

## 4-①-1.

**Increased plasma levels of myosin heavy chain 11 is associated with atherosclerosis**

(社会人大学院博士課程2年東京医科大学病院 循環器内科、東京医科大学 細胞生理学)

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Extensive studies have revealed numerous potential biomarkers for atherosclerosis, but tissue-specific biomarkers are still needed. Recent lineage-tracing studies revealed that smooth muscle cells (SMCs) contribute substantially to plaque formation and the loss of SMCs causes plaque vulnerability. We investigated the association of SMC-specific myosin heavy chain 11 (myosin-11) with atherosclerosis. Forty-six patients with atherosclerosis and 34 control subjects were recruited. In the atherosclerosis cohort, 35 patients had either coronary artery disease (CAD) or peripheral artery disease (PAD), and 11 had both CAD and PAD. Circulating myosin-11 levels were higher in the CAD or PAD group than in control subjects. The area under the receiver operating characteristic curve of myosin-11 was 0.954 with a specificity of 88% at a sensitivity of 90%, which was significantly higher than that of high-sensitivity C-reactive protein (hsCRP). Circulating myosin-11 levels in the CAD and PAD group were higher than in the CAD or PAD group, while hsCRP

concentrations did not differ between these groups. Multinomial logistic regression analyses showed a significant association of myosin-11 levels not only with the presence of atherosclerosis, but also with the presence of multiple atherosclerotic regions. Circulating levels of myosin-11 may be useful for detecting spatial expansion of atherosclerotic regions.

## 4-①-2.

**Changes in hemodynamics and lower limb conditions during 3-hour persistent sitting**

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[Background] Sedentary behavior is associated with a number of adverse health conditions, such as diabetes, obesity, cardiovascular diseases and cancer incidence. However, physical changes due to sitting even in a short period remain unknown.

[Methods] Eleven healthy males (age;  $29.8 \pm 9.6$  years old, body weight;  $64.5 \pm 4.1$  kg, BMI;  $22.3 \pm 2.6$  kg/m<sup>2</sup>) completed a 3-hour persistent sitting. All the data was compared between before and after the 3-hour continuous sitting. The evaluated parameters were; physical fatigue (questionnaire), edema (circumferences in the calf/ankle, extracellular water/total body water (ECW/TBW) ratio), muscle oxygenation levels (near-infrared time-resolved spectroscopy), and hemodynamics in lower limbs (ultrasonography).

[Results] After persistent sitting, physical fatigue in the lower limb was augmented ( $p < 0.05$ ). Circumferences in the bilateral calf/ankle were significantly enlarged, and ECW/TBW ratio in the lower limbs was increased due to the 3-hour constant sitting ( $p < 0.05$ , respectively). Oxygenated-Hb and total-Hb in the lateral head of gastrocnemius muscles were decreased ( $p < 0.05$ ). Interestingly, volume flow and velocity in