

Fat Deposition in the Myocardium of the Left Ventricle

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ABSTRACT

We present a case of post-myocardial infarction fat deposition of the left ventricle in a 68-year-old-man. Fat deposition and myocardial infarction are demonstrated using pre- and post-contrast magnetic resonance.

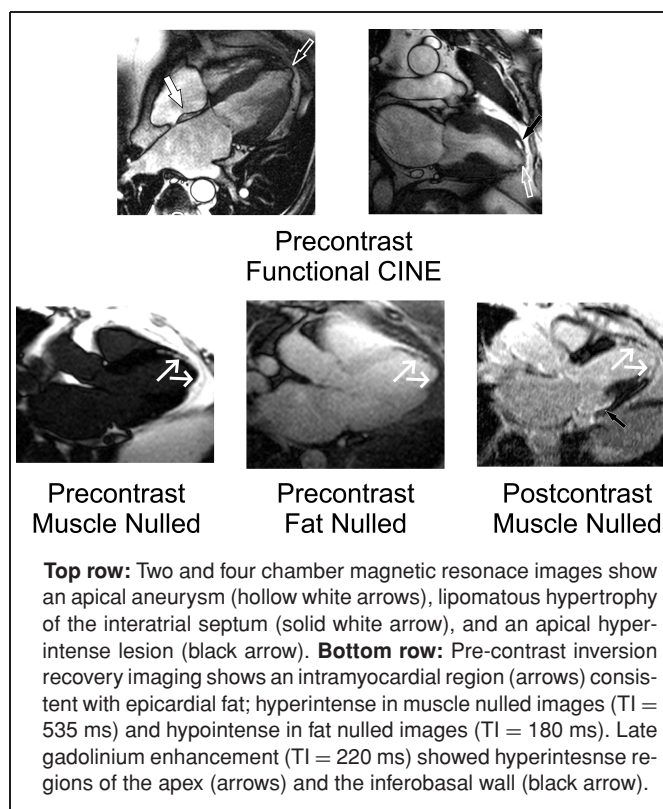
CASE REPORT

A 68-year-old man voluntarily participated in a cardiovascular magnetic resonance study to assess the gadolinium pharmacokinetics of chronic myocardial infarcts. During preliminary functional CINE imaging, an apical region of high signal intensity with extensive hypokinesis and akinesis was immediately noted. Additional precontrast inversion recovery imaging showed that this region had the same characteristics as epicardial fat and was located in the epicardium and across the thinned myocardium of the apex. Precontrast images were obtained before connection of the intravenous line to cardiovascular magnetic resonance (CMR) compatible power injector syringe containing the gadolinium contrast material. In late gadolinium enhancement infarction images, a hyperintense region (presumably a mixture of fat and necrosis) was present in the same location, as well as, in an inferobasal region.

Seven years prior, the patient presented with a history of hypertension and retrosternal chest discomfort. The EKG demonstrated an anterior infarction with ST segment elevation and peak CK was 3138 U/l. Cardiac catheterization demonstrated inferoapical hypokinesis and subtotal occlusion of the LAD with extensive thrombosis. ReoPro was administered and balloon angioplasty of the mid-LAD was performed with good results. Three years later, a second cardiac catheterization was performed due to increasing angina pectoris and showed severe multi-vessel disease. A triple coronary artery bypass was

then performed with good results. Exercise SPECT imaging performed one year prior to CMR imaging revealed a large size, fixed inferior and inferoapical defect of severe intensity consistent with infarction.

In a recent issue of the *Journal of Cardiovascular Magnetic Resonance* (1), a case report was entitled and showed “Unusual Fatty Infiltration of the Basal Left Ventricle.” The patient did not have a history of myocardial infarction and coronary angiography demonstrated normal coronary arteries. The authors stated: “The presence of a layer of intramyocardial fat has not previously been reported.” Older pathologic literature (2, 3) makes



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no reference to fat deposition in infarction, but an autopsy study (4) reports that mature adipose tissue was often found within LV myocardial segments having infarction. A second autopsy study (5) histologically confirmed the high prevalence (84%) of adipose tissue in healed myocardial infarcts. In addition to these studies, several case reports and published images reporting non-invasive imaging of myocardial fat with magnetic resonance and computed tomography are available in the literature (6–8). In contrast to Heatlie et al. (1), these reports do not show intramural myocardial fat. With CMR, we have recently shown an association between fat deposition and myocardial infarction (9–10). In the future, imaging technique optimization and associations with clinically relevant situations are needed to determine the significance of LV fatty deposition. In conclusion, precontrast CMR imaging provides a unique imaging modality for the identification of myocardial fatty deposition due to its soft tissue contrast generating ability.

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