Abstract: **P4389**

**Effect of cigarette smoking on carotid artery atherosclerosis: a community-based cohort study**

**Authors:**
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**Topic(s):**
Tobacco

**Citation:**

Background:
Cigarette smoking is closely associated with the development of cardiovascular diseases (CVD), and the European Society of Cardiology/European Atherosclerosis Society (ESC/EAS) guidelines recommend smoking bans. On the other hand, the relationship between cigarette smoking and subclinical atherosclerosis has not been fully studied. Carotid intima-media thickness (cIMT) is commonly used as a subclinical atherosclerosis marker, and a carotid plaque feature is also known to be an important predictor of cardiovascular diseases.

Purpose:
We sought to clarify the association between cigarette smoking and subclinical atherosclerosis by evaluating carotid plaque including cIMT and carotid plaque features in general population.

Methods and Results:
Among 1,209 participants with no prior coronary artery disease who received a medical check-up with cardiovascular examination at our institution, 450 participants (37.2 %) were smokers (including both past and current smokers). We defined carotid plaque as cIMT = 1.1 mm and high-risk plaque as carotid plaque with hypoechoic dominant and/or plaque ulceration. The value of cIMT and the rate of carotid plaque were not different between smokers and never smokers (Figure A&B). However, the rate of carotid high-risk plaque was significantly higher in participants with smokers than those with never smokers (29.7 %, vs 23.5 %, p=0.011) (Figure C). Even after adjustment with covariates including age, gender and traditional cardiovascular risk factors, cigarette smoking was independently associated with high-risk plaque formation (odds ratio 1.384, 95% CI 1.020-1.877; p= 0.037). According to the subgroup analysis classified by age, cigarette smoking was associated with not only the development of high-risk plaque but also the increased value of cIMT in the subgroup over 60 years old, whereas only the rate of high-risk plaque was higher in smokers than never smokers in the subgroup under 60 years old.

Conclusion:

The development of high-risk carotid artery plaque may precede thickening of cIMT in cigarette smokers, suggesting that the novel insight for the pathological mechanism underlying cardiovascular events and cigarette smoking.
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Figure. Evaluation of Carotid Plaque between Never Smoker and Smoker

(A) Value of cIMT
(B) Prevalence of Carotid Plaque
(C) Prevalence of High-risk Plaque

P=0.356
P=0.827
P=0.011

High Risk Plaque: Low Attenuated Plaque = Ulcer