1. **No.**

   FP01803047

2. **Title**

   Relationship between smoking and plaque imaging using NaF PET and FDG PET in carotid artery

3. **Period**

   2017-2019

4. **Summary**

   Throughout the study period, we used molecular imaging with positron emission tomography (PET) to evaluate the accumulation of fluorodeoxyglucose (FDG) and fluoride sodium (NaF) in carotid plaque and to compare the FDG and NaF uptake and various known risk factors of atherosclerosis, including smoking.

   FDG and NaF PET images showed higher accumulation in patients with atherosclerosis and atherosclerosis risk factors than in healthy controls. These findings supported that FDG and NaF PET could be utilized to detect vulnerable and atherosclerotic plaques, as in previous reports. In our study, A significant correlation was observed between NaF uptake on PET and calcification on CT. Furthermore, high NaF uptake was seen in patients with severe ischemic changes in cerebral hemispheres. Both results indicated that NaF uptake may reflected the chronic changes in carotid atherosclerotic plaque. On the other hand, FDG uptake was not associated with calcification on CT and ischemic changes on MRI and may be related to acute phase of plaque formation. FDG uptake in non-smoker was significantly lower than in ex-smoker and current smoker. Smoking may affect the plaque formation and increasing inflammation in plaque. Our preliminary results indicated that current smoking may not only indirectly but also directly increase the risk of stroke.