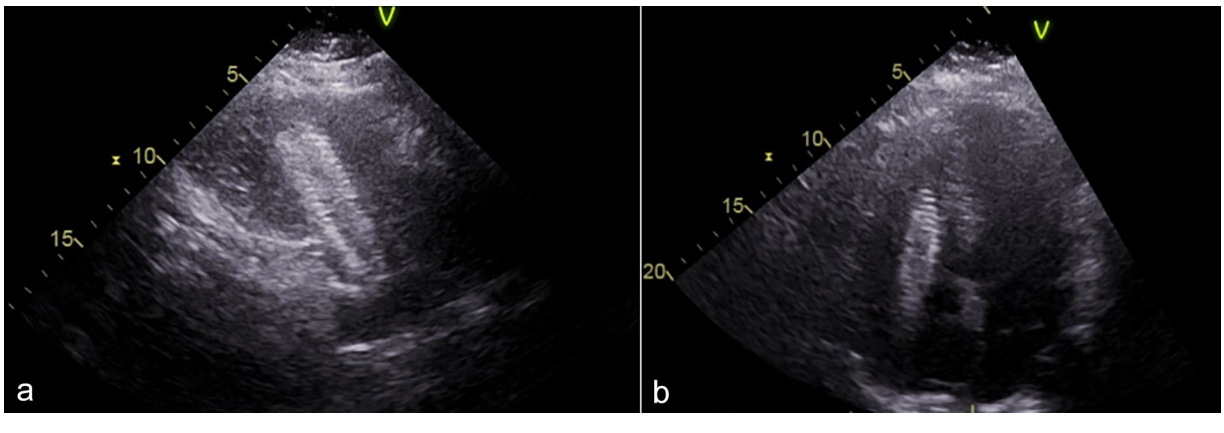

Figure 2. Echocardiogram shows the stent in the right ventricle (RV) across the tricuspid valve in (a) the RV inflow view and (b) the apical 4 chambers view.

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Ethics Approval

Our institution does not require ethical approval for reporting individual cases or case series.

Informed Consent

Verbal informed consent was obtained from the patient for their anonymized information to be published in this article.

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