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Biomarkers of brain function in children with uncomplicated epilepsy

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Many studies reported cognitive and behavioral abnormalities with recurrent seizures in adult brains. Similar evidences from the pediatric population are few and controversial. We aimed to investigate the effect of recurrent seizures on the developing brains. Included were 42 children with recurrent untreated uncomplicated epilepsy (generalized or focal) with mean age of 14.1 years and 30 healthy children for comparison. Intelligence (IQ) and cognition were examined using Wechsler Intelligence Scale for Children (WISC-III) and Stanford Binet subsets test (SBST4). Serum levels of neuron-specific enolase (NSE) and S100B proteins, sensitive markers of neuronal and glial cells damage were measured. Compared to controls, patients had lower mean score of full scale IQ (FSIQ) of WISC-III (P=0.045) particularly performance IQ (PIQ) scores (P<0.01), and comprehension, pattern analysis, quantitation, bead memory and memory for sentences of SBST4 (P=0.045; P=0.013, P=0.007, P=0.002; P=0.035), but not for NSE or S100B. Significant correlation was observed between FSIQ and duration of illness (r=-0.430, P=0.035) and number of seizures (r=-0.580, P=0.005) but not with S100B or NSE levels. Lower intelligence and poor cognitive performance are common with recurrent childhood epilepsy. Dysfunction in brain connectivity but not structural brain injury may likely be the cause.

Biography

Dr. Sherifa A. Hamed (M.D.) is an Associate Professor of Neurology and the director of the Neurogenetic unit in Assiut University, Egypt. She worked as a postdoctoral fellow (visiting scholar, 8/1998 to 8/2000) in USA [in Research Center for Genetic Medicine, Children's National Medical Center, Dept. Integrative Systems Biology, George Washington University School of Medicine and Health Sciences]. She was a part of a multidisciplinary research program concerning disease gene identification of muscular dystrophies. She served as a reviewer for 30 medical journals and has a least 70 international publications in the fields of Neurology, Neurogenetics and Neuropsychopharmacology.