Thursday, January 11th, 2pm EDT

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Imaging and Medical Predictors of Naming Outcome after Left Hemisphere Stroke
Argye E. Hillis, MD.
Johns Hopkins University, School of Medicine

Most studies of language recovery after stroke have evaluated people at different times post-stroke and identified variables associated with good versus poor recovery. There have been some longitudinal studies of aphasia recovery, but few have used advanced brain imaging, and no longitudinal studies have evaluated the influence of medications. We studied 31 patients from the first 48 hours after stroke, 1 month, and 6 months on picture descriptions (quantitatively analyzed for Content Units (CU; mentioned by normal controls in describing the picture) and the Boston Naming Test (BNT). Patients had structural and functional MRI at each time point. We evaluated associations between improvement (measured by BNT and CU) and imaging variables and selective serotonin reuptake inhibitors (SSRIs). We then tested predictions from this set of patients in a separate set of 42 patients with chronic stroke, with logistic regression and t-tests. The only regions where damage was associated with the degree of naming recovery were left superior longitudinal fasciculus (SLF) and posterior superior temporal gyrus (pSTG), after controlling for lesion volume. Changes in activation patterns associated with naming differed across patients, even with similar lesions. Good recovery was associated with increased balance of activity across pSTG, inferior frontal gyrus, and angular gyrus bilaterally in patients without damage to these key areas. SSRI use during the first 3 months after stroke was associated with greater naming improvement ($X^2 = 6.30$; p=0.012) and greater improvement in picture description content ($X^2 = 6.92$; p= 0.009) (after correcting for initial severity for both), even though patients taking SSRIs were nonsignificantly more depressed.

In the independent group of patients with chronic stroke, we confirmed that damage to pSTG and/or SLF was associated with failure to recover naming (X^2=24.2; p<0.0001). Damage to pSTG/SLF was associated with lower odds of achieving highest quartile of object naming, after controlling for lesion volume and months since onset (OR:0.034; CI 0.0033-0.35; p=0.005). We also confirmed that among those with pSTG/SLF lesions, SSRIs users showed better recovery in object naming than non-users (45.5 vs. 83.5% correct; t=2.0; p=0.029). Those without pSTG/SLF lesions showed excellent naming recovery with or without SSRIs (99.7 vs 99.3% correct).

Finally, we carried out an additional study to evaluate the effect of leukoaraiosis in the right hemisphere. We found poorer outcome in aphasic individuals with leukoaraiosis, independently of lesion volume, site, or other risk factors. These preliminary data indicate that language recovery is influenced by lesion location, SSRI use, and leukoaraiosis in the undamaged hemisphere. Larger studies are needed to determine the extent to which they prospectively predict recovery by a particular time point.

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The lecture will be held at Johns Hopkins University. However, it will be broadcast live to USC:

Room #140, Discovery I, 915 Greene Street, Columbia, SC 29208
Date: Thursday, January 11th 2018, Time: **2pm – 3pm** EDT
The viewing event will be catered!
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