

Updates the diagnostic and therapeutic strategies for coronary calcification

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Severe calcification in atherosclerotic plaques has been the cause of worse clinical outcomes following percutaneous coronary intervention (PCI). The most predominant reason is considered underexpansion of lesions due to calcium, which cause restenosis as well as subacute or late thrombosis. To overcome it, in-detail assessment of severity and extensibility of calcium is the key by use of conventional coronary angiography, intravascular imaging devices, and computed tomography angiogram (CTA). According to the JCS guideline on revascularization of stable coronary artery disease, to optimize stent implantation, both intravascular ultrasound (IVUS) and optical coherence tomography (OCT) are recommended as class IIa. IVUS clearly differentiates calcium by the findings of blight arcs with acoustic shadow, whose strengthen might be circumference evaluation. In terms of OCT, the light beam can penetrate calcium, that is able to clearly depict its far borderline, providing more cross-sectional quantitative information like “thickness” of calcium. CTA and even conventional angiography provide supplemental anatomical information to enable comprehensive consideration. The bases of these diagnostic procedures are well summarized in the Japanese expert consensus document on either IVUS or OCT.

The previous studies indicated there might be a cut-off value of calcium thickness whether balloon or stent can be well expanded. For the lesions with thicker or larger circumferentially extended calcium, adjunctive mechanical treatment may be required. We proposed and published the Japanese expert consensus document on rotational atherectomy, which may guide how to deal with calcified lesion when use this technology. Currently, orbital atherectomy and intravascular lithotripsy (SHOCKWAVE) are also available in our country. The selection of optimal mechanical device has become more complex. Accordingly, that on device indication for calcified lesions based on coronary imaging findings has been also introduced, which provide clear strategy flow-chart of device selection with semi-quantitative assessment of severity of calcium (calcium scoring) by OCT/OFDI or by IVUS.

In this session, we introduce our continuous efforts on systematic approach to coronary calcification as well as accumulated clinical evidences in our country, and would like to ask the KCS members to have vigorous discussion and give their critical comments.