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SEIZURE DISORDERS

THE MOZART EFFECT AND EPILEPSY

Researchers at Kaohsiung Medical University and other centers in Taiwan studied the long-term effect of listening to Mozart K-448 (Sonata for Two Pianos in D major) on the frequency of epileptiform discharges in children with epilepsy, and analyzed the relationship between the number of epileptiform discharges and foci of origin, epilepsy etiology, age, IQ, and gender. Eighteen children (8 boys, 10 girls; mean age, 7 years 10 months; age range, 7 months to 14 years 4 months) with epilepsy and persistent epileptiform discharges for at least 6 months had seizures well controlled with anticonvulsant drugs. Seizures were focal in 16 (88.9%) and generalized in 2; the etiology was idiopathic in 10 and symptomatic in 8. None had musicogenic epilepsy.

After patients had listened to Mozart K448 for 8 minutes before bedtime for 1, 2, and 6 months, epileptiform discharges significantly decreased by 53.2, 64.4, and 71.6%, respectively ($p < 0.001$), except those with occipital discharges. At 6 months, the average decreases in epileptiform discharges at frontal, central, and temporal locations were 100, 99.1, and 96.6%, respectively, compared to 3.7% for occipital foci. Generalized discharges showed a 97.2% decrease. Patients with normal intelligence and idiopathic epilepsy had greater decreases than those with mental retardation and symptomatic epilepsy. Age and gender had no relation to the Mozart effect. (Lin L-C, Lee W-T, Wu H-C, et al. The long-term effect of listening to Mozart K448 decreases epileptiform discharges in children with epilepsy. *Epilepsy Behav* August 2011;21:420-424). (Respond: Dr Rei-Cheng Yang, Department of Pediatrics, Kaohsiung Medical University Hospital, No 100, Tzu-you 1st Road, Kaohsiung City, Taiwan 807. E-mail: rechya@kmu.edu.tw).

PEDIATRIC NEUROLOGY BRIEFS (ISSN 1043-3155) © 2011 covers selected articles from the world literature and is published monthly. Send subscription requests (\$68 US; \$72 Canada; \$75 airmail outside N America) to **Pediatric Neurology Briefs - J. Gordon Millichap, M.D., F.R.C.P.-Editor**, P.O. Box 11391, Chicago, Illinois, 60611, USA. The editor is Pediatric Neurologist at Children's Memorial Hospital and Professor Emeritus, Northwestern University Medical School, Chicago, Illinois.

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COMMENT. The Mozart effect was first observed in college students who showed induction of right frontal and left hemisphere EEG activity and enhancement of visual-spatial-temporal reasoning during and after listening to 10 minutes of the Mozart sonata tape. (Rauscher FH et al. **Nature** 1993; Sarnthein J et al. **Neurol Res** 1998). Relaxation tapes and minimalist music had no effect. These investigators also reported long-term enhancement of preschool children's spatial temporal reasoning during piano keyboard lessons but not computer lessons. Listening to music is also recommended as adjunct therapy in children with ADHD and adults with Parkinsonism or Alzheimer's disease. The Mozart effect in patients with epilepsy is explained by resonance of the cerebral cortex with the architecture of Mozart's music (Hughes JR et al. **Clin Electroencephalogr** 1998;29(3):109-119).

The variation in the Mozart response with cerebral localization of the epileptiform discharge may be a manifestation of the functional independence of sub-components of musical expression. The left hemisphere is dominant for rhythm, tune recognition, and pitch perception, while the right hemisphere is involved in timbre or quality of tone perception. The differentiation of pitch requires not only auditory, but also, visual interpretation and mental imagery. Listening to Mozart enhances cortical cerebral activity used in spatial-temporal reasoning (Platel, Frackowiak et al. **Brain** 1997;120:229-243). String music (string Mozart 448) with a larger number of higher harmonics than piano Mozart 448 had no effect on epileptiform discharges. (Lin L-C et al. **Epilepsy Res** 2010;89(2-3):238-245).

ATYPICAL PRESENTATIONS/COMORBIDITIES OF BCECTS

The frequency of atypical features among 196 patients (118 male and 78 female; mean age at diagnosis 7.64 years, range 1.5-14) with benign childhood epilepsy with centrotemporal spikes (BCECTS) was determined by a retrospective chart study in four pediatric neurology outpatient clinics in Israel between the years 1991 and 2008. Mean duration of follow-up was 4.43 years (range 2-11). Comorbidities or presentations included electrical status epilepticus in slow waves sleep (ESES) in 9 (4.6%) patients, Landau-Kleffner syndrome in 4 (2%), BCECTS with frequent refractory seizures in 3 (1.5%), BCECTS with falls in 2 (1%), atypical variant in 1 (0.5%), and oromotor dysfunction in 1 (0.5%). Sixty-one (31%) had ADHD, 43 (21.9%) had specific cognitive deficits, and 23 (11.7%) had behavioral disorders, including aggressiveness, anxiety, depression, and pervasive developmental disorder. (Tovia E, Goldberg-Stern H, Zeev BB, et al. The prevalence of atypical presentations and comorbidities of benign childhood epilepsy with centrotemporal spikes. **Epilepsia** Sept 2011;52(8):1483-1488). (Respond: Uri Kramer MD, Pediatric Neurology Unit, Tel Aviv, Sourasky, Medical Center, 6 Weitzman St, Tel Aviv 65211, Israel. E-mail: umkramer@netvision.net.il).

COMMENT. BCECTS is the most prevalent of benign focal epilepsies of childhood, accounting for 15-25% of epilepsy syndromes in children <15 years of age. Age at onset ranges from 3-13 years, with peak incidence at 7-8 years. The male-to-female ratio is 3:2. Hemifacial motor seizures are preceded by drooling and oromotor apraxia (Lombroso, 1967; Roulet, Deonna et al, 1989, 1993), and frequently followed by ipsilateral hand and leg involvement, usually nocturnal. Apart from ESES, an EEG