**Inflammation and Risk of Decline in Learning and Memory Function in the REasons for Geographic And Racial Differences in Stroke (REGARDS) Study**

 **Sarah R Gillett**

Project Collaborators:
University of Alabama: Leslie A McClure, Virginia G Wadley, Stephen P Glasser,  Virginia J Howard
University of Cincinnati: Brett M Kissela
Indiana University: Frederick W Unverzagt
University of Vermont: Nancy S Jenny, Mary Cushman

Background. Higher levels of inflammation factors like C-reactive protein (CRP) are associated with stroke. Stroke risk factors relate to cognitive decline (CD), but there is limited study of inflammation and CD. We examined associations of CRP with declines in learning and memory function in REGARDS.

Methods. REGARDS is a population-based national cohort of 30,239 black and white Americans with baseline measurement of CRP and stroke risk factors. Learning and memory were assessed every 2 years by the Consortium to Establish a Registry for Alzheimer's Disease (CERAD) Word List Learning (WLL) and Word List Recall (WLR) tests. CD was defined as a decline in score >1.5 standard deviations from the mean change.  Data were available on 7885 subjects without baseline stroke for WLL and 7538 for WLR. Logistic regression was used to determine odds ratios (ORs) and 95% confidence intervals (CIs) of CD by CRP.

Results. There were 445 cases of CD in learning function and 316 cases of CD in memory function over a 2 year follow up period. Adjusting for other risk factors, CRP quartiles were not associated with decline in WLL or WLR. CRP ≥90th percentile was associated with 45% higher risk of decline in WLL (table). Results for WLR decline were similar but not statistically significant (not shown).

Conclusion. Higher CRP is associated with CD in learning and memory, but only at levels above the 90th percentile. Findings support a role of inflammation in CD.

Table 1: Odds Ratios (95% CIs) of Decline in Learning Function by CRP Category

| | Q1 | Q2 | Q3 | Q4 | ≥90th percentile |
|---|---|---|---|---|---|
| n CD cases/ N at risk of CD | 110/2006 | 93/1955 | 113/1991 | 129/1990 | 54/753 |
| % with CD | 5% | 5% | 6% | 6% | 7% |
| Unadjusted OR | Ref | 0.94 (0.70, 1.26) | 1.19 (0.91, 1.57) | 1.35 (1.02, 1.77) | 1.47* (1.09, 2.00) |
| Adjusted† OR | Ref | 0.84 (0.62, 1.15) | 0.98 (0.73, 1.33) | 1.15 (0.85, 1.57) | 1.45* (1.04, 2.02) |

* OR ≥90th percentile vs. < 90th percentile.
†Adjusted for baseline score on WLL, age, sex, race, region, education, income, smoking history, alcohol consumption, exercise, diabetes, hypertension, body mass index, hypercholesterolemia, aspirin use, statin use, prior coronary heart disease