Findings alter views about serotonin's role in autism

Because a third of autistic children have high blood levels of a "messenger" chemical called serotonin, researchers have theorized that high *brain* levels of the substance might be linked to autistic symptoms. A new study by Christopher McDougle and colleagues, however, strongly suggests that serotonin function is *decreased*, not increased, in the autistic brain.

McDougle's study involved feeding autistic individuals diets deficient in the nutrient tryptophan, an amino acid from which the body manufactures serotonin. Animal studies show that lowering dietary tryptophan reduces brain serotonin function.

Several years ago (see ARRI 7/3), McDougle et al. reported that one adult autistic woman worsened after the researchers gave her a diet deficient in tryptophan. This year, the researchers tested a tryptophan-depleted diet on 20 drug-free autistic adults, to see if this finding could be replicated.

In a double-blind, placebo-controlled, crossover study, McDougle et al. fed their subjects low-tryptophan diets for 24 hours, followed the next day by either a tryptophan-depleted amino acid drink, or a "sham" drink containing normal amounts of tryptophan. The researchers measured blood levels of tryptophan both before and five hours after the tryptophan-depleted drinks were given, and found that tryptophan levels dropped markedly after the depleted drinks were administered.

Of the 17 subjects who completed the study, the researchers report, 11 subjects (or 65%) worsened behaviorally during the low-tryptophan phase, while none worsened during the placebo phase. "Tryptophan depletion led to a significant increase in behaviors such as whirling, flapping, pacing, banging and hitting self, rocking, and toe walking," McDougle et al. say. "In addition, patients were significantly less calm and happy and more anxious." No changes were seen, however, in social behaviors or in repetitive actions or thoughts. The most significant worsening of behavior was seen in autistic individuals with the most severe symptoms, and in those with the highest baseline levels of tryptophan.

While cautioning that their research is not conclusive, the researchers say that the worsening seen in tryptophan-deprived autistic adults supports the theory that these individuals "may be vulnerable to short-term alterations in central serotonin neurotransmission, and that a dysregulation in brain serotonin function may be... integral to the symptom manifestation of autism."

Editor's Note: Tryptophan is an amino acid which is not only safe but essential for life. The body uses vitamin B6 and magnesium to convert tryptophan to serotonin. In addition to being found in most protein-containing foods, tryptophan was freely sold in the U.S. as a food supplement for 25 years. In 1988, one shipment of contaminated tryptophan was imported into the U.S., which caused some deaths and illness. The FDA used the incident as an excuse to take tryptophan off the market, thus depriving families and physicians who care for autistic children of the use of this safe and essential source of serotonin. The FDA still prohibits you from buying tryptophan, presumably on the grounds that it might still be contaminated—even though the FDA requires that infant formulas and parenteral feeding solutions contain tryptophan.

Now that David Kessler is leaving the FDA, we hope that his successor will adopt a more favorable position. Please write or call your Representatives and Senators to ask that the next FDA chief *not* share Kessler's bias against vitamins, minerals, and other nutritional supplements.

—

"Effects of tryptophan depletion in drug-free adults with autistic disorder," Christopher J. McDougle, Susan T. Naylor, Donald J. Cohen, George K. Aghajanian, George R. Heninger, and Lawrence H. Price; *Archives of General Psychiatry*, Vol. 53, November 1996, pp. 993-1000. Address: Christopher J. McDougle, Connecticut Mental Health Center, 34 Park Street, Room 333B, New Haven, CT 06519.

LETTERS

SIBIS

To the Editor:

I am writing you to express my joy over the fact that my seven-year-old severely autistic son no longer has to live with uncontrollable self-injurious behavior. Despite intensive opposition from positive-intervention groups, we fought for the use of the SIBIS *[Editor's Note: the Self Injurious Behavior Inhibiting System—see page 1—which uses a brief, mild electrical shock to stop severe self-injury]*—and won.

Unfortunately, we had listened to many of the zealots who told us that there were "more humane ways" to deal with chronic self-injurious behavior. After four years of failed positive interventions, thousands of blows to my son's head and face, and him knocking out his two front teeth, I decided to take some serious action.

We saw immediate results [with SIBIS]. Within one week his self abuse went from 85 blows to the head a minute, 20 times a day, to 4 to 5 episodes a day with him only hitting his head two times each. Our son is now laughing and enjoying life for the first time in a very long time.

I must add a very important finding that we discovered: only AFTER the use of the SIBIS device did we see any therapeutic effects of other therapies. His body had to heal from four years of blows to the head and face. After all, he took more savage beatings from his own fists that do most professional boxers in their entire careers.

It sickens me to think that because my son is autistic, his self abuse is considered par for the course. I am here to tell you that it is not a normal behavior and it must be controlled.

SIBIS is not for everyone's self-injurious child. Just as there are different degrees of autism, there are different degrees of self-injury. One must carefully examine all methods of treatment and follow one's heart. We followed our hearts and saved our son's life.

Kim Gilbert-Oakley
(619) 746-5071

Neurofeedback

To the Editor:

[Re your article on neurofeedback in ARRI 10/2]: This is to relay observations of the results of EDS [neurofeedback] treatments on our son, who is a 19-year-old man with autism. Although he is not a "classic" autistic, his disability has caused him and ourselves much grief in the form of tantrumming, some rigidity, inability to understand cause-and-effect, emotional lability, and the concomitant tendency to be abused by other less-disabled clients and sometimes staff. Although he is a gentle person by nature, he can become aggressive and self-assaultive, damage property, etc., and "change is not his friend"—as with many autistic people. Also, he can become easily overtired and is prone to physical illnesses.

We began treatments in EDS for our son in late April. The initial results were astounding. His energy level increased to the point where his bedtime jumped by an entire hour. His bowling score jumped from 73 average to 105 in one week. We have seen, in the ensuing months, many (some very subtle but significant) changes in every area of functioning: vision, printing, memory, reasoning, emotional lability, tantrum control, and improved response to behavior modification training, speech articulation, attachment/detachment behavior, and empathy.

EDS is slowly changing our son into a person who will be able to live first in a supported environment and then, we believe, eventually in an independent mode. We are available to discuss EDS through our E-mail address: jdwilson@ccnet.com, and we have a website address at:

http://www.ccnet.com/~jdwilson.

John and Sheryl Wilson

Editor's Note: additional information about EDS is available from IMA (International Mobilization against Autism), which is encouraging research into neurofeedback as a rehabilitation approach. Interested individuals can contact IMA through LaVonne Filipek, (914) 331-2631, or leave a message at (609) 371-1717, ext. 777.

continued on page 7