Coronary artery aneurysm presenting as STEMI

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DESCRIPTION

A 75-year-old man presenting with sudden onset angina was found to have inferior wall ST elevation myocardial infarction (figure 1). He was emergently scheduled for cardiac catheterisation. Coronary angiography revealed aneurysmal dilatation of distal right coronary artery (RCA) with 100% occlusion from thrombosis at the aneurysmal site, aneurysm in left circumflex artery (LCX) and mild luminal irregularities in distal left anterior descending (figure 2A). He underwent mechanical thrombectomy with restoration of flow from TIMI 0 to TIMI 1 (figure 2B). After the procedure patient was started on aspirin 81 mg q.d., prasugrel 10 mg q.d. and rivaroxaban 2.5 mg bid.

Coronary artery aneurysm (CAA) is the localised dilatation of a coronary artery with diameter >1.5 times diameter of adjacent normal segment. Its incidence is reported as 0.3%–5.3% with mean incidence of 1.65% from pooled analysis.¹ Men are affected more predominantly than women. Atherosclerotic coronary artery disease is the most common cause of CAA in adult population whereas Kawasaki disease triumphs in children. Atherosclerosis is usually associated with multi-vessel coronary aneurysms as seen in our patient involving RCA and LCX.² Other aetiologies include genetic causes, inflammatory, connective tissue disorders and infectious diseases. CAA is usually an incidental finding but can be complicated by thrombosis and embolism. The aneurysmal dilatation provides a nidus for acute thrombus formation which can present as STEMI. Thrombus formation is favoured at aneurysmal site due to more sluggish flow through a dilated vessel. Patients usually present with angina, ischaemia or myocardial infarction. Coronary angiography is valuable diagnostic tool for CAA. Intravascular ultrasound can aid in differentiating true versus pseudo-aneurysms and helps in determination of luminal composition of the aneurysm.³ There is lack of consensus in the optimal management of CAA. Guideline-directed medical management is preferred in the setting of atherosclerotic coronary artery disease. Antiplatelet

Figure 2 A: showing 100% occlusion of right coronary artery (RCA) with thrombosis at the site of coronary artery aneurysm. B: showing improvement in the flow in RCA after mechanical thrombectomy.

medications with anticoagulants should be considered if thrombosis/embolism is a concern, as noted in our case.⁴ Bleeding risk of the patient should be taken into consideration before combining dual antiplatelet therapy (DAPT) and anticoagulation. As shown in the PIONEER AF-PCI trial, rivaroxaban has been shown to have less bleeding risk than vitamin K antagonist when used in combination with DAPT. Inflammatory cytokines and matrix metalloproteinase have been linked to CAA; therefore, statins have been hypothesised to play an essential role in management.⁵ Intravenous immunoglobulin is the mainstay of therapy for Kawasaki disease associated CAA. Invasive management involves percutaneous intervention which includes covered stents, coil insertion but is usually reserved for smaller aneurysms. Surgical techniques which include aneurysmal resection, aneurysmal ligation, aneurysmectomy with or without bypass grafting are reserved for saccular aneurysms or larger aneurysms (>10 mm) which are at increased risk for rupture.⁶

Learning points

- ▶ Atherosclerosis can cause multi-vessel coronary artery aneurysms. Right coronary artery is predominantly affected in 40%–70% cases.
- ▶ There is lack of consensus regarding the optimal management of coronary artery aneurysm. Guideline-directed medical therapy is preferred.
- ▶ Dual antiplatelet therapy with anticoagulation should be considered if thrombosis/embolism is a concern as noted in our case.

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Figure 1 ECG showing ST elevations in the leads II, III and aVF.

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