

# CARDIOVASCULAR IMAGES

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## Cardiac Sarcoidosis Imitating Arrhythmogenic Right Ventricular Dysplasia

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### Clinical History

A 59-year old man was admitted to Massachusetts General Hospital with a two month history of progressive exertional dyspnea. He had not experienced dyspnea at rest, nor any chest pain, palpitations, diaphoresis, paroxysmal nocturnal dyspnea, orthopnea, pre-syncope or syncope. An outpatient echocardiogram (Figure 1) was notable for focal right ventricular (RV) aneurysms, suggestive of right ventricular dysplasia after detection of focal RV aneurysms. Upon admission to hospital, the patient's electrocardiogram showed normal sinus rhythm and Mobitz type II 2nd degree AV block with 2:1 conduction and a heart rate of 45 bpm. There was no evidence of myocardial infarction.

(Figure 2) Cardiac MRI confirmed the presence of the RV aneurysms and segmental hypokinesia, with delayed hyperenhancement in the right and left ventricular myocardium, including involvement of the RV border of the interventricular septum (atypical finding for arrhythmogenic right ventricular dysplasia), and prominent mediastinal lymphadenopathy; suggestive of cardiac sarcoidosis.

PET scanning was performed (Figure 3) to evaluate the extent of active disease, and a subsequent MRI directed endomyocardial biopsy (Figure 4) revealed histology consistent with cardiac sarcoidosis.

The patient was started on steroid therapy and 12 days following initiation of therapy, his heart rate reverted back to normal sinus rhythm with a subsequent interval improvement of his symptoms.

### REFERENCES

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3. Okumura WO, et al. *J. Nuc Med.* 2004;45:1989-1998



Figure 1

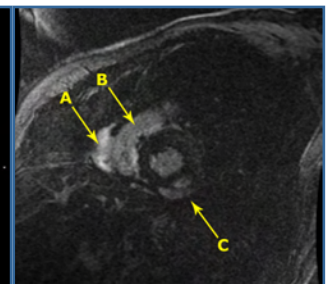


Figure 2

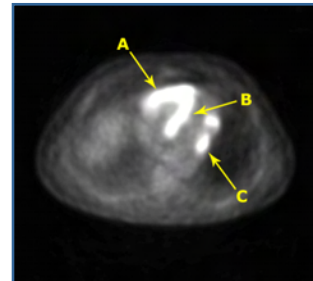


Figure 3

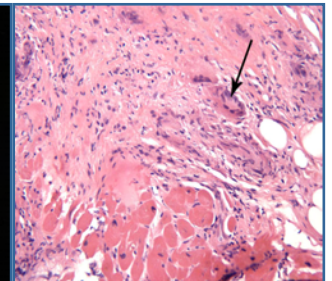


Figure 4

**Figure 1.** Echocardiogram shows mild diffuse right ventricular (RV) hypokinesia and evidence of segmental RV dysfunction in two discrete aneurysmal areas in the RV free wall measuring 1.5 and 3.0 cm in width. Both areas appeared thinned and dyskinetic.

**Figure 2.** Dynamic contrast cardiac MRI shows delayed hyper-enhancement of the basal portion of the RV free wall (A), the mid-ventricular septum (B), and the subepicardial portion of the basal and apical posteriolateral walls of the left ventricle (LV) (C).

**Figure 3.** PET images show intense uptake in the RV (A), ventricular septum (B), and patchy uptake in the basal posteriolateral LV wall (C), and prominent uptake in multiple thoracic lymph node groups.

**Figure 4.** Endomyocardial biopsy shows extensive fibrosis with giant cells, compact non-caseating granulomas, and accompanying lymphocytic infiltrate, consistent with cardiac sarcoidosis.

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