Plaque disruption during transcatheter aortic valve replacement

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A 91-year-old man with a history of hypertension, hyperlipidaemia, coronary artery disease, and atrial fibrillation on chronic anticoagulation therapy presented with symptomatic aortic valve stenosis. The patient underwent a transcatheter aortic valve replacement (TAVR) using an 18-French delivery catheter. A live 3D transoesophageal echocardiogram (TOE) obtained during the procedure revealed an atherosclerotic plaque in the descending aorta which was disrupted during advancement of the catheter (Panels A and B, arrow pointing to atherosclerotic plaque, Supplementary material online, Video 1). In spite of these findings, the patient developed neither adverse clinical consequences nor evidence of any systemic emboli.

Cholesterol embolization is caused by the release of cholesterol crystals from ulcerated vascular plaques. The dislodgment of plaques may be spontaneous, medication-induced or following vascular endothelial trauma due to surgical or percutaneous procedures. Cholesterol crystals obstruct the vessel and induce an inflammatory process ultimately leading to fibrosis. Emboli can appear all over the body and cause a variety of symptoms including skin lesions, visual impairment due to retinal emboli, transient ischaemic attacks and stroke, gastric and small bowel bleeding, and renal deterioration. Large retrospective studies of patients undergoing intravascular procedures have reported a 0.6–0.9% incidence. Risk factors for cholesterol embolization syndrome include advanced age, multiple vascular procedures, hypertension, smoking, female gender, elevated C-reactive protein levels, and atherosclerotic disease. This is the first case to demonstrate in vivo plaque disruption during a transcatheter procedure. This case highlights the potential risk of performing TAVR in patients with atherosclerotic plaques. R.B. is a recipient of a fellowship grant from the American Physicians’ Fellowship for Medicine in Israel.

Supplementary data are available at European Heart Journal — Cardiovascular Imaging online.

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