

## Biomedical Update:

### Low levels of DHA may be culprit in intractable seizures

Low levels of the omega-3 fatty acid docosahexaenoic acid (DHA) may play a key role in hard-to-control seizures, according to a new study.

Thomas Henry and colleagues analyzed levels of DHA in the red blood cell membranes of 41 people suffering from complex partial seizures that could not be controlled by medication. (Previous research shows that low DHA levels in red blood cell membranes correlate with low levels in cerebral neurons.) Compared to a group of 57 nondisabled controls, the researchers say, the subjects with epilepsy had markedly lower levels of DHA.

The new finding is consistent with animal studies, which have demonstrated that giving DHA to epileptic rats raises the seizure threshold. Henry says additional studies are needed to determine if DHA supplements can help control seizures in people with drug-refractory epilepsy.

DHA and other omega-3 fatty acids are needed for normal development and function of the brain and eyes, and deficiencies of these nutrients have been linked to depression, bipolar disorder, learning disabilities, and attention deficit hyperactivity disorder.

"Patients with uncontrolled epilepsy have low levels of fatty acids," Thomas R. Henry, presentation to the American Academy of Neurology, San Francisco, April 28, 2004.

### MRIs show white matter overgrowth in autism

Many autistic children exhibit accelerated head growth in the first few months of life, and a significant number have larger than normal head circumferences (see ARRI 17/3). New research pinpoints the specific areas of white matter that are abnormally overgrown in these children.

Martha Herbert and colleagues analyzed MRI scans of 13 autistic children (all boys), 24 children with developmental language disorder or DLD (which also is linked to white matter overgrowth), and 29 non-disabled controls. Subdividing white matter into regions, the researchers found that in both autistic children and those with DLD, the outer layer of white matter was significantly larger than in controls. In contrast, the inner areas of white matter were similar in all groups.

All areas of the outer layer of white matter were abnormally large in autistic subjects, but the frontal lobe area showed the greatest enlargement. The researchers say their study—which shows that the most enlarged areas of white matter in autistic subjects were those in which neurons form an insulating myelin coating late in development—shows that brain overgrowth in autistic children occurs after birth, and may be related to myelination.

"Localization of white matter volume increase in autism and developmental language disorder," Martha R. Herbert, David A. Ziegler, Nikos Makris, Pauline A. Filipek, Thomas L. Kemper, Joseph J. Normandin, Heather A. Sanders, David N. Kennedy, and Verne S. Caviness, *Annals of Neurology*, Vol. 55, No. 4, March 2004, 530-40. Address: Martha R. Herbert, Center for Morphometric Analysis, 149 13<sup>th</sup> Street, Room 6012, Charlestown, MA 02129.

—and—

"MGH study details brain changes in autism, language disorder," news release, Massachusetts General Hospital, March 22, 2004.

### Gene on chromosome 2 associated with autism

A gene on chromosome 2 is strongly linked to autism, according to a recent study by Joseph Buxbaum and colleagues.

Screening more than 400 families who showed evidence of autism linked to chromosome 2, the researchers found that two particular variants of the SLC25A12 gene were transmitted from parents to autistic children significantly more often than would normally occur. According to Buxbaum, having one of these variants "appears to approximately double an individual's risk for this disorder." The gene is involved in energy production within the mitochondria, and is especially active during early brain development.

The finding is of particular interest because previous research has linked deficits in language development to the q region on chromosome 2, where the SLC25A12 gene lies.

"Linkage and association of the mitochondrial aspartate/glutamate carrier SLC25A12 gene with autism," N. Ramoz, J. G. Reichert, C. J. Smith, J. M. Silverman, I. N. Bespalova, K. L. Davis, and J. D. Buxbaum, *American Journal of Psychiatry*, Vol. 161, No. 4, April 2004, 662-9. Address: J. D. Buxbaum, Laboratory of Molecular Neuropsychiatry, Department of Psychiatry, Mount Sinai School of Medicine, New York, NY 10029.

—and—

"Autism gene found," news release, April 1, 2004, Mount Sinai School of Medicine.

### Psych drugs: rates of pediatric users soar

Despite studies showing that antidepressants are ineffective for children and can be extremely dangerous (see ARRI 18/1), the number of antidepressant prescriptions written for children and teens is continuing to grow by 10 percent per year, according to a new study.

Express Scripts, a pharmacy benefits management firm, conducted the study, which analyzed antidepressant use from 1998 to 2002 among approximately two million children under the age of 18 who were enrolled in medical insurance plans.

"The fastest growing segment of users," the firm found, "were found to be preschoolers aged 0 to 5 years," with rates of antidepressant use among girls in this age group doubling between 1998 and 2002 and use among boys rising by 64 percent. For the group as a whole, antidepressant use increased by 49 percent during the study period. Use of paroxetine, a drug the Food and Drug Administration now warns doctors not to prescribe for pediatric patients, increased 113 percent in girls and 91 percent in boys.

The use of Ritalin and other stimulant drugs for hyperactivity also continues to soar, with prescriptions of these drugs for children under five rising by 49 percent between 2000 and 2003, according to a study by the pharmacy benefits management company Medco. According to Robert Epstein, chief medical officer of Medco, sales of behavioral drugs are growing faster than sales of any other type of pediatric medicine.

"Preschoolers lead growth of antidepressant use, study reveals," news release, Express Scripts, April 2, 2004.

—and—

"Behavior drugs lead in sales for children," Milt Freudenheim, *New York Times*, May 17, 2004.

#### —Raise funds for ARI—

If you or your group plan to raise funds for autism research, via a walk, a run, a golf tournament, or other event, do it for the Autism Research Institute.

Since 1967, ARI has conducted and funded "Research That Makes a Difference." Other organizations spend millions of dollars on "pie in the sky" projects that may help children who will be born 5, 10, or 15 years from now. Our efforts, in contrast, are bringing major improvement, and even recovery (yes, recovery!) to thousands of today's autistic children. Please help if you can.