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HOW-TO-DO-IT

Acute Myocardial Infarction as the Initial Manifestation of Delayed Bioprosthesis Thrombosis After Transcatheter Aortic Valve Replacement

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Bioprosthesis thrombosis after transcatheter aortic valve replacement (TAVR) raised concerns about further clinical events. We report the case of a patient who suffered acute myocardial infarction (AMI) after TAVR for 3 years. Thrombosis was confirmed in the right coronary sinus of Valsalva by transthoracic echocardiography. Coronary angiography demonstrated the ostium of the right coronary artery was occluded. As an attempt to perform percutaneous coronary intervention (PCI) was unsuccessful, long-term therapeutic anticoagulation with warfarin was undertaken. Within 2 weeks, symptoms were relieved, and the right coronary ostium thrombus disappeared on computed tomography (CT) angiography. This case highlights the AMI as initial manifestation of delayed bioprosthesis thrombosis and the importance of anticoagulation against the bioprosthesis thrombosis. Meanwhile, the difficulty of PCI after TAVR is not only the stent frame of bioprosthesis, but also the location of the thrombosis.

Keywords Transcatheter aortic valve replacement • Acute myocardial infarction • Thrombosis

Background

Transcather aortic valve replacement (TAVR) has been approved for use in patients with severe symptomatic aortic stenosis (AS) who are at intermediate to high surgical risk or are inoperable [1], while the leaflet thrombosis in bioprosthesis aortic valve raised a concern about further clinical events, which have been demonstrated to have an association with increasing transvalvular gradients or even clinical symptoms [2,3]. Furthermore, leaflet thrombosis was reported in a patient who had had a prior stroke [2], which lead to the possible link between them. Here, we reported a case of delayed bioprosthesis thrombosis after TAVR with acute myocardial infarction (AMI) as the initial manifestation.

Case Presentation

An 83-year-old male who underwent TAVR 3 years earlier (Medtronic CoreValve®) presented to the emergency department with 1 week of intermittent chest discomfort. The patient was receiving aspirin after 1-year dual antiplatelet therapy (aspirin plus clopidogrel) post-TAVR. On arrival, the electrocardiograph was notable for inferior wall ST-segment elevations (Figure 1), and the initial high sensitivity troponin

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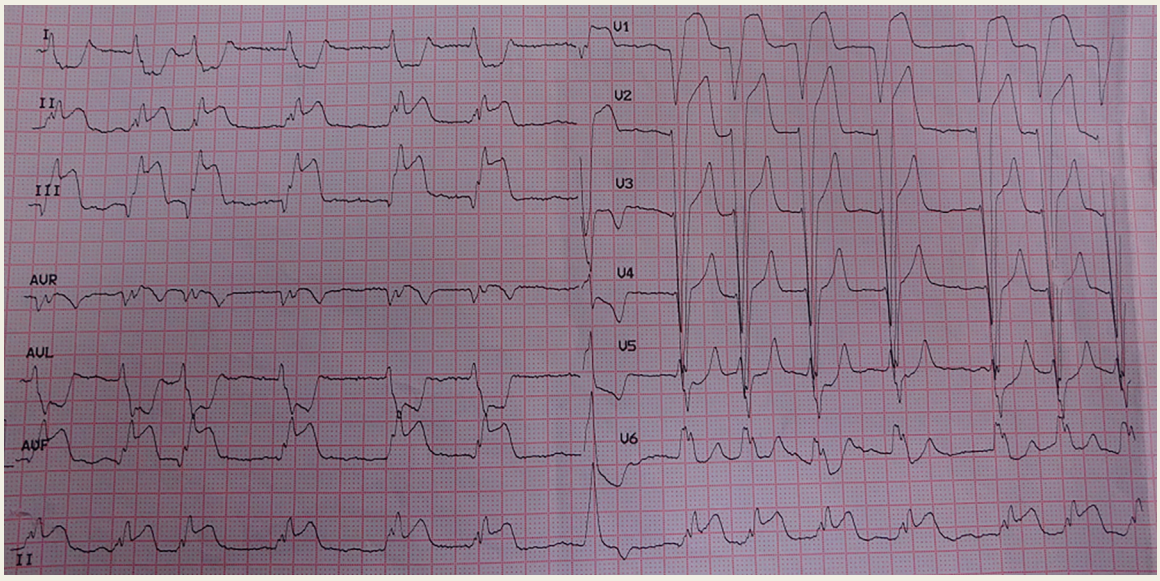

Figure 1 Immediate electrocardiogram after the patient arrived showing inferior myocardial infarction.

T was 2440 ng/L (normal level <14 ng/L), both of which were consistent with acute or subacute myocardial infarction. Physical examination demonstrated a stable haemodynamic condition (blood pressure: 110/85 mmHg). Urgent transthoracic echocardiography showed the thrombosis in the right coronary sinus of Valsalva (Supplemental Video 1 in the online version, at DOI:10.1016/j.hlc.2017.10.026) and the undamaged bioprosthetic valve function (mean transaortic gradient: 4 mmHg, peak jet velocity: 1.3 m/s). Computed tomography angiography (CTA) revealed the thrombosis located on the noncoronary sinus (extending into the noncoronary cusp of bioprosthesis) and right coronary sinus of Valsalva (Figures 2 and 3). Coronary angiography demonstrated the ostium of right coronary artery occlusion and the collateral branch from left anterior descending artery into right coronary artery (Supplemental Videos 2 and 3 in the online version, at DOI:10.1016/j.hlc.2017.10.026). An attempt to perform PCI was not successful owing to the

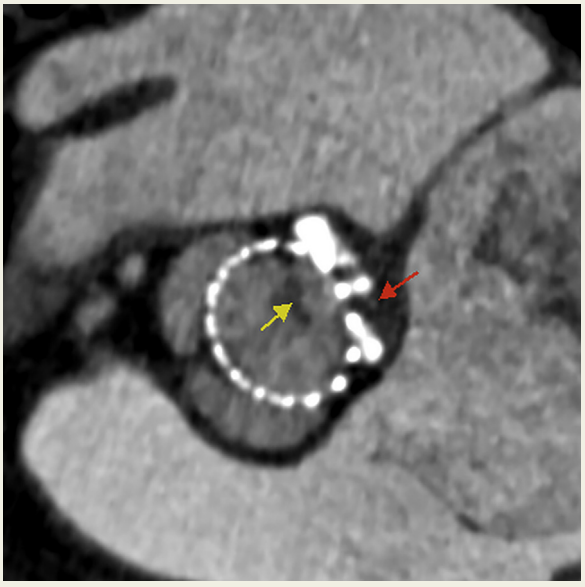

Figure 2 Thrombus located on the noncoronary cusps of bioprosthesis and noncoronary sinus of Valsalva. Red arrow shows the thrombus located in the noncoronary sinus Valsalva; yellow arrow shows the thrombus located on the noncoronary cusps of bioprosthesis.

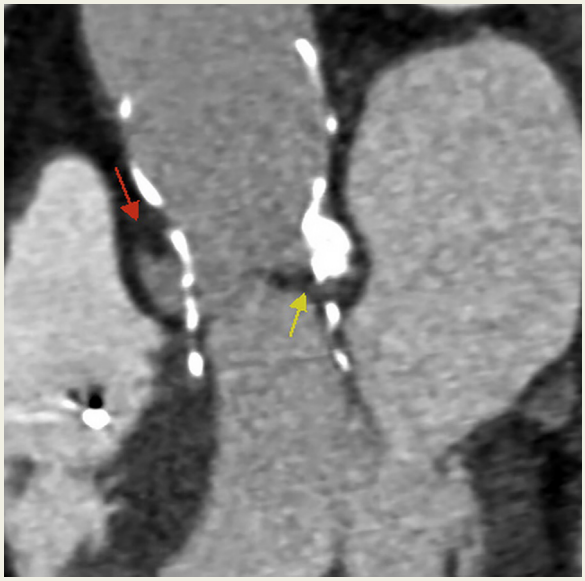

Figure 3 Thrombus located in the right coronary sinus of Valsalva and on the noncoronary cusps of bioprosthesis. Red arrow shows the thrombus located in the right coronary sinus Valsalva; yellow arrow shows the thrombus located on the noncoronary cusps of bioprosthesis.

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