A170.E1597
JACC Maarch 9, 2010
Volume 55, issue 10A

VASCULAR DISEASE

ASSOCIATION BETWEEN ADVANCED ENDOTHELIAL DYSFUNCTION AND VULNERABLE CORONARY PLAQUES IN HIGH RISK PATIENTS WITH SUSPECTED CORONARY ARTERY DISEASE

ACC Poster Contributions
Georgia World Congress Center, Hall B5
Monday, March 15, 2010, 3:30 p.m.-4:30 p.m.

Session Title: Vascular Biology/Atherosclerosis/Thrombosis/Endothelium
Abstract Category: Vascular Biology/Atherosclerosis/Thrombosis/Endothelium
Presentation Number: 1220-348

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Background: Angiographic complexity of coronary lesions could reflect plaque vulnerability. Endothelial dysfunction is a key component of plaque vulnerability, resulting in future cardiovascular events. Digital reactive hyperemia-peripheral arterial tonometry (RH-PAT) is a new method which can noninvasively evaluate endothelial function. To determine association between endothelial function and coronary plaque vulnerability, we tested the utility of RH-PAT and its usefulness for detection of coronary plaque complexity.

Methods: 240 consecutive stable high-risk patients suspected of coronary artery disease (CAD) were enrolled. We assessed endothelial functions by RH-PAT using Endo-PAT2000 prior to cardiac catheterization. Coronary lesions were classified angiographically as simple or complex according to Ambrose criteria.

Results: The RH-PAT indexes of patients with CAD (≥50% coronary artery stenosis, n=190, 69±10 years) were significantly lower than those of patients without CAD (non-CAD, n=50, 60±11 years) (RH-PAT index: 0.51±0.18 versus 0.70±0.17, P<0.001). In patients with CAD, the complex-CAD group (n=125) had lower RH-PAT index than the simplex-CAD group (n=65) (RH-PAT index: 0.48±0.19 versus 0.58±0.16, P<0.001). The RH-PAT indexes of CAD patients with multiple complex lesions were significantly lower than those of patients with single complex lesion (RH-PAT index: 0.51±0.20 versus 0.43±0.15, P=0.01). Multivariable logistic regression analysis identified lower RH-PAT index as an independent determinant of coronary complex plaque in high-risk patients (odds ratio 0.73 [95%confidence interval: 0.59 to 0.90], P<0.001). Receiver operating characteristics analysis demonstrated RH-PAT index significantly predicted coronary plaque complexity in high-risk patients (Area Under the Curve [AUC] 0.77, P<0.001) and even in CAD patients (AUC 0.71, P=0.004).

Conclusions: Advanced endothelial dysfunction significantly correlates with coronary plaque complexity in stable patients suspected CAD. High-risk patients with lower RH-PAT index might be vulnerable patients with vulnerable plaques requiring aggressive and intensive treatment to improve prognosis.