Rate of autoimmune disorders high in autism families

Thayne Sweeten and colleagues recently reported a surprising finding: the rate of autoimmune disorders is even higher in relatives of autistic children than it is in relatives of children with autoimmune diseases. The finding provides additional evidence that autism involves autoimmune processes, in which the body attacks its own cells.

Sweeten and colleagues compared three groups in their study:

• 101 families with a child with PDD (pervasive developmental disorder), a category including autism, Asperger syndrome, and PDD-NOS (pervasive developmental disorder not otherwise specified).

• 101 families with a child with an autoimmune disorder.

• 101 families with a non-disabled child.

Surveying these families to determine which first- and second-degree relatives had been diagnosed as having an autoimmune disorder, the researchers found that "the frequency of autoimmune disorders was significantly higher in families of the PDD probands compared with families of both the autoimmune and healthy control probands." The average number of relatives with autoimmune disorders was 1.87 for the PDD group, 1.44 for the autoimmune group, and 0.93 for the non-disabled control group. In particular, rates of hypothyroidism, Hashimoto's thyroiditis, and rheumatic fever were elevated in PDD families. Families whose children had autism or Asperger's syndrome had a higher rate of autoimmune disorders than families of children with PDD-NOS, who had a rate close to that of families of non-disabled controls.

The researchers also found a slight increase in the rate of autoimmune disease in the brothers of autistic children as compared to brothers of non-disabled children. "Although this finding did not reach statistical significance," they say, "it is notable because of the rarity of autoimmune disorders in young boys, the close genetic relationship of these brothers to the PDD probands, and the male preponderance in autism."

They add that the finding of increased autoimmune illness in grandmothers, uncles, mothers, and brothers of autistic children "suggests a possible mother-to-son transmission of susceptibility to autoimmune disease in the PDD families." They speculate that autoimmunity or chronic immune system activation could account for some of the biochemical anomalies seen in autistic individuals, including high uric acid and iron deficiency anemia, which are often seen in autoimmune disorders.

The researchers say their findings "warrant additional investigation into immune and autoimmune mechanisms in autism." Their finding is particularly interesting, they note, in light of evidence indicating that autism is becoming more common—as is pediatric type 1 diabetes, an autoimmune disorder.

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"Increased prevalence of familial autoimmunity in probands with pervasive developmental disorders," Thayne L. Sweeten, Suzanne L. Bowyer, David J. Posey, Gary M. Halberstadt, and Christopher J. McDougle, *Pediatrics*, Vol. 112, No. 5, November 2003, e420 (electronic publication). Address: Christopher J. McDougle, Department of Psychiatry, Indiana University School of Medicine, Psychiatry Building A305, 1111 W. 10th Street, Indianapolis, IN 46202-4800, cmcdougl@iupui.edu.

Case study: dramatic results from treatment with fatty acid EPA

Mounting research indicates that many children with autism, depression, or learning disabilities are deficient in omega-3 fatty acids (see ARRI 14/4, 13/1). A recent case study by Stewart Johnson and Eric Hollander indicates that supplementation with one of these omega-3 fatty acids, eicosapentaenoic acid (EPA), can dramatically reduce obsessive-compulsive behaviors in autism.

The researchers' subject, an 11-year-old, was treated with several medications (including lithium, risperidone, and paroxetine), but the drugs failed to control his anxiety and agitation. He became highly compulsive about his autistic rituals and routines, constantly repeating, "It's one o'clock," and exhibiting extreme anxiety about stores opening and closing and about streetlights turning on or off. All of these behaviors are typical of obsessive-compulsive disorder (OCD).

The researchers gave the boy supplements of fish oil containing EPA, raising the dose to 540 mg of EPA per day by the end of four weeks. "Complete elimination of the anxiety and agitation was reported by parents and clinician observations after one week at this level," they say. "His fixation and agitation about the time of day disappeared, along with his anxiety over routine, inconsequential events and observations." The boy was able to pay attention to his schoolwork, and to participate more completely in daily activities. He continued to exhibit reduced anxiety and agitation at an eight-month followup.

Citing research showing low omega-3 levels in autistic children, the researchers conclude that "further controlled study of the efficacy of omega-3 fatty acids in the treatment of agitation, anxiety, and affective instability in autism seems warranted."

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"Evidence that eicosapentaenoic acid is effective in treating autism" (letter), Stewart M. Johnson and Eric Hollander, *Journal of Clinical Psychiatry*, Vol. 64, No. 7, 2003, 848-9. Address: Eric Hollander, Mount Sinai School of Medicine, One Gustave L. Levy Place, New York, NY 10029-6574.

New Geier study again shows thimerosal risk

Extending their previous research, David and Mark Geier have released a new study that again shows a strong association between exposure to thimerosal, a mercury-laden preservative added to many pediatric vaccines until recently, and autism and other neurodevelopmental disorders.

In the current study, Geier and Geier analyzed dose-response curves in order to investigate the relationship between increasing dosages of thimerosal and the risk of neurodevelopmental disorders. Comparing children who had received thimerosal-free diphtheria-tetanus-acellular pertussis (DTaP) shots to those who received thimerosal-containing DTaP shots, they found "a close linear correlation between increasing mercury from thimerosal contained in childhood vaccines and the increased odds ratio of neurodevelopmental disorders." Overall, they say, the children receiving thimerosal-containing DTaP shots were 2.6 times as likely to develop autism, 1.5 times as likely to develop personality disorders, and 2.5 times as likely to develop mental retardation as were children receiving thimerosal-free DTaP shots. Increasing levels of mercury did not correlate with other acute adverse DTaP effects, such as fevers, seizures, pain, edema, or vomiting, or with visual impairment, deaf-blindness, or orthopedic problems.

Analyzing data on neurodevelopmental disorders provided by the U.S. Department of Education, and charting the data in relationship to the average dosages of mercury that children in different birth cohorts received, the researchers once again found a linear relationship between increasing thimerosal and increased risk of autism and speech disorders.

In addition, the researchers found that "the instantaneous relative excess mercury that U.S. children received from their childhood immunizations ranged from 3.2 to 32-fold in comparison to the U.S. FDA safety guidelines for the daily maximum oral ingestion of methyl mercury." They note that intravenous injection of mercury appears to result in far higher concentration in organs than oral ingestion.

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—Raise funds for ARI—

If you or your group plans 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 (see p. 3).