THE NUMBER OF VERY EARLY ENDOTHELIAL PROGENITOR CELL COLONIES CORRELATES WITH Atherosclerosis Burden in Acute Coronary Syndromes

ACC Poster Contributions
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Background: Endothelial progenitor cells (EPCs) have been shown to promote repair of damaged endothelium and to promote neovascularization in ischemic areas. While EPCs have been shown to correlate with numbers of cardiovascular risk factors, their association to atherosclerosis burden has been disputed. Previous studies did not use an objective measure of atherosclerosis like quantitative coronary angiography (QCA) and have not linked atherosclerosis burden with very early EPCs.

Methods: EPCs were measured by flow cytometry (CD34+/KDR+) and by colony forming units (CFU) after 4 days of culture. QCA was used to assess the cumulative coronary stenosis score, which is calculated by adding all percent diameter stenoses.

Results: We studied 160 patients, 105 presenting with an acute coronary syndrome and 55 presenting with stable angina. Mean age was 59 years, with 8% diabetics and 80% men. EPC CFU, but not EPC counts by flow cytometry, were inversely correlated with the cumulative coronary stenosis score (respectively \( r = -0.224, p = 0.004 \) and \( r = -0.102, p = 0.265 \)). The relationship was observed in patients presenting with an acute coronary syndrome (n=105: EPC CFU \( r = -0.343, p < 0.001 \) and \( r = -0.186, p = 0.099 \) for EPC count) but not in the stable angina population (n=55: EPC CFU \( r = 0.112, p = 0.418 \), EPC count \( r = 0.017, p = 0.918 \)). In a multivariate analysis of all patients, EPC CFU was the only predictor (\( p=0.005 \)) of the cumulative coronary stenosis score in a model that included known cardiovascular risk factors (age, gender, diabetes, hypertension, dyslipidemia, BMI, angina, prior MI).

Conclusion: This is the first report of an association between an objective QCA measurement of atherosclerosis burden and very early EPC CFU counts. The association is independent of traditional cardiovascular risk factors and is seen in patients presenting with an acute coronary syndrome.