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IMAGES IN CARDIOLOGY

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Blockage of bileaflet mitral valve prosthesis imaged by computed tomography virtual endoscopy

A 53-year-old man with a bileaflet mitral valve prosthesis and coronary artery bypass grafting presented with severe symptoms of heart failure. His ECG showed a common atrial flutter with 2:1 conduction and a heart rate of about 130 beats/min; there was no sign of acute myocardial ischaemia. Laboratory findings were also negative. A pharmacological conversion of the atrial flutter was unsuccessful, thus making electrical cardioversion necessary.

Both transthoracic (TTE) and transoesophageal echocardiography (TOE) were performed. TTE showed an elevated mean diastolic gradient (10 mm Hg) across the prosthesis. TOE confirmed the suspicion of prosthetic valve dysfunction showing a blockage of one leaflet. No thrombi were detected. A successful restoration of sinus rhythm by electrical cardioversion was achieved.

Because of the malfunctioning prosthesis the patient underwent valve replacement. In order to exclude progression of the coronary artery disease before reoperation, a fast computed tomographic (CT) scan (LightSpeed VCT scanner, GE Healthcare) was performed. Post-processing imaging showed in a three-dimensional format the prosthesis both from the left atrium and the left ventricle perspective, confirming the blockage of one leaflet (see panels A–D).

Virtual coronary angiography is a novel post-processing imaging modality of CT scans. This procedure makes the contrast material inside the coronary arteries appear transparent and the vessel wall grey or another colour (according to the attenuation control). At present, there is no other report of the use of this imaging modality in the diagnosis of prosthetic valve obstruction. In conclusion, post-processing imaging modality of fast CT scanning is a novel technique for imaging prosthetic obstruction.

Virtual endoscopy of a bileaflet valve. Panels A and B: view from left ventricle. Panels C and D: view from left atrium. The apparent rupture of the ring and one leaflet is due to motion-related artefact.

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