Association of Stroke Risk Biomarkers with Stroke Symptoms: the Reasons for Geographic and Racial Differences in Stroke (REGARDS) cohort


**Background:** History of stroke symptoms in the absence of prior stroke or TIA is associated with adverse stroke risk profile and future stroke risk. Biomarkers associated with inflammation, cardiac function and hemostatic function are also associated with stroke. Better understanding of the relationship between stroke symptoms and these biomarkers will allow hypothesis formation on the biologic underpinnings of stroke symptoms.

**Hypothesis:** Higher levels of D-dimer, C-reactive protein (CRP), fibrinogen, factor VIII, and factor XI and NT-proBNP are associated with prevalent SS.

**Methods:** REGARDS enrolled 30,239 black and white participants ≥45 years old from the contiguous US to study geographic and racial differences in stroke. We performed a cross-sectional study in a random sample of 1100 participants in which the above biomarkers were measured. Prevalent stroke symptoms at baseline were ascertained using the Questionnaire for Verifying Stroke-free Status. Excluding those with pre-baseline stroke or TIA, there were 190 participants with self-reported stroke symptoms and 770 control participants. Odds ratios of prevalence of stroke symptoms by quartiles and per SD increment of each biomarker were calculated using logistic regression.

**Results:** Adjusting for age, race and sex, NT-proBNP, CRP and D-dimer in the top vs bottom quartile were associated with history of any SS (ORs: 3.06 (95%CI: 1.76-5.34), 2.32 (95%CI: 1.43-3.74), and 1.99 (95%CI: 1.20-3.29), respectively), as were SD increments of these and factor XI. Odds ratios with added adjustment for Framingham stroke risk factors were little changed.

**Summary:** Higher levels of NT-proBNP, CRP, factor XI and D-dimer are associated with prevalent stroke symptoms. Results provide further evidence that history of stroke symptoms may represent cerebrovascular disease.