1. **No.**

   FP01912060

2. **Title**

   Age-dependent Evaluation of Deterioration of Cerebral Arteriolar Vasomotorfunction due to Smoking: Application of New MRI Evaluation Technique

3. **Period**

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4. **Summary**

In this study, we applied our proposed noninvasive method utilizing MRI to investigate the deterioration of cerebral arteriolar vasomotor function due to smoking in difference age groups. Firstly, the method was improved by removing the influence to MR signal due to other physiological process such as cardiac pulsation. And the improved method was applied to smokers and nonsmokers both at 20s showing a degeneration of cerebral arteriolar vasomotor function due to chronic smoking habits even in several years. Then this method was applied to smokers and nonsmokers both at 40s. The cerebral arteriolar vasomotor function of 40s nonsmoker was higher than of 20s smoker and almost the same as the 20s nonsmoker showing that cerebral arteriolar vasomotor function does not significantly deteriorate due to aging from 20s to 40s. The data of almost 40s smokers were ascribed to the violation of the experimental condition and has been excluded. This phenomenon may induced by head motion during the MRI scan or variation in blood flow of the sinus inside the scan slice. The motion correction and MRI signal compensation of blood flow are in expected in further study. Besides those data, a comparable value of cerebral arteriolar vasomotor function as nonsmokers was obtained after smoking for a 40s smoker who had 1 year smoking cessation and is using electronic cigarette. This result may indicate that degeneration of cerebral arteriolar vasomotor function might be moderated due to smoking cessation or usage of electronic cigarette.