

PEDIATRIC NEUROLOGY BRIEFS

A MONTHLY JOURNAL REVIEW

J. GORDON MILLICHAP, M.D., F.R.C.P., EDITOR

Vol. 20, No. 10

October 2006

COGNITIVE AND ATTENTION DEFICIT DISORDERS

NEURAL CORRELATES OF CONGENITAL AMUSIA

Magnetic resonance T1-weighted images were analyzed, using voxel-based morphometry (VBM), to detect brain anatomical differences in two independent groups of adults with congenital amusia (or tone-deafness) compared to controls with normal pitch perception and no formal musical training. One sample from the Montreal Neurologic Institute included 13 amusic and 22 control individuals; a second sample from Newcastle University Medical School, UK, consisted of 8 amusics and 7 controls. On the Montreal Battery of Evaluation of Amusia (MBEA), a standardized test of music perception and memory, all amusics were severely impaired on melodic tests that discriminate changes in pitch while half had normal rhythm appreciation. A reduction in white matter concentration was detected in the right inferior frontal gyrus (IFG) of amusic subjects. White matter concentration in the right IFG was positively correlated with the melodic key-violation test and the memory tests of the MBEA, but not with rhythmic discrimination. VBM also showed more grey matter in the IFG of amusics relative to controls, corresponding to the decrease in white matter. In congenital amusics, an anomalous wiring of connections between the right IFG and the right auditory cortex is proposed, based on genetic factors and a lack of musical training and experience. Normal musical competence requires the integrity of white matter tracts in the right frontal brain. (Hyde KL, Zatorre RJ, Griffiths TD, Lerch JP, Peretz I. Morphometry of the amusic brain: a two-site study. **Brain** October 2006;129:2562-2570). (Respond: Krista L Hyde, Cognitive Neuroscience Unit, Montreal Neurological Institute, McGill University, 3801 University Street, Montreal, Quebec, Canada H3A 2B4).

COMMENT. Congenital amusia is characterized by an abnormal perception of music with normal hearing and otherwise preserved cognition. An inability to sing, recognized by friends but not the subjects themselves, is associated with deficits in pitch perception, chiefly

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pitch direction. The prevalence of congenital amusia is estimated at 5% of the population. Familial cases are common, and the suggested mode of inheritance is autosomal dominant with incomplete penetrance. Congenital amusia is correlated with abnormal development of white matter in the right inferior frontal gyrus and its connections with the right auditory cortex. In a review of music and the brain, Stewart L et al, at Newcastle University and Institute of Neurology, London, UK (**Brain** 2006;129:2533-2553), outline advances in our understanding of structural and functional organization of the brains of musicians, since the excellent publication by Crichtley and Henson (1977). Different components of music (pitch, melody, rhythm, timbre and emotion) are represented by different psychological and neural mechanisms. Both congenital and acquired brain lesions in cases of disordered music appreciation are discussed. The influence of musical training on the development of auditory evoked responses and neural networks in young children has been studied using magnetoencephalography (Fujioka T et al. **Brain** 2006;129:2593-2608). See **Ped Neur Briefs** (April 1997;11:28) for further reference to the anatomy of music (Platel H et al. **Brain** 1997;120:229-243). The value of musical education and exposure in grade school education as an aid to academic achievement may be underestimated in some present day school curricula.

COGNITIVE FUNCTION DURING OXCARBAZEPINE TREATMENT FOR PARTIAL SEIZURES

The effect of oxcarbazepine compared to standard antiepileptic drug therapy (carbamazepine and valproate) on cognitive function in 112 children and adolescents (ages 6 to 16 years) with newly diagnosed partial seizures was investigated in a multicenter, open-label, randomized, active-control group study at University Hospital, Bern, Switzerland; University of Maastricht, The Netherlands; and other European centers. Mean daily doses during the 4 weeks prior to cognitive function testing after 6 months treatment were 19.6 mg/kg for oxcarbazepine, 14.4 mg/kg for carbamazepine, and 20.7 mg/kg for valproate. Mean Computerized Visual Searching Task (CVST) times (the primary endpoint comparison of information processing speed) decreased in all 3 treatment groups compared to baseline, indicating improvement. No significant difference or worsening occurred of baseline in the secondary cognitive tests (finger-tapping, visual reaction time, mental information processing speed, memory, learning, and nonverbal IQ) between and within groups. Patients were free of seizures in 58% of oxcarbazepine-treated and in 50% of those receiving carbamazepine/valproate. Most frequent adverse events (>10%) were fatigue and headache for oxcarbazepine, fatigue and rash for carbamazepine, and headache, increased appetite, and alopecia for valproate. (Donati F, Gobbi G, Campistol J et al. Effects of oxcarbazepine on cognitive function in children and adolescents with partial seizures. **Neurology** August (2 of 2) 2006;67:679-682). (Reprints: Dr Albert P Aldenkamp, Department of Behavioural Sciences, Epilepsy Centre Kempenhaeghe, PO Box 61, NL-5590 AB Heeze, The Netherlands).

COMMENT. No significant change in cognitive function occurred during open-label monotherapy with oxcarbazepine in children treated for partial seizures. Results were similar in patients treated with carbamazepine/valproate.