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Stable Ischemic Heart Disease

CIRCULATING PENTRAXIN 3 LEVELS WERE ASSOCIATED WITH CORONARY PLAQUE COMPOSITIONS ASSESSED BY IMAP-INTRAVASCULAR ULTRASOUND

Poster Contributions
Hall C
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Session Title: Biomarkers, Predictors and Imaging in Stable Ischemic Heart Disease
Abstract Category: 25. Stable Ischemic Heart Disease: Clinical
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Background: Pentraxin 3 (PTX3) is a novel biomarker that is specific to localized vascular inflammation. However, whether plasma PTX3 reflects coronary plaque characteristics remains unclear. This study investigates whether plasma PTX3 level is associated with coronary plaque composition as assessed by iMap-intravascular ultrasound (iMap-IVUS).

Methods: We enrolled 69 patients (60 with stable and 9 with unstable angina pectoris) who underwent percutaneous coronary intervention (PCI) following iMap-IVUS analysis to culprit lesions. Circulating levels of plasma PTX3 and serum high sensitive C-reactive protein (hsCRP) were measured before PCI. Patients were divided into the following two groups according to median PTX3 value: low-PTX3 (n = 35, PTX3 < 2.51 ng/mL) and high-PTX3 (n = 34, PTX3 ≥ 2.51 ng/mL). Volumetric grayscale- and iMap-IVUS analysis was performed across the entire lesion segment. Plaque compositions were classified by iMap-IVUS as fibrotic, lipidic, necrotic and calcified, and each volume [fibrotic volume (FV), lipidic volume (LV), necrotic volume (NV) and calcified volume (CV), respectively] was reported as a percentage of the total plaque volume.

Results: Compared with patients with low-PTX3, those with high-PTX3 had significantly greater %plaque volume (68.0 ± 7.9 vs. 62.8 ± 6.5 %, p = 0.004), higher %NV (36.8 ± 11.6 vs. 29.2 ± 12.7 %, p = 0.011), and lower %FV (49.1 ± 12.3 vs. 57.4 ± 15.0 %, p = 0.014). The %LV and %CA values did not significantly differ between the groups. The PTX3 level correlated positively with plaque volume (r = 0.25, p = 0.04), %plaque volume (r = 0.41, p < 0.001), %NV (r = 0.43, p < 0.001), and inversely with %FV (r = -0.41, p < 0.001). In contrast, serum hsCRP level did not correlated with any plaque compositions volumes. Multivariate regression analysis showed that significant factors associated with %NV were PTX3 (β coefficient = 0.36, p = 0.020) and low-density lipoprotein cholesterol (β coefficient = 0.29, p = 0.032).

Conclusion: Elevated levels of plasma PTX3 were associated with plaque compositions, especially greater %NV and smaller %FV. These findings suggest that plasma PTX3 could serve as a useful marker of plaque instability.