Acute Aortic Regurgitation Due to Necrotizing Granulomatous Inflammation of the Aortic Valve in a Patient With Rheumatoid Arthritis

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A 62-year-old woman with severe rheumatoid arthritis was admitted to our hospital with a 1-month history of increasing breathlessness. She had undergone pericardectomy for pericardial constriction 2 years previously. The histology of pericardium showed chronic nonspecific inflammation.

On examination she was found to be in congestive cardiac failure with signs of aortic regurgitation. An echocardiogram showed severe aortic regurgitation with a dilated left ventricle with a diameter of 6.1 cm in diastole and 4.8 cm in systole. The ejection fraction by 2-dimensional Simpson analysis was 42% (Figure 1). Aortogram confirmed severe aortic regurgitation, and coronary angiography documented no significant coronary stenosis.

There was no evidence of infective endocarditis, and previous echocardiograms had not shown significant aortic valve disease.

The patient underwent tissue aortic valve implantation. The native aortic valve was excised. The valve leaflets were found to be edematous with localized collections of fluid (Figure 2). The appearances were consistent with acute inflammation. The annulus was also edematous.

The histology of the aortic valve tissue showed extensive areas of necrosis with mixed acute and chronic inflammatory cell infiltrates typical for rheumatoid nodules (Figure 3). Epithelioid histiocytes and scattered multinucleate giant cells were seen surrounding the necrotic areas (Figure 4). On Gram staining, no microorganisms were identified. Stains for fungi and acid-fast bacilli were also negative. The overall appearances were of a destructive necrotizing granulomatous reaction in the aortic valve, in keeping with rheumatoid nodules.

This case highlights that granulomatous inflammation of the aortic valve can cause acute aortic regurgitation in patients with rheumatoid arthritis.

Disclosures
None.

Figure 1. Transthoracic echocardiogram showing a broad jet of severe aortic regurgitation occupying most of the left ventricular outflow tract.
Figure 2. Macroscopic appearance of the excised aortic valve leaflets showing thickened edematous leaflets with areas of fluid collection.

Figure 3. Histology of the aortic valve under hematoxylin and eosin staining showing a rheumatoid granuloma (magnification ×40).

Figure 4. Histology of the aortic valve tissue under hematoxylin and eosin staining showing granulomatous inflammation with central necrosis, surrounded by palisading histiocytes and occasional multinucleated giant cells (magnification ×100).
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