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Relationship of Blood Eosinophil Counts of Adults with Diabetes as a Risk Factor for Coronary Artery Disease

Rationale

Elevated serum eosinophil levels have been shown to be associated with multiple immune disorders. We have previously examined the relationship between eosinophilia and coronary artery disease (CAD) diagnosis in the National Health and Nutrition Examination Surveys (NHANES) from data of patients from 2005-2016. We found that blood levels of eosinophils are increased in the blood of adults with a history of coronary artery disease, thereby establishing eosinophilia as a biomarker for CAD. Diabetes, as well as hypertension, obesity, hyperlipidemia, and smoking are all risk factors for the development of cardiac disease and atherosclerosis. The relationship of HbA1C, which reflects diabetes control, has not been evaluated with respect to eosinophil counts. We hypothesized that HbA1C levels may correlate with blood eosinophil counts.

Methods

We tested our hypothesis through a retrospective chart analysis of adult diabetic patients (n=60) of our ambulatory endocrinology clinic at the University Hospital of Brooklyn. Patient data included HbA1c and CBC with differentials over three points in time. Absolute eosinophil count (AEC) was non-normal therefore logarithmized. Spearman correlation analysis and generalized linear mixed models (GLMM) were conducted to identify factors predicting AEC.

Results

The Raw Spearman correlation was –0.06 between contemporaneous HbA1c and AEC. There was no significant association (p=0.142) using a mixed linear model to predict log(AEC) from contemporaneous HbA1c. Log(AEC) was not predictable based on prior HbA1c (p=0.558). Also, the extent of change from prior AEC was not predictable from the extent of change from prior HbA1c (p=0.861).

Conclusion

There has been no significant association of AEC and HbA1c from contemporaneous HbA1c as well as over time. Future studies should consider analyzing the association of other markers of diabetic status or glycemic control in predicting AEC as a forerunner to CAD.

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