

学位論文審査結果の要旨

所 属	甲 三重大学大学院医学系研究科 生命医科学専攻 病態制御医学講座 非侵襲診断治療学分野	氏 名	加藤 真吾
審 査 委 員	主 査 白石 泰三 副 査 田中 利男 副 査 鈴木 秀謙		
<p>(学位論文審査結果の要旨)</p> <p>Detection of diminished response to cold pressor test in smokers: Assessment using phase-contrast cine magnetic resonance imaging of the coronary sinus.</p> <p>(主論文審査結果の要旨)</p> <p>著者らは論文において下記の内容を述べている。</p> <p>PURPOSE:</p> <p>The purposes of this study were to evaluate the reproducibility for measuring the cold pressor test (CPT)-induced myocardial blood flow (MBF) alteration using phase-contrast (PC) cine MRI, and to determine if this approach could detect altered MBF response to CPT in smokers.</p> <p>MATERIALS AND METHODS:</p> <p>After obtaining informed consent, ten healthy male non-smokers (mean age: 28±5 years) and ten age-matched male smokers (smoking duration ≥5 years, mean age: 28±3 years) were examined in this institutional review board approved study. Breath-hold PC cine MR images of the coronary sinus were obtained with a 3T MR imager with 32 channel coils at rest and during a CPT performed after immersing one foot in ice water. MBF was calculated as coronary sinus flow divided by the left ventricular (LV) mass which was given as a total LV myocardial volume measured on cine MRI multiplied by the specific gravity (1.05 g/mL).</p> <p>RESULTS:</p> <p>In non-smokers, MBF was 0.86±0.25 mL/min/g at rest, with a significant increase to 1.20±0.36 mL/min/g seen during CPT (percentage change of MBF (ΔMBF (%)); 39.2%±14.4%, p<0.001). Inter-study reproducibility for ΔMBF (%) measurements</p>			

by different MR technologist was good, as indicated by the intraclass correlation coefficient of 0.93 and reproducibility coefficient of 10.5%. There was no significant difference between smokers and non-smokers for resting MBF (0.85 ± 0.32 mL/min/g, $p=0.91$). However, Δ MBF (%) in smokers was significantly reduced ($-4.0 \pm 32.2\%$ vs. $39.2 \pm 14.4\%$, $p=0.011$).

CONCLUSION:

PC cine MRI can be used to reproducibly quantify MBF response to CPT and to detect impaired flow response in smokers. This MR approach may be useful for monitoring the sequential change of coronary blood flow in various potentially pathologic conditions and for investigating its relationship with cardiovascular risk.

本論文は、磁場強度の高い3テスラ磁気共鳴装置を用いると、寒冷負荷試験による心筋血流の変化を高い再現性をもって評価可能であり、喫煙者における寒冷負荷試験に対する心筋血流の反応性の低下を従来の方法よりも高い精度で検出可能である事を示した論文である。学術上極めて有益であり、学位論文として価値あるものと認めた。

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著者名

Shingo Kato, Kakuya Kitagawa, Yeonyee E. Yoon, Hiroshi Nakajima, Motonori Nagata, Shinichi Takase, Shiro Nakamori, Masaaki Ito, Hajime Sakuma

