

Poster presentation

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Lipomatous metaplasia in patients with myocardial infarction: evaluation with cardiac magnetic resonance

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Introduction

There has been few report on myocardial fat in MI using traditional MR techniques discriminating fat (i.e, T1WI with and without fat suppression), which probably attributes to reduced ability to characterize myocardial fat due to poor contrast of microscopic fat and partial-volume effects. Therefore somewhat sophisticated means such as multiecho Dixon method and IR-SSFP sequence were recently introduced to increase sensitivity of fat detection. We hypothesized that myocardial fat can be readily identified on cine imaging among generally used CMR sequences in which cancellation artifact occurs in borders of fat and water.

Purpose

The purpose of our study was (1) to determine the utility of fat-water cancellation artifact (India ink artifact) on cine MRI to detect myocardial fat, compared to T1-weighted imaging (T1WI) with and without fat saturation, and (2) to assess clinical correlates of lipomatous mataplasia in patients with myocardial infarction.

Methods

Thirty-nine MI patients who underwent both cardiac CT and MRI (SSFP cine, T1 weighted, and delayed enhancement) within one month were retrospectively evaluated. The presence of myocardial fat was concluded when intramyocardial focal low attenuation can be detected in both non-enhanced and enhanced CT. India ink artifact within infarcted region on cine imaging and high signal

area which was suppressed with fat saturation on T1WI was considered to represent myocardial fat. The diagnostic accuracies of cine imaging and T1WI were compared. We also compared the clinical parameters of the patients with and those without myocardial fat.

Results

Patients were divided into two groups; MI patients with myocardial fat (n = 22) and those without fat (n = 17) according to CT results. All patients with myocardial fat showed India ink artifact within the infarcted myocardium on cine imaging (sensitivity 100% and specificity 100%), while sensitivity of T1 weighted imaging was relatively low (sensitivity 71.4%, specificity 100%). Myocardial fat was more frequently associated with a greater infarct age (p = 0.0313), more severe regional wall motion abnormalities (p = 0.0283), and larger transmural extent (p = 0.0025). Patients with myocardial fat had fewer number of diseased vessels (p = 0.0186). Age, sex, incidence of dyslipidemia, DM, and hypertension were not significantly different between the two groups.

Conclusion

The presence of India ink artifact within the infarcted myocardium on cine MRI is indicative of myocardial fat in MI. Lipomatous metaplasia in MI patients is more frequently associated with greater infarct age, larger transmural extent, more severe regional wall motion abnormalities, and fewer number of diseased vessels.