

Meeting abstract

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1023 Correlation of chronic left ventricular infarct size assessed with 0.2 mmol/kg of gadopentetate dimeglumine (Gd-DTPA) and 0.1 mmol/kg gadobenate dimeglumine (Gd-BOPTA)

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Introduction

Gadobenate dimeglumine (Gd-BOPTA) is a relatively new paramagnetic contrast agent that produces two-fold higher T1 relaxivity compared with gadopentetate dimeglumine (Gd-DTPA). Importantly however, it is not known whether Gd-BOPTA is efficacious for identifying chronically infarcted tissue in subjects with ischemic cardiovascular disease.

Purpose

To determine the association between myocardial infarct size identified with delayed enhancement imaging using lower dose (0.1 mmol/kg) of Gd-BOPTA versus standard dose 0.2 mmol/kg of Gd-DTPA.

Methods

Twenty participants (16 men, 4 women) aged 58 ± 12 years who sustained chronic myocardial infarction (MI) were enrolled and provided written informed consent. Using a double-blind, cross-over design, each participant underwent delayed enhancement images of the left ventricle 10 minutes after the intravenous administration of contrast on 2 separate occasions separated by 3 to 7 days. During one exam, participants received 0.2 mmol/kg of Gd-DTPA, and on the other, they received 0.1 mmol/kg of Gd-BOPTA. Voxels displaying delayed enhancement (DE) were identified as having an intensity of > 2 standard deviations

above those voxels in non-infarct myocardium. Paired Student's t-tests and McNemar's tests were performed to determine the differences of infarct size, signal intensities (SIs), and transmural extent of infarct tissue. Cohan's kappa statistic was used to measure degree of agreement between two contrast agents for the location of infarcts.

Results

A total of 320 myocardial segments were analyzed. The mean \pm standard deviation of Infarct size was 31.7 ± 21 (range 0 to 88.7) ml. The correlations and inter-contrast reliabilities of infarct size in ml were high (0.91 and 0.91), respectively. The contrast-to-noise ratio (CNR) of the infarcted and normal myocardium ($p = 0.25$), and signal-to-noise ratio (SNR) of infarcted myocardium ($p = 0.23$) were similar in both contrast agents. There was no significant difference between the 2 contrast agents in the number ($p = 0.4$) and location ($k = 0.6-1$) of myocardial segments displaying DE, as well as the number of segments identifying $> 50\%$ or $< 50\%$ transmural DE ($p = 0.9$).

Conclusion

In the setting of chronic myocardial infarction, delayed enhancement identified with a single 0.1 mmol/kg dose of Gd-BOPTA is associated in size, SIs, location, and sever-

ity to DE identified after a double 0.2 mmol/kg dose of Gd-DTPA.

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