Journal of Cardiovascular Magnetic Resonance

Poster presentation

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Tissue characteristics of Microvascular obstruction

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from 13th Annual SCMR Scientific Sessions
Phoenix, AZ, USA. 21-24 January 2010

Published: 21 January 2010

Journal of Cardiovascular Magnetic Resonance 2010, **12**(Suppl 1):P152 doi:10.1186/1532-429X-12-S1-P152

This abstract is available from: http://jcmr-online.com/content/12/S1/P152

Introduction

The mechanism of MO induction was discussed related to hemorrhage as result of reperfusion injury with reperfusion therapy, but the tissue characteristics of MO is not clear enough.

Purpose

The purpose of this study was to evaluate the tissue characteristics of MO by comparing LGE image and T2* image taken at acute phase of the patients with acute myocardial infarction.

Method

One hundred and fifteen AMI patients with successfully treated by reperfusion therapy within 17.3 ± 40.1 hours from onset was examined.

Within 5.2 ± 2.6 days after reperfusion therapy, LGE image was taken at basal, midventricle and apical short axis view. Especially in 65 patients, T2*image was also taken.

The occupation ratio of MO to cross section of left ventricle at each short axis view of LGE image and T2* image were calculated, and 1) the frequency of MO, 2)the relationship between MO and infarct size, CAG findings and regional wall motion in 6 month later from 1st CMR were examined.

Results

1) The infarct area showed LGE-positive in all cases, and MO was recognized in 63 cases of all 115 cases (54.8%). In all of MO-recognized cases with LGE image, MO was also recognized with T2* image showing low signal intensity.

2) The occupation ratio of MO to cross section of LV short axis in LGE image showed a significant highly correlation with the ratio in T2* image(5.8%,6.2%, r = 0.95) (Figure 1).

3) The circumferential and transmural extension of infarct area was bigger in MO-positive cases than negative cases significantly ($p < 1.0 \times 10^{-13}$)

4) The values of peak CK were significantly bigger in MO-positive cases than negative cases ($p < 1.0 \times 10^{-11}$), also the points of Blush Grade were lower in MO-positive cases than negative cases ($p < 1.0 \times 10^{-4}$).

5) The frequency of heart failure in hospital was significantly high in MO-positive cases than negative cases (p = 0.026).

6) Regional wall motion (% wall thickening) in infarct area did not improved significantly in MO-positive cases than negative cases($p < 0.05$).

Conclusion

MO was recognized with LGE-MRI in 54% patients with acute myocardial infarction treated with reperfusion therapy successfully. The size of MO evaluated with LGE images showed a significant high correlation with the size of MO evaluated with T2* image. The area of MO show-

ing low signal intensity with T2*images was thought as hemorrhage into the infarct zone as result of reperfusion injury with reperfusion therapy.