Massive mitral annular calcification: A stone in the heart

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Figure 1) Massive calcific deposits at the posterior annulus are seen. Some chordae tendinae appear to have ruptured and residual stumps are seen

An 82-year-old woman presented with hypertension (on treatment) and a three-month history of progressive shortness of breath. A transesophageal echocardiography showed severe mitral regurgitation with a centrally directed regurgitant jet, associated with severe mitral annular calcification (MAC). At surgery, the massive calcific deposits at the posterior annulus were removed (Figure 1), the annulus was reconstructed with bovine pericardium and the valve was replaced with a 27 mm Hancock II porcine valve (Medtronic Inc, USA). A left internal mammary artery was anastomosed to the left anterior descending artery. The postoperative course was uneventful, except for atrial fibrillation.

The excised mitral valve annulus and valve leaflet tissue weighed more than 22 g. The leaflets showed myxomatous change, and the calcific masses measured 0.2 cm × 0.9 cm × 0.2 cm to 3.1 cm × 1.7 cm × 1.6 cm (Figure 2). Some had adherent mitral leaflet tissue (mostly chordae tendinae). The large calcific fragment showed cardiac muscle, separated focally by a layer of fibrovascular tissue.

MAC is a 'degenerative' change that is usually inconsequential and is seen in approximately 10% of patients older than 50 years of age. MAC is believed to be accelerated by hypertension, diabetes mellitus or hyperlipidemia (1), and involves the annulus to varying degrees, extending into the adjoining myocardium or even into the papillary muscle (2). The annular lesion can lead to significant manifestations

Figure 2) A and B show the largest of the surgically excised calcific masses. Both show the deep surfaces and, clearly, there would be residual calcification (arrow). C The entire 22 g mass of surgically excised calcific tissue, some with a smooth endocardial surface. D Histological section showing the myocardium (bottom of picture) with overlying endocardial fibrosis and nodular calcification

such as mitral regurgitation (as in the present patient), mitral stenosis or a combination of the two. Massive annular calcification, as seen in the present case, has been reported to simulate an intracardiac tumour (3). Ulceration of the calcific masses through leaflet tissues can lead to thrombosis and infective endocarditis. The treatment is surgical excision with valve replacement (or repair, if possible) (4).

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