

Plaque erosion is associated with less systemic atherosclerosis than other plaque types of acute coronary syndrome

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Funding Acknowledgement: Type of funding source: None

Background: Previous studies have demonstrated that plaque erosion is associated with less atheromatous plaque at both culprit and non-culprit lesion than other plaque types of acute coronary syndrome (ACS). However, the status of systemic atherosclerosis in patients with plaque erosion remains to be elucidated.

Purpose: To clarify if plaque erosion is associated with less systemic atherosclerosis than other plaque types of ACS.

Methods: A total of 239 consecutive patients with ACS who underwent optical coherence tomography (OCT) imaging of the culprit lesion were enrolled. Patients were classified into either plaque erosion (PE, n=45) or non-plaque erosion (non-PE, n=194) including plaque rupture and calcified nodule based on OCT findings of the culprit lesions. The status of systemic atherosclerosis was assessed by the findings of carotid echography, the severity of aortic arch calcification (AAC; grade 0–3) on chest X-ray, brachial-ankle pulse wave velocity (baPWV) and ankle-brachial pressure index (ABPI).

Results: The maximum intima media thickness (IMT) was significantly thinner in the PE group than in the non-PE group (1.9 ± 0.8 vs. 2.3 ± 0.9 mm, $p=0.023$) (Panel A). The prevalence of heterogeneous plaque and calcified plaque was significantly lower in the PE group than in the non-PE group (25.0 vs. 50.4%, $p=0.010$, 18.8 vs. 38.5%, $p=0.037$, respectively). The prevalence of AAC grade was significantly different between the two groups with a tendency toward lower AAC grade in the PE group than the non-PE group (Panel B). The mean baPWV (1588.1 ± 420.6 vs. 1686.5 ± 363.5 cm/sec, $p=0.186$) and ABPI (1.1 ± 0.1 vs. 1.1 ± 0.1 , $p=0.270$) was comparable between the two groups.

Conclusion: Plaque erosion was associated with less atherosclerosis in carotid artery and aortic arch than non-plaque erosion. These findings may help further clarify the distinct pathophysiology of plaque erosion.

