

Neurofeedback therapy reduces autistic symptoms

Neurofeedback can markedly reduce autistic behavior problems and improve verbal production, socialization, sleep patterns, and academic performance, according to a recent pilot study.

In neurofeedback therapy, participants learn how to alter their own brainwave patterns, producing more normal output. The technique has been successfully used to help people suffering from migraines, sleep problems, anxiety, depression, traumatic brain injury, epilepsy, and attention deficit hyperactivity disorder.

Betty Jarusiewicz recently tested the effects of neurofeedback training on 12 children with autism spectrum disorders, comparing them to 12 autistic controls who did not receive training. The training, which involved 20 or more sessions, consisted of rewarding participants when they produced desired brainwave patterns. The Autism Treatment Evaluation Checklist (ATEC) and parental assessments were used to evaluate the treatment's effects.

Jarusiewicz reports, "Neurofeedback training resulted in a 26 percent average re-

duction in total ATEC rated autism symptoms, compared to 3 percent for the control group." All 12 children receiving neurofeedback training showed improvement, according to both ATEC scores and parent ratings. Improvements were reported in socialization, vocalization, school performance, anxiety levels, tantrums, and sleep patterns. She also reports that "the magnitude of improvement was independent of initial severity or age."

Jarusiewicz cites earlier research revealing that for individuals with attention deficits and hyperactivity, neurofeedback proved to be as effective treatment as stimulant drugs. Because of the attention problems that are a hallmark of autism, she says, neurofeedback may be particularly effective as a treatment for autistic individuals.

"Efficacy of neurofeedback for children in the autistic spectrum: a pilot study," Betty Jarusiewicz, *Journal of Neurotherapy*, Vol. 6, No. 4, 2002, 39-49. Address: Betty Jarusiewicz, 51 Memorial Parkway (Highway 36), Atlantic Highlands, NJ 07716.

Tests show thimerosal causes chromosome damage

New evidence indicating that the vaccine preservative thimerosal can cause physiological damage was reported recently by researchers in Germany.

G. A. Westphal and colleagues studied the effects of thimerosal using the cytochalasin B block micronucleus test, which is designed to determine if a chemical causes chromosomal damage. When cells divide, the genetic material replicates itself and then is divided between two "daughter" cells. If the process goes awry, bits of chromosomes may fail to be incorporated into a new daughter cell, forming a "micronucleus." In the micronucleus test, cells are treated with a chemical and the number of micronucleated cells is calculated; a higher-than-normal frequency

of these cells indicates that the chemical is capable of causing disruptions in chromosome structure or function.

Westphal and colleagues exposed blood cells from six healthy donors to thimerosal, testing each sample at least two times, and report, "Significant induction of micronuclei was seen at concentrations between 0.05-0.5 micro g/ml in 14 out of 16 experiments." There was wide variation in test results, although the variations were not associated with different alleles of genes that code for glutathione S-transferases (natural substances that may be involved in the detoxification of thimerosal or its byproducts).

"In conclusion," the researchers say, "thimerosal is genotoxic [damaging to genetic material] in the cytochalasin B block micronucleus test with human lymphocytes. These data raise some concern on the widespread use of thimerosal."

Thimerosal, which is approximately 50 percent mercury, was included in many childhood vaccines until the late 1990s (see related stories on pages 1 and 7).

"Thimerosal induces micronuclei in the cytochalasin B block micronucleus test with human lymphocytes," G. A. Westphal, S. Asgari, T. G. Schulz, J. Bünger, M. Müller, and E. Hallier, *Archives of Toxicology*, Vol. 77, No. 1, January 2003, 50-5. Address: G. Westphal, Department of Occupational Health, Georg-August-University Göttingen, Waldweg 37, 37073 Göttingen, Germany, gwestph@gwdg.de.

Correlation between autism, thimerosal 'seems to be confirmed'

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rosal-containing DTaP (diphtheria-tetanus-acellular-pertussis) and DTwCP (diphtheria-tetanus-whole-cell-pertussis) to children who received thimerosal-free DTaP vaccines. Their data, they say, show both that "those

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vaccinated with thimerosal-containing DTaP and DTwCP have higher rates of speech disorders, autism, and heart arrest overall," and also that "the relative risk of each of these disorders correlated with increasing doses of mercury contained in childhood vaccines." Increasing mercury exposure did not correlate with other common vaccine adverse events such as febrile seizures, vomiting, edema, fever, or pain. The researchers note that a mercury/adverse event link was seen only for symptoms and disorders for which such a link is "biologically plausible."

Geier and Geier say their findings are consistent with data from a different source, the U.S. Department of Education's recent report on the prevalence of childhood diseases among school-aged children. That report, they say, shows that rates of autism and speech disorders in children rose as levels of mercury in vaccinations increased, while showing no correlation between mercury exposure and other disorders such as deafness, blindness, or orthopedic impairments.

In addition, the researchers analyzed the CDC's Phase I thimerosal Vaccine Safety Datalink data, and found a close correlation between increasing mercury levels due to vaccines and neurologic disorders, autism, speech disorders, and attention deficit disorder.

Based on these converging lines of evidence, they say, "a causal relationship between thimerosal-containing childhood vaccines and neurodevelopment disorders and heart disease appears to be confirmed." They add, "It is to be hoped that complete removal of thimerosal from all childhood vaccines will help to stem the tragic, apparently iatrogenic epidemic of autism and speech disorders that the United States is now facing." (See related stories on this page and page 7.)

"Thimerosal in childhood vaccines, neurodevelopment disorders, and heart disease in the United States," Mark R. Geier and David A. Geier, *Journal of American Physicians and Surgeons*, Vol. 8, No. 1, Spring 2003, 6-11. Address: Mark Geier, 14 Redgate Court, Silver Spring, MD 20905.

China DAN! update

The Autism Research Institute's Defeat Autism Now! Project, which has brought about marked improvement in thousands of autistic children in the U.S., has sparked a great deal of interest world-wide.

In response to strong interest in the DAN! approach from China, Miriam Jang, M.D., a DAN! doctor with strong connections in China, has been organizing a DAN! Conference in September in Beijing and several other large Chinese cities. Dr. Jang and a group of American DAN! physicians were planning to travel to China for the September 2003 conference. However, concern

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