

Associations of Dyslexia with Epilepsy, Handedness, and Gender

STEVEN C. SCHACHTER,^a ALBERT M. GALABURDA,^a

AND BERNARD J. RANSIL^b

^a*Department of Neurology
Beth Israel Hospital and Harvard Medical School
330 Brookline Avenue
Boston, Massachusetts 02215*

^b*Harvard-Thorndike Laboratory of Beth Israel Hospital
Department of Medicine
Beth Israel Hospital and Harvard Medical School
Boston, Massachusetts 02215*

Based on the observations of developmental cortical abnormalities in the brains of some dyslexic¹ and epileptic² patients, we tested for an association between epilepsy and a history of dyslexia in 200 adult epileptic patients and 130 age-matched controls. We also evaluated the interrelationships of handedness scores,^{3,4} gender, and dyslexia in epileptics given the literature on dyslexia, male gender, and left-handedness.⁵

A history of dyslexia was significantly increased in patients with epilepsy compared with controls (9 vs. 2.3 percent; odds ratio = 4.19; 95 percent confidence interval = 1.21 to 15). Further, dyslexic epileptic males had significantly younger age of seizure onset than nondyslexic males, consistent with other epileptic syndromes associated with cortical anomalies.⁶⁻¹⁰ Left-handed epileptic females were also at greater risk for dyslexia—among epileptic dyslexic patients, 15 percent of males versus 45 percent of females wrote with the left hand, possibly the first demonstration of elevated left-handedness in females compared to males.

The possible explanations for an association between dyslexia and epilepsy are (1) the cortical lesions seen in dyslexic brains may be epileptogenic and/or the structural abnormalities associated with epilepsy may also include neural networks involved in reading, (2) subclinical electrical discharges of the cortex may cause reading impairment, (3) epilepsy and dyslexia may be genetically linked, (4) reading impairment may result from anticonvulsant toxicity.

Adult patients referred to an epilepsy center may be at increased risk for dyslexia compared to controls, especially left-handed women and males with seizure onset by age 12. These findings supplement previous studies of reading achievement in epileptics and suggest that maintaining a high index of suspicion for dyslexia in these subgroups of epileptic patients may facilitate earlier recognition and intervention.

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