Dutch study: SIBIS highly effective

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Prior to intervention, the researchers say, the 12 subjects had extremely high rates of self-injury "that had resulted in severe physical injuries, such as 'cauliflower' ears, severe skin injury, and blindness." Ten required physical restraints at all times, and one, the researchers say, "had already hit himself to blindness in both eyes before we were consulted." Interventions including behavior modification, Gentle Teaching, functional movement training, and drugs had failed, in all 12 cases, to reduce self-injury significantly.

Treatment with the electric stimulus was combined with differential reinforcement of appropriate behaviors, and with functional communication training. Duker and Seys say that treatment with the HSP 3012 failed to reduce the self-injury of two subjects. "With seven individuals, however," they say, "suppression was nearly complete in that physical restraints were no longer necessary." An additional three subjects improved moderately, and required far less physical restraint.

While several individuals were fearful of the device initially, the researchers note that eventually most of the subjects "would panic or become extremely anxious when the device had to be temporarily removed." This is consistent with reports on SIBIS, which suggest that individuals want to continue wearing the device.

Duker and Seys say their results indicate that treatment with SIBIS, the HSP 3012, and similar devices "may be a viable option for individuals who show severe and life-threatening forms of self-injurious behavior."

U.S. studies consistently report that SIBIS stops or markedly reduces self-injury in many individuals unresponsive to other treatments. In a 1995 case study, for instance, Don Williams et al. (see ARRI 9/4) noted that long-term SIBIS treatment resulted in a 93% reduction in self-injurious episodes, an 82% reduction in injuries caused by self-injurious behavior, and a greatly reduced need for psychotropic drugs. And in 1994, Thomas Linscheid et al. (see ARRI 8/2) reported on several individuals whose self-injury was dramatically reduced or stopped by SIBIS, including one child who had previously hit his head violently 300 times an hour.

Despite the success of SIBIS treatment, the device is banned in some parts of the U.S., and several states have withheld funding for services for some children using the device (see letters, page 6).

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"Long-term use of electrical aversion treatment with self-injurious behavior," Pieter C. Duker and Daniel M. Seys; *Research in Developmental Disabilities*, 1996, Vol. 17, No. 4, pp. 293-301. Address: Pieter C. Duker, University of Nijmegen, Psychology Lab., A6.23, P.O. Box 9104, 6500 HE Nijmegen, The Netherlands.

Serotonin/immune system link?

Two of the strongest and most frequently replicated findings in autism research are elevated blood levels of serotonin, and abnormalities of the immune system—the system that protects the body against viruses, bacteria, and other invaders. A new report by Reed Warren and V. K. Singh offers evidence that abnormal serotonin levels in autism may, in fact, stem from a malfunctioning immune system.

Previous autism research by Warren, Singh, and colleagues investigated the major histocompatibility complex (MHC), a collection of genes on the sixth chromosome that gives each human a unique "biological fingerprint." The MHC genes signal cells to produce substances that allow the body to recognize its own cells as "self," and foreign invaders as "non-self." (MHC genes must be similar, for instance, for organ transplants to be successful.)

For each gene in the MHC, there are a variety of alleles—different variations of the gene—that can be inherited. Some MHC gene alleles have been linked to immune disorders such as multiple sclerosis and arthritis.

In their earlier research, Warren et al. searched for any link between autism and certain allele combinations (called haplotypes) in the MHC. The researchers found that a haplotype called B44-DR4, and an allele called the C4B null allele, occur with increased frequency in autistic subjects.

In their new study, Warren and Singh compared the serotonin levels of autistic subjects with the B44-DR4 haplotype and C4B null allele, autistic subjects without them, and non-disabled subjects. The results:

—Serotonin levels of autistic subjects without the B44-DR4 haplotype were not significantly elevated, while serotonin levels of autistic individuals with the haplotype *were* significantly higher than normal.

—The ten autistic subjects with the C4B null allele had elevated serotonin levels. While this allele is a part of the B44-DR4 haplotype, two of four subjects with the allele but not the entire haplotype had elevated serotonin levels. No autistic subjects without the C4B null allele had abnormally high serotonin levels.

Warren and Singh say evidence from immunological studies suggests that an autoimmune mechanism is a primary factor in the development of autism. The abnormal serotonin levels seen in children with particular MHC patterns, they say, "may be secondary phenomena to ongoing autoimmune processes in these subjects."

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"Elevated serotonin levels in autism: association with the major histocompatibility complex," R. P. Warren and V. K. Singh; *Neuropsychobiology*, 34, 1996, pp. 72-75. Address: Reed P. Warren, UMC 6895, Utah State University, Logan, UT 84322.

SSRIs: better, safer than traditional medications?

Research suggests that a new generation of drugs called selective serotonin reuptake inhibitors (SSRIs) may be more helpful in controlling aggression and self-injury, and cause fewer dangerous side effects, than most drugs commonly used to treat autism and mental retardation. Several of these studies, however, reveal that like other psychoactive drugs, SSRIs can cause serious side effects.

The SSRIs, which include Prozac (fluoxetine), Zoloft (sertraline), Luvox (fluvoxamine), and Paxil (paroxetine), are designed to inhibit the reuptake of serotonin after it is released by neurons, while having a minimal effect on other brain chemicals. Among recent studies on the drugs' effects:

—George Awad recently tested SSRIs on eight children under the age of seven. All of the children were diagnosed as having autism, pervasive developmental disorder, or Asperger's syndrome. In an open clinical trial, six children received Prozac, two received Paxil, and two received Zoloft.

Awad reports that the drugs "produced positive results in half the children, particularly those with obsessional, repetitive, and anxiety symptoms." Improvements were seen in language and communication skills, empathy, social relating, and self-help skills. Two children grew worse while taking SSRIs, becoming hyperactive, agitated, and/or aggressive, and were taken off the drugs. The remaining two children, Awad says, were taken off the drugs even though drug treatment was not conclusively linked to adverse effects.

Awad concludes that "the use of SSRIs in the treatment of some symptoms of PDD clearly shows mixed results," noting that "an improvement rate of 50% is not great, but is still acceptable." He points out that side effects of SSRIs (which can include nausea, sleepiness, weakness, dizziness, insomnia, sweating, tremor, nervousness, and lack of appetite) are less severe than the serious or even life-threatening side effects often caused by neuroleptic drugs such as Haldol. He also notes that "SSRIs are easier to administer than clomipramine, which requires ECG and blood monitoring."

In Awad's study, children with milder forms of PDD reacted more positively to SSRIs than children with more severe autistic symptoms, a finding he believes may suggest that some cases of mild PDD are more closely related to obsessive compulsive disorder and anxiety disorders than to autism.

—In an open trial, Jessica Hellings et al. administered the SSRI sertraline to nine mentally retarded adults ranging in age from 20 to 47 years. All of the subjects in the study exhibited aggression and/or self-in-

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