Vaccine controversy

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concerns over possible links between vaccines and a host of medical problems including autism, diabetes, and multiple sclerosis. "We have absolutely suppressed infectious disease in childhood, there's no question," Barbara Fisher of the National Vaccine Information Center told the newspaper. "But public health is not only measured by the absence of infectious disease. It's also measured in chronic disease, such as diabetes, asthma, multiple sclerosis, learning disabilities.... Why are these immune and neurologic disorders on the rise?"

• Dozens of other TV shows, radio stations, and newspapers ran articles on the vaccination issue. At one Buffalo station, which scheduled a three-hour morning segment on the controversy, listener response was so overwhelming that the station cancelled its entire afternoon of regular programming to allow the discussion to continue!

Once skeptical, many mainstream researchers are acknowledging that investigations into the possible side effects of vaccines have been inadequate, and that careful research is needed to determine whether or not immunizations are safe—particularly for infants and young children. Marie Bristol-Power, coordinator of the Network on Neurobiology and Genetics of Autism at the National Institute of Child Health and Human Development, says, "There [are] a sufficient number of credible people who have reported the appearance of a link between the vaccine and autism, and we have to find out why. Although we think vaccines are safe for most children, research is needed to identify potentially susceptible populations. We also have to investigate the timing of administration and grouping of vaccines." For their part, critics of the current vaccination program are calling for more research, more information on which to base immunization decisions, and an end to mandatory vaccinations. Says physician Harold Buttram, "Parents should be allowed the right of informed consent, or the right to accept or reject vaccines for their children based on full and uncensored disclosure of pros and cons."

PET studies hint at serotonin abnormalities

Research suggests that abnormalities in the synthesis or usage of the neurotransmitter serotonin play a role in autism (see ARRI 11/2, 11/1, 10/1). More evidence pointing to serotonin abnormalities comes from Diane Chugani and colleagues, who used a new technique to study serotonin synthesis in the brains of 30 autistic children, their nondisabled siblings, and a second control group comprised of children with epilepsy.

The researchers used a new tracer that allowed them to directly measure serotonin synthesis in the brain using positron emission tomography (PET) scanning. They report that in non-autistic children, "serotonin synthesis capacity was more than 200 percent of adult values until the age of five years and then declined toward adult values." In contrast, they say, autistic children's serotonin synthesis capacity "increased gradually between the ages of 2 years and 15 years to values 1.5 times adult normal values." Differences between boys and girls were seen in non-autistic children (with serotonin synthesis capacity declining at an earlier age in girls than in boys), but not in the autistic group.

Chugani et al. say their data "suggest that humans undergo a period of high brain serotonin synthesis capacity during childhood, and that this developmental process is disrupted in autistic children." They cite evidence that serotonin is involved in the differentiation of brain cells during development, and that administration of serotonin-depleting drugs to pregnant rats causes altered neuronal development in their offspring similar to that reported in autopsy studies of autistic humans.

An earlier study by Chugani and colleagues found evidence of altered serotonin synthesis in specific brain areas of male but not female autistic subjects. In this study, the researchers say, "decreased serotonin synthesis was found in the left frontal cortex and thalamus in five of the seven boys and in the right frontal cortex and thalamus in the two remaining autistic boys." In addition, they say, all seven boys exhibited elevated serotonin synthesis in the contralateral dentate nucleus. The researchers say that altered serotonin synthesis in the dentatothalamocortical pathway, which is critically involved in sensory integration and language development, "may represent one mechanism underlying the pathophysiology of autism."

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"Developmental changes in brain serotonin synthesis capacity in autistic and nonautistic children," D. C. Chugani, O.Muzik, M. Behen, R. Rothermel, J. J. Janisse, J. Lee, and H. T. Chugani, *Annals of Neurology*, Vol. 45, No. 3, March 1999, pp. 287-295. Address: Diane C. Chugani, Children's Hospital of Michigan PET Center, 3901 Beaubien Boulevard, Detroit, MI 48201.

—and—

"Altered serotonin synthesis in the dentatothalamocortical pathway in autistic boys," D. C. Chugani, O. Muzik, R. Rothermel, M. Behen, P. Chakraborty, T. Mangner, E. A. da Silva, and H. T. Chugani, *Annals of Neurology*, Vol. 42, No. 4, October 1997, pp. 666-669. Address: see above.

PANDAS treatment reduces symptoms

Several years ago, researcher Susan Swedo and colleagues identified a new disease entity which they dubbed PANDAS, for "pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections." PANDAS is implicated as a cause of many cases of Tourette's syndrome, obsessive-compulsive disorder, and attention deficit hyperactivity disorder, and a recent study also indicated that PANDAS plays a role in autism (see ARRI 13/1).

One treatment being tested for PANDAS is the removal of antibodies from the bloodstream by plasmapheresis, in which blood is withdrawn, the plasma portion of the blood is removed, and the blood cells are mixed with a plasma substitute and returned to the body. According to a recent presentation by Swedo and colleagues to the American Academy of Child and Adolescent Psychiatry, the technique is highly effective in reducing the tics and obsessive behaviors of children with PANDAS.

In the new study, 28 children diagnosed with PANDAS received either plasmapheresis, intravenous immunoglobulin therapy, or a placebo. The researchers report that tics decreased by 50% within one month in the plasmapheresis-treated patients and 25% in the group receiving immunoglobulin. In contrast, no change was seen in the placebo group. In addition, obsessive-compulsive symptoms declined by 60% in the plasmapheresis-treated group and 45% in the immunoglobulin-treated group, but did not change in the placebo group.

Tics declined by 50%, and obsessive-compulsive behaviors by 60%, in the plasmapheresis-treated children.

Swedo et al. say that children treated with plasmapheresis showed significant improvement on measures of global functioning. In addition, brain scans showed evidence of normalization of brain structures affected by PANDAS.

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"Plasmapheresis may benefit strep-related OCD," *Pediatric News*, Vol. 33, No. 1, p. 28, 1999.

LETTERS

Letters to the editor are welcome. Letters intended for publication must be signed and should not exceed two pages including references. Letters may be edited.