

Blood Monocytes are Associated with Body Mass Index and Hypertension in Inner-City Diabetic Adults

Rationale: We previously showed blood eosinophilia to be associated with coronary artery disease (CAD). Factors such as diabetes, hypertension (HTN), and body mass index (BMI) have been shown to be markers for CAD. As macrophages are involved in the formation of atherosclerotic plaques, we investigated the relationship between absolute blood monocyte counts (AMC) with BMI, HTN, and HbA1C as CAD precursors.

Methods: In a retrospective chart review, we obtained histories of 60 adult diabetic patients including BMI, HTN, hemoglobin A1C (HbA1C), glucose, and CBC with differentials over three points in time. T-tests and correlation analysis comparing cumulative mean-AMC across HTN/BMI groups were conducted, as were generalized linear model (GLM) repeated measures analysis of variance (ANOVA) of marginal mean AMCs across hypertension and BMI groups, adjusting for age. Pairwise comparisons amongst the three measurements using Bonferroni correction were performed. All analyses were conducted using SPSS v25.

Results: Cumulative mean AMC was higher in the obese (BMI cutoff 30) 0.42 vs 0.35, $p=0.03$ and high A1C groups (cutoff 7.0) 0.42 vs 0.34, $p=0.013$. It was also positively correlated with BMI ($r=0.346$ $p=0.007$) and marginally with A1C ($r=0.252$ $p=.052$). In GLM ANOVA, within-subjects contrasts were significant with HTN over time after adjusting for BMI ($F=4.263$, $p=0.044$). BMI itself was marginally significant ($F=3.544$, $p=0.065$). The average BMI for all subjects was 30.9 (SD ± 6.98), which is classified as obese.

Conclusions: Blood monocytes were associated with HTN and BMI in a sample of diabetic adults. Measures including BMI may reach statistical significance using a larger sample. Future studies will analyze the association of other leukocytes with other markers of metabolic syndrome.