

Relation of Coronary Artery Plaque Composition Assessed by Cardiac CT and Serum Level of C-reactive Protein in Patients With Acute Chest Pain

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Background:

The role of inflammation in atherosclerosis is well established, but data emphasizing the correlation of coronary plaque components to serum levels of high-sensitivity C-reactive protein (hs-CRP) are lacking. Since multidetector computed tomography (MDCT) is a non-invasive technique that permits the detection and characterization of coronary plaques, we sought to investigate the relation between coronary plaque composition and the serum levels of hs-CRP in patients with acute chest pain (ACP) and non obstructive coronary artery disease (CAD).

Methods:

28 patients (20 male, mean age 52 ± 10 y) with ACP underwent MDCT (Brilliance 64, Philips Medical Systems, Cleveland, Ohio). Serum level of hs-CRP was determined in all patients. Atherosclerotic plaques were analyzed for the presence of calcified, mixed, and non-calcified (NC) components. MDCT data sets were used to calculate the total plaque volumes as well as the volumes of calcified, mixed, and NC components in every plaque using dedicated software.

Results:

Fourteen patients were free of CAD and in the remaining 14 patients with non obstructive CAD we analyzed 28 plaques which had excellent image quality. Of the 28 plaques, 27 had calcified and mixed components and one plaque had mixed and NC components. Plasma hs-CRP was significantly higher in patients with CAD than in patients who were free of CAD (4.07 ± 3.3 vs. 1.3 ± 1.0 , respectively; $P = 0.006$); however, there was no correlation between plasma hs-CRP level and the total plaque volume ($r^2 = 0.02$, $P = 0.9$) as well as between hs-CRP and calcified ($r^2 = -0.1$, $P = 0.7$) and mixed ($r^2 = 0.2$; $P = 0.35$) plaque components.

Conclusions:

This ongoing study demonstrates the ability of plasma hs-CRP to identify patients with (non obstructive) and without CAD. However, hs-CRP did not differ between calcified and mixed plaques in patients with non obstructive CAD presenting with ACP.