

学位論文の要約

三重大学

所属	甲 三重大学大学院医学系研究科 生命医科学専攻 臨床医学系講座 神経病態内科学分野	氏名	加藤奈津子 <small>かとう なつこ</small>
主論文の題名			
Brain magnetic resonance imaging and cognitive alterations after ablation in patients with atrial fibrillation			
(心房細動カテーテルアブレーション後の脳画像所見と認知機能の変化)			
Natsuko Kato, Kanako Muraga, Yoshinori Hirata, Akihiro Shindo, Keita Matsuura, Yuichiro Ii, Mariko Shiga, Ken-ichi Tabei, Masayuki Satoh, Satoshi Fujita, Tomoyuki Fukuma, Yoshihiko Kagawa, Eitaro Fujii, Maki Umino, Masayuki Maeda, Hajime Sakuma, Masaaki Ito, Hidekazu Tomimoto			
主論文の要約			
Introduction			
<p>Atrial fibrillation (AF) is associated with an increased risk of dementia even in patients without a history of stroke. Several mechanisms have been proposed to explain the association between cognitive impairment and AF, including microembolism, cerebral microbleeds (MBs), chronic cerebral hypoperfusion and brain atrophy. Catheter ablation is an important non-pharmacological intervention for AF, but its effect on the incidence of asymptomatic cerebral emboli and long-term effects on cognitive function remain unknown.</p>			
Objectives			
<p>We aimed to evaluate whether catheter ablation has a protective effect on cognitive function by evaluating the incidence of cerebral microembolism as well as the neuropsychological outcome after catheter ablation in patients with AF.</p>			
Methods			
<p>We prospectively enrolled 101 patients who underwent AF ablation. Brain magnetic resonance imaging (MRI) (72 patients) and neuropsychological assessments (66 patients) were performed 1–3 days (baseline) and 6 months after ablation. Cardiac function was assessed by</p>			

measuring ejection fraction (EF), left atrial volume index (LAVI) and brain natriuretic peptide (BNP) before ablation and at 3-6 months after ablation.

Results

Immediately after ablation, diffusion-weighted MRI and 3-dimensional double inversion recovery (3D-DIR) detected embolic microinfarctions in 63 patients (87.5%) and 62 patients (86.1%), respectively. Most lesions were located in cerebral cortex. After 6 months, DIR lesions disappeared in 41 patients. Microbleeds (MBs) increased by 17%, and 65% of the de novo MBs were exactly at the same location as the microinfarctions. Average Mini-Mental State Examination scores improved from 27.9 ± 2.4 to 28.5 ± 1.7 ($p = 0.037$), and detailed neuropsychological assessment scores showed improvement in memory, constructional, and frontal lobe functions. EF, LAVI and BNP level improved from baseline to 3-6 months after ablation. Positive correlation was observed between the improvement of several neuropsychological scores and the improvement of cardiac function.

Consideration

Our study indicated that ablation has beneficial effects on overall neuropsychological scores despite the incidental embolic microinfarctions. Catheter ablation may suppress the chronic incidence of microembolism in AF, which may have a beneficial effect on cognitive dysfunction. However, because small vessel diseases, including CMI, usually contribute to frontal lobe dysfunction, this possibility could not explain the improvement of neuropsychological scores encompassing overall cognitive domains in the present study. This result may indicate that improvement of cardiac output and subsequent CBF might have led to the recovery of neuropsychological scores in patients with AF.

Conclusion

Despite incidental microemboli, cognitive function was preserved 6 months after ablation.