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Double-layered calcification with interspacial pericardial effusion in a patient with pericarditis constrictiva calcarea detected by multislice computed tomography

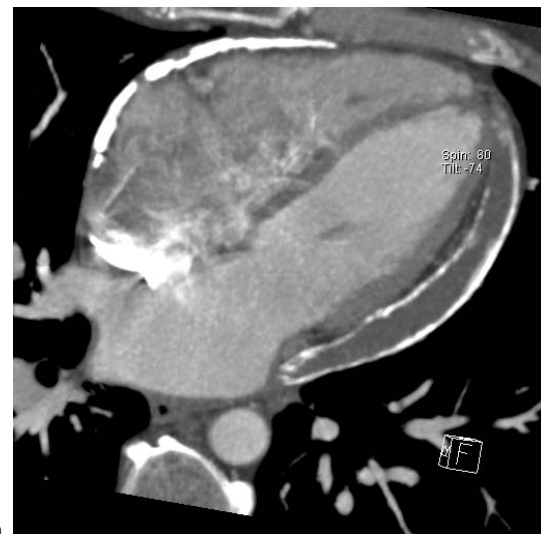
Sirs: Multislice computed tomography (MSCT; Sensation Cardiac, Siemens, Germany) was performed in a 50 year-old woman with suspected constrictive pericarditis in order to complete preoperative information and to allow for an optimal surgical approach. MSCT showed a double-layered calcification with interspacial pericardial effusion, a very rare finding in pericarditis constrictiva calcarea (Fig. 1 a). Hounsfield units between 30 and 50 were assessed in the area of the pericardial effusion, indicating a fibrinous fluid. Probably a former effusive-constrictive pericarditis has evolved to a pericarditis constrictiva calcarea (“armoured heart”).

Important additional information for the planning of pericardectomy was given by the three-dimensional reconstruction of the MSCT data set which demonstrated the exact calcification pattern (Fig. 1 b).

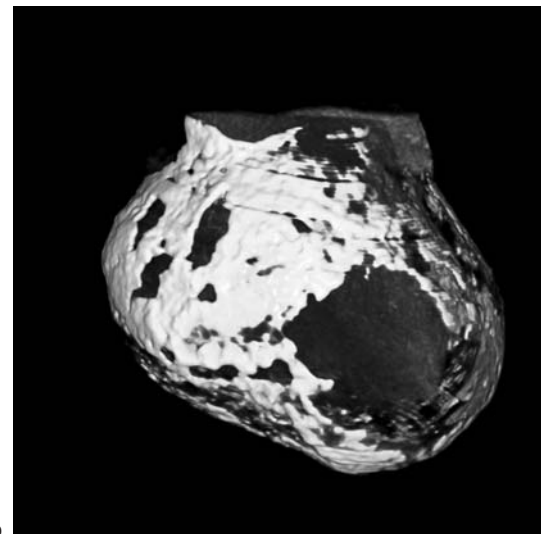
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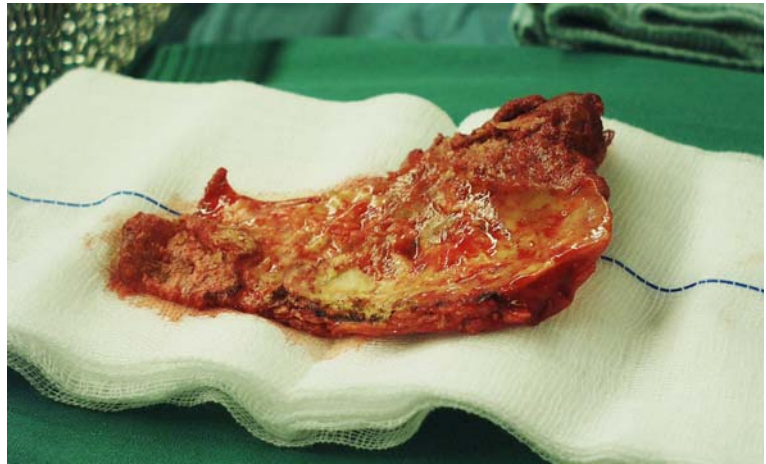


a



b

Fig. 1 a MSCT demonstrating the double-layered calcification encapsulating an extensive pericardial effusion. b Three dimensional MSCT-reconstruction of the calcified pericardial shell.

Fig. 1 c Calcified pericardium removed during pericardectomy

A subtotal pericardectomy was performed after longitudinal sternotomy under extracorporeal circulation. Removal of the calcifications (Fig. 1 c) was particularly difficult in the areas where the pericardial calcifications infiltrated the epicardium involving the marginal branch of the circumflex coronary artery. The pericardial effusion was described as serous fluid that was partly organised. Histology and further laboratory tests were without specific findings despite scared and calcified pericardium.

The postoperative course was uneventful, and a follow-up echocardiography 18 months postoperatively revealed a nearly normalised left ventricular function.

New diagnostic approaches like echocardiographic tissue doppler imaging (TDI), magnetic resonance imaging (MRI) and MSCT have been recently proposed for better differentiation of constrictive pericarditis (CP) and restrictive cardiomyopathy. TDI analy-

sis of the lateral mitral annulus motion with a cut-off value for $E' > 8$ cm/s annulus was suggested to differentiate patients with CP with a high sensitivity and specificity [1] and was included in the Guidelines on the Diagnosis and Management of Pericardial Diseases of the European Society of Cardiology [2]. MSCT and MRI, which provide additional information about thickening and calcification of the pericardium, pericardial effusion, and septal motion, should be part of the diagnostic work up [2, 3]. Different forms of CP diagnosed by computed tomography have been previously described and patients with a higher operative risk had been identified by their calcification pattern and the pattern of myocardial fibrosis and atrophy [3]. A MSCT-based 3-D-reconstruction of the calcified pericardial shells provides an excellent imaging of the calcification patterns, and therefore new insights in the understanding of the underlying condition and may facilitate surgical therapy [4].

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