

<u>Session/Poster#</u>	<u>Presenter</u>
A07	Hall Zhang College of Medicine Student

Advisor(s): Dr. Jason Lazar, Medicine

### **The Association of the Systemic Immune-Inflammation Index and Brain White Matter Hyperintensities**

**Purpose:** The Systemic immune-inflammation index (SII) is calculated by  $(N - P) / L$  where N, P and L represent neutrophil counts, platelet counts and lymphocyte counts. This is associated with tumors such as metastatic renal cell and prostate cancer. Recently this index has been associated with cardiovascular disorders such as hypertension, stroke and peripheral vascular disease. Compared with other biomarkers of inflammation the SII may better reflect the balance between the immune and the inflammatory response. Atherosclerosis is a systemic inflammatory disease, with pathological mechanisms involving endothelial cells, platelets, and inflammatory cells. Cerebral small vessel disease (SVD) consists of cerebral small vascular atherosclerosis. Cerebral SVD is related to cardiovascular risk factors and disease states including hypertension, diabetes, age, and smoking. Neuroimaging markers of SVD evident on conventional MRI include white matter hyperintensities (WMH) of the periventricular (PWMH) and deep white matter (DWMH) regions. We sought to investigate the association of the SII index and the in a cohort of patients that had brain MRIs.

**Methods:** This retrospective chart review study consisted of 150 patients that had brain MRIs and bloodwork to calculate the SII. The extent of DWMH and PWMH was graded on the brain MRI using the Fazekas scoring system. Univariate and logistic regression was used to find associations between risk factors, the SII and WMHs.

**Results:** The mean age was 60 - 14; 67% female. The mean SII was 50.3 - 1243.0. On univariate analysis we found the both WMHs to correlate with age, sex, hypertension, diabetes, smoking, stroke, weight, creatinine level. On logistic regression the SII, in addition to age, sex and smoking history, was a predictor of the PWMH but not the DWMH.

**Conclusion:** The SII is associated with PWMH, but not with DWMH. This finding supports the differential involvement of inflammation in the development of periventricular and deep WMH.