Imaging modalities echocardiography and cardiac magnetic resonance in diagnostics of acute myocarditis

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The most common echocardiographic patterns of acute myocarditis are dilated and hypertrophic cardiomyopathy. Segmental wall motion abnormalities (hypokinesia, akinesia, and dyskinesia) that can simulate acute myocardial infarction are quite common. The LV is typically normal-sized or mildly dilated in patients with acute heart failure. In early stages, focal inflammation leads to local cell necrosis and tissue edema, often before global LV dilatation or dysfunction are evident. Increased sphericity and LV volume occur in acute, active myocarditis. Echocardiography is useful for detecting LV thrombus and pericardial effusion. Transient increases in LV wall thickness have been reported. Right ventricular function is an independent predictor of death or cardiac transplantation in acute myocarditis.

During the recent decade Cardiovascular Magnetic Resonance has become the diagnostic tool of choice in tertiary care centers for patients with evidence for acute nonischemic myocardial injury. Suspected myocarditis is one of the most frequent indications for CMR scans and, in Europe, represents about one third of CMR referrals. CMR allows for targeting several features of myocarditis inflammatory hyperemia and edema, necrosis/scar, contractile dysfunction, and accompanying pericadial effusion. Although systolic dysfunction is not always present and also is not specific to inflammatory causes, knowledge about left ventricular and right ventricular function is important for clinical decision making CMR is the only imaging modality that allows for assessing myocardial edema, a feature of inflammation. Studies of edema-sensitive CMR protocols during the course of myocarditis have confirmed that edema imaging is mostly useful in clinically acute settings, during the first 7–14 days of the disease. The extent of myocardial edema may be less in patients with chronic mild myocarditis.

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