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Prevention

OSTEOCALCIN POSITIVE CD133+/CD34-/KDR+ PROGENITOR CELLS ARE ASSOCIATED WITH POOR GLYCEMIC CONTROL

ACC Moderated Poster Contributions
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Background: Vascular calcification, an important feature of diabetic vasculopathy, may be mediated by a sub-type of endothelial progenitor cells (EPCs) co-expressing the osteoblastic marker osteocalcin (OCN). In this study we tested the hypothesis that there is an association of these cells with HbA1c, a measure for average glucose concentrations over a prolonged time.

Methods: 91 patients (age 58.6±16.2yrs) with cardiovascular risk factors (cvRF) were divided into two groups according to their median HbA1c plasma levels (low HbA1c<5.7, high HbA1c>5.7%). Flow cytometry of peripheral blood mononuclear cells was used to analyze EPC markers and OCN. OCN+ EPCs (CD34+/CD133+/KDR+) as well as more immature OCN+ CD133+/CD34-/KDR+ cells were counted.

Results: We found significantly higher numbers of circulating immature OCN+ EPCs in the "high HbA1c" group compared to the "low HbA1c" group (9 [IQR1,21] counts per 100,000, versus 27 [12,175], p<0.001, Figure). Mature OCN+ EPCs were not different between the groups. In a univariate model, the number of circulating immature OCN+ EPCs significantly predicted HbA1c (R2=0.07, p=0.01), even after adjusting for differences in cvRF and for the number of CV medications in a multivariate model (p=0.02).

Conclusion: This preliminary study demonstrates a highly significant increase in potentially immature OCN+ EPCs with higher HbA1c. Thus, these cells could potentially mediate vascular calcification and may illustrate a potential therapeutic target.