Plasma apoC-III levels predict coronary severity and cardiovascular risks in stable coronary artery disease patients with diabetes or pre-diabetes: a prospective cohort study

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Background: Apolipoprotein C-III (apoC-III) has been proposed to be involved in lipid and glucose metabolism and related to cardiovascular risks. The aim of this study is to investigate the association of apoC-III levels with coronary severity and cardiovascular outcomes in coronary artery disease (CAD) patients under different glucose metabolism status.

Methods: A total of 4342 consecutive patients with newly angiography-proven stable CAD were enrolled and categorized into three groups according to apoC-III levels and further stratified by glucose metabolism status [diabetes mellitus (DM), pre-DM, normal glucose regulation (NGR)]. Patients were followed for the occurrence of cardiovascular events (CVEs). Plasma apoC-III concentration was measured by enzyme immunoassay and coronary severity was assessed by number of diseased vessels, Gensini score and syntax score. The relationships of apoC-III levels with coronary severity and CVEs were evaluated.

Results: 389 (9.0%) CVEs were developed during a follow-up of 5.1 years. Plasma apoC-III levels were increased in prediabetic and diabetic patients with stable CAD. Elevated apoC-III levels were associated with more severe coronary lesion and the risk for CVEs. No significant differences in incident CVEs and coronary severity were observed between pre-DM and NGR groups. When combined glucose metabolism status and apoC-III levels as stratifying factors, patients with the highest apoC-III levels and prediabetic or diabetic patients with any levels of apoC-III had more sever coronary lesion and higher risk of subsequent CVEs compared to those with the lowest apoC-III levels and NGR.

Conclusion: Our data firstly found that elevated apoC-III levels were greatly associated with coronary severity and adverse cardiovascular events in stable CAD patients with pre-DM and DM, which suggested apoC-III may be a prognostic predictor among CAD patient with impaired glucose metabolism.