Pericoronary adipose tissue inflammation on coronary computed tomography in patients with vasospastic angina

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Background: A recent study has demonstrated that coronary spasm is associated with inflammation of peri-coronary adipose tissue (PAT) by using the combination of 18F-fluorodeoxyglucose positron emission tomography and computed tomography (CT). PAT attenuation (FAI) on CT angiography (CTA) has been reported to reflect PAT inflammation. We sought to investigate if FAI on CTA was associated with coronary vasospasm in patients with suspected vasospastic angina (VSA).

Methods: A total of 88 patients who underwent CTA and acetylcholine provocation test (SPT) for suspected VSA were retrospectively investigated. FAI was assessed by the crude analysis of the mean CT attenuation value of 3 major coronary arteries on CTA. FAI was evaluated for the proximal reference diameter (FAI-Ref) and inner 2mm adipose tissue layer (FAI-2mm) from the vessel wall. Diagnosis of VSA (VSA group) was made by SPT and the subjects with negative SPT without organic coronary lesions served as non-VSA group. Association between VSA diagnosis and FAI was assessed and the predictors of VSA was explored by univariable and multivariable analyses.

Results: In 45 patients (51.1%), VSA was diagnosed (VSA group). There were no significant differences in baseline characteristics between the VSA and non-VSA groups. RCA-FAI was significantly higher in patients of VSA group than in non-VSA group. RCA-FAI-2mm provided significantly better diagnostic performance for VSA than RCA-FAI-Ref and LCA-derived FAI values. Furthermore, RCA-FAI-2mm showed a significant relationship with the severity of spasm evaluated by most stenotic segment diameter during SPT. (r=−0.28, p<0.001) Multivariable logistic regression analysis revealed that RCA-FAI-2mm was an independent predictor of predicting VSA (P<0.001).

Conclusion: Coronary spasm may be linked with PAT inflammation detected by CTA-derived RCA-FAI, particularly by inner PAT assessment close to the vessel wall.
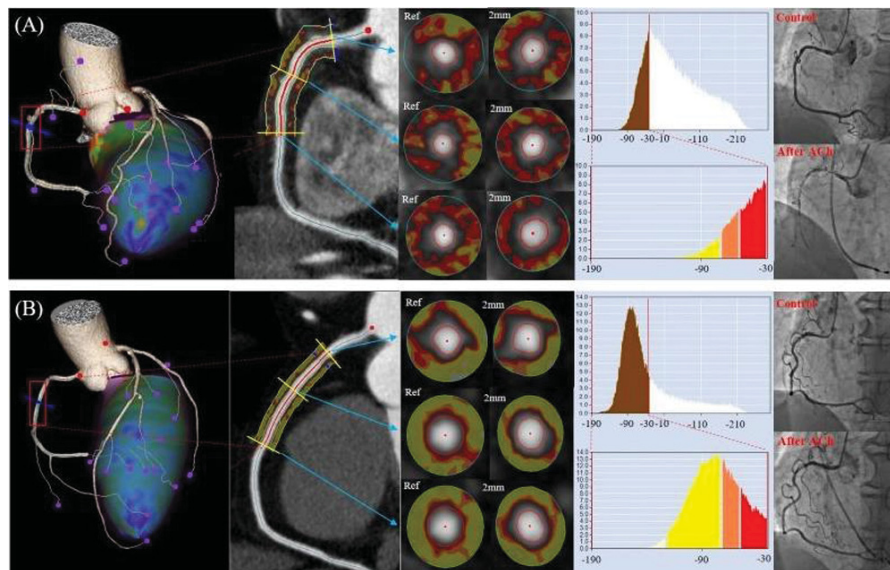
Representative cases for FAI analyses