Correlation between SYNTAX score and carotid intima-media thickness in patients with chronic coronary syndrome

P. Djuric[1], S. Obradovic[1], M. Spasic[1], D.J. Prokic[1], Z. Mladenovic[1], Z. Jovic[1], V. Subota[1], J. Maric Kocijancic[1], D. Djuric[2]

[1]Military Medical Academy of Belgrade, Belgrade, Serbia; [2]University of Belgrade, Institute of Medical Physiology "Richard Burian", Faculty of Medicine, Belgrade, Serbia

Funding Acknowledgement: Type of funding source: None

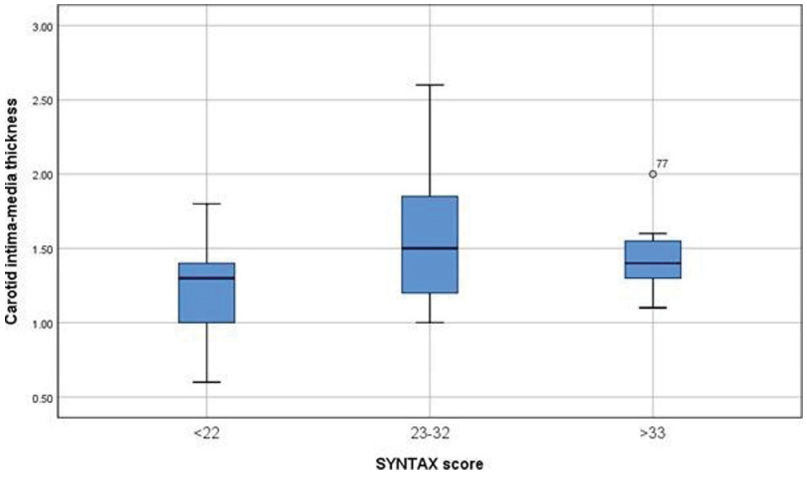
Background: In most cases coronary artery disease (CAD) and carotid artery disease exist at the same time and both represent the most serious manifestation of systemic atherosclerosis. Chronic coronary syndrome (CSS) includes six different clinical scenarious, and patients with stable angina symptoms and/or dyspnoea were comprised in our study. A previous studies have demonstrated that patients with myocardial infarction have more severe carotid artery disease, but there are no available data regarding association between SYNTAX I score (SS) and carotid intima-media thickness (CIMT) in patients with CSS. SS is known as universal angiographic scoring system, entirely based on coronary anatomy and lesion characteristics. CIMT measurement is a non-invasive tool to diagnose early atherosclerosis.

Purpose: The aim of this study was to determine the correlation between SS and CIMT in patients with with CSS.

Methods: A total of 82 CSS patients (average age 61±12 years, 28.9% females) underwent exercise ECG or stress echocardiography. Coronary angiography and ultrasonography of internal carotid artery were performed and patients were divided into three groups according to SS: Group I (<22, n=42), Group II (23–32, n=20), Group III (>33, n=20). We also estimate the severity of CAD according to clinical SYNTAX. Simultaneously, we evaluate whether biomarkers of hemostasis and thrombosis, such as fibrinogen, plasminogen activator inhibitor (PAI-1), D dimer, coagulation factor VIII and von Willebrand factor (VWF), as well as homocysteine and C reactive protein (hs CRP) were associated with CAD complexity.

Results: There were significant correlation between severity of CAD according to SYNTAX I score and CIMT (Group I: 1.23±0.27, II: 1.56±0.43, III 1.43±0.21, Kruskal Wallis p=0.000). In order to estimate the impact of atherosclerosis burden on CAD complexity, patients were divided into 3 groups according to CIMT: low (<0.90 mm), intermediate (0.91–1.30 mm) and high (≥1.31 mm). SS according to the CIMT were: Group I: 12.57±5.71, Group II: 21.20±11.36, Group III: 28.38±10.92, KW, p=0.004. We demonstrated significant correlation between SS and values of fibrinogen (I: 3.53±0.70, II: 3.59±0.62, III 3.93±0.56, p=0.018), VWF (I: 1.16±0.59, II: 1.52±0.62, III 1.49±0.80, p=0.040), factor VIII (I: 2.25±0.75, II: 2.21±0.53, III 2.97±0.95, p=0.009), homocysteine (I: 11.21±3.78, II: 13.66±4.61, III 13.87±5.34, p=0.019) and CRP (I: 3.75±4.10, II: 3.82±4.86, III 7.28±5.75, p=0.013), but not with PAI-1 and D dimer (p>0.05). We didn't find positive association between clinical SYNTAX I score and CIMT (p>0.05).

Conclusion: Patients with chronic coronary syndrome and severe carotid artery disease according to CIMT (≥1.31) had higher SS and more complex CAD. Elevated biomarkers of hemostasis and thrombosis such as fibrinogen, VWF and factor VIII, as well as homocysteine and CRP may be a mutual casual factors for associated polyvascular disease.



Correlation between CIMT and SS