

Title: New onset heart failure–Free-breathing MOCO LGE rescues the EMF diagnosis

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Description of Clinical Presentation

An 82-year-old female with a past medical history of allergic bronchopulmonary aspergillosis was admitted with supraventricular tachycardia and new onset acute heart failure. Inpatient cardiovascular magnetic resonance (CMR) was organized to investigate heart failure.

Diagnostic Techniques and Their Most Important Findings

Electrocardiography showed no ischemic changes. Troponin was negative but N-terminal pro-brain natriuretic peptide was elevated to twice the normal value. Complete blood count revealed eosinophilia and she was hypoalbuminaemic on serum biochemistry. Bilateral pleural effusions were seen on chest X-ray. Transthoracic echocardiography (TTE) showed an abnormal left ventricular (LV) diastolic filling pattern, mild hypertrophy, an ejection fraction of >55% and normal pericardial appearance. A diagnostic angiogram showed unobstructed coronaries. Up until this point, the aetiology of her heart failure remained elusive. CMR showed preserved biventricular size, good systolic function and nondilated atria. There was LV apical hypertrophy but no regional wall motional abnormalities.

The patient was sick and breathless on table so cines misgated (**Figure 1, top**) and native T1 and T2 mapping were not pursued. We went on to scar imaging directly instead, and used a free-breathing motion corrected late gadolinium enhancement (FB MOCO LGE) sequence.

LGE image quality was excellent - we observed diffuse and striking subendocardial fibrosis (**Figure 1, bottom, red arrowheads**) involving the LV circumferentially, but especially from mid to apex and laterally. Right ventricular free wall subendocardial LGE was also noted.

Learning Points from this Case

This lady had endomyocardial fibrosis (EMF)—a nearly missed diagnosis had it not been for CMR FB MOCO LGE.

EMF closely resembles late stage Loeffler’s endocarditis (LE) with eosinophilia being the unifying feature in both. However, hypoalbuminemia (see in our patient) is specific to EMF [1]. Distinguishing between the two can be challenging but is important, as management and prognosis differs. Here the abnormal diastology by TTE, apical hypertrophy, absence of myocarditis-type (subepicardial) scar on LGE imaging, and the striking subendocardial fibrosis, all favored a diagnosis of EMF over LE.

In EMF, LGE CMR findings are usually so definitive [2,3] that they preclude the need for biopsy. As these patients are often sick and breathless, access to a state-of-the-art FB MOCO LGE sequence meant this rare cause for heart failure was not missed.

References:

- 1) Weller PF et al. Blood 1994; 83:2759
- 2) Bukhman G et al. PLoS Negl Trop Dis. 2008
- 3) Caudron J et al. Diagn Interv Imag. 2012

