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Internal Carotid Artery Stenosis Peak systolic velocity is Associated to Coronary Artery Aisease Severity: A Retrospective analysis of 884 Patients

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Background: Atherosclerosis is a diffuse process in the body vasculature. Our Objective was to investigate the relationship between the severity of the atherosclerotic lesions in the coronary arteries and those of the internal carotid arteries (ICA).

Methods: We performed a retrospective analysis of prospectively collected data obtained from 884 consecutive patients that underwent same-day elective coronary angiography and carotid Doppler study, between January 2007 and December 2007. The data was retrieved from the catheterization and Doppler laboratories databases. The chi-square test was used to evaluate the relation between severity of internal carotid artery stenosis and the extent of coronary disease. Step wise multiple regression models were fitted for the peak systolic velocity as the dependant variable and adjusted to degree of coronary disease, age, gender and cardiovascular risk factors.

Results: The study population included 884 patients (696 males) at a mean (SD) age of 65 (±10). Significant ICA stenosis was found in 13.1% of the study population, while 58.1% had at least mild steonosis. The relation between severity of ICA stenosis and the extent of coronary arteries disease was statistically significant ($p<0.001$). The ICA peak systolic velocity was related to three vessel and left main artery disease, age, history of smoking and coronary artery bypass grafting ($r=0.259$; $r2=0.066$; all $p<0.05$).

Conclusions: The degree of ICA stenosis is related to the degree of coronary artery disease severity. Carotid Doppler study in patients undergoing coronary angiography, should be used for early detection of significant ICA disease in order to apply appropriate preventative measures.