atherothrombosis. These findings suggest that MRI may be used as a ideal non-invasive modality for detection of vulnerable plaques.

RABBIT ATHEROSCLEROTIC VULNERABLE PLAQUES FEATURES OF MRI: AN EXPERIMENTAL STUDY

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Objective To investigate the difference between the vulnerable plaques and stable plaques in MR images.

Methods Atherosclerosis was induced in twenty male New Zealand White rabbits by high cholesterol diet and balloon injury of the abdominal aorta. After baseline (pre-trigger) MRI scan, the rabbits underwent two pharmacological triggering with Russell's viper venom and histamine to induce atherothrombosis, followed by another MRI 48 h later (post-triggering). Rabbits were euthanised before gross anatomy and histological specimen of aorta were obtained. The results of MRI, histopathological data were compared.

Results MR showed that abdominal aorta of the rabbits had pathological change of atherosclerosis in different degrees. 75 plaques were analysed, 14 (18.67%) had thrombi (vulnerable) and 61 did not (stable) (81.33%). Thrombosis was identified in 7 of 11 rabbits by post-trigger MRI, the sensitivity and K value of MR for vulnerable plaque detection was 71.43% and 0.803 (p<0.05). MR data significantly correlated with the histopathological data in fibrotic cap thickness (r=0.749 p<0.05), plaque area (r=0.853 p<0.05), lipid core area (r=0.9 p<0.05). Compared with stable plaques, vulnerable plaques had a thin fibrotic cap (0.58±0.27 vs 0.95±0.22 mm; p<0.05), larger lipid core area (7.56±2.78 vs 3.29±1.75 mm2; p<0.05), and a higher ratio of lipid core area/plaque area (54.62±16.29 vs 27.26±16.60; p<0.05). In particular, the ratio of lipid core area/plaque area was a strong predictor of vulnerable plaques.

Conclusions Our research shows that MR can distinguish vulnerable plaques from stable plaques in an animal model of