

Autism Research Review

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Reviewing biomedical and educational research in the field of autism and related disorders

Smoking gun? Measles found in vast majority of autistic children with gut disorder

Strong evidence that the measles virus can act as an immune system "trigger," causing the gut abnormalities detected in many autistic children, appears in a new study by Andrew Wakefield and colleagues.

Earlier, the researchers reported the discovery of a unique form of inflammatory bowel disease, involving colitis and ileoco-

Wakefield says, "What we have done is to show that the parents' story [about deterioration in their children following MMR vaccination] is valid. We have found measles virus highly in excess of developmentally normal controls in the diseased [bowel] tissue of children with autism, and not only in the diseased tissue but in the very cells in that diseased tissue that you would anticipate if it were the cause of the disease."

lonic lymphonodular hyperplasia, in a high percentage of autistic children (see ARRI 15/1, 12/1). In the new research, Wakefield et al. examined biopsy samples from 91 developmentally disabled children who exhibited these bowel abnormalities, comparing them to 70 non-disabled children. The control group included subjects with no bowel problems, subjects with Crohn's disease, ulcerative colitis, and other bowel abnormalities, and subjects who had undergone appendectomies.

The researchers report that 75 of the 91 children with developmental delays and bowel abnormalities had measles virus RNA in their ileal lymphoid tissue, compared with only five of the 70 controls. They conclude, "These data confirm an association between the presence of measles virus and gut pathology in children with developmental disorder." They also note that the syndrome they have identified is far more common in boys than in girls, a finding consistent with the male predominance in autism and related developmental disabilities.

Study co-author John O'Leary, commenting on the paper's findings, said, "I stand by the findings of our research, which raises many questions about whether measles virus has a role in bowel inflammation in developmental disorder." He stressed that the chil-

dren the researchers studied were likely to be "a very distinctive subset" of autistic individuals, and that the study did not specifically investigate the role of the MMR vaccine in causing either bowel disease or developmental disorder. However, he said it was unlikely that the measles found in the biopsies of the autistic children was from a wild virus.

"A measles rash is pretty classic," he told the *British Medical Journal*. "...The parents probably would have spotted that."

In a recent interview, Wakefield said, "In light of this evidence there is a question mark [about the MMR vaccine], and while that question mark exists, parents must have the choice over how they protect their children." Mentioning the many parents who charge that their children developed symptoms of autism as a result of MMR shots, he added, "What we have done is to show that the parents' story is valid. We have found measles virus highly in excess of developmentally normal controls in the diseased [bowel] tissue of children with autism, and not only in the diseased tissue but in the very cells in that diseased tissue

that you would anticipate if it were the cause of the disease."

Like O'Leary, Wakefield notes that the study did not conclusively link the measles

Physician and U.S. Representative Dave Weldon comments, "While the verdict is still out on whether the MMR vaccine causes regressive autism, an association has been demonstrated in this study and others. I call upon the American Academy of Pediatrics to give parents all the facts about this safety concern and allow parents to make an informed decision about whether or not they want to separate the MMR vaccine for their children."

RNA found in subjects to MMR vaccine. "We don't know whether it is the vaccine strain or not," he told the *British Medical Journal*, "but these children's only exposure has been to the vaccine strain. None of them had a history of measles."

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Defect may cause sensory overload in autistic brain

Autistic children's brains may receive too much sensory input due to abnormalities in the organization of their neurons, according to a new study.

The brain contains millions of "minicolumns," or circuits of about 100 neurons and their connections. Manuel Casanova and colleagues compared the structure of minicolumns in the brains of nine autistic individuals and nine controls, looking at areas of the prefrontal cortex and temporal lobes.

"Cell columns in brains of autistic patients were more numerous, smaller, and less compact in their cellular configuration," the researchers report, "with reduced neuropil space in the periphery." (Neuropil is the tissue between neurons, containing synapses, dendrites, and axons.) Casanova says that this may allow sensory signals to spread too easily from column to column, causing a sensory overload.

"They have too much signal-to-noise,"

Casanova notes, "which actually does explain some of their hypersensitivity."

Casanova says, "An autistic person can look at you and it's almost like looking into the sun. There are too many features. There's too much intensity. What do you do when you look at the sun? You turn away. You try to shield yourself from that sensory impact."

The researchers suggest that if the abnormal minicolumn architecture in autistic brains can be identified very early in life, it may be possible, using anticonvulsants or other treatments, to inhibit excess sensory input.

"Minicolumnar pathology in autism," Manuel F. Casanova, Daniel P. Buxhoeveden, Andrew E. Switala, and Emil Roy, *Neurology*, Vol. 58, No. 3, February 12, 2002, 428-32. Address: Manuel F. Casanova, Downtown VA Medical Center, 26 Psychiatry Service, 3B-121, Augusta, GA 30910.

—and—

"MCG doctors' brain study advances autism research," Tom Corwin, *Augusta Chronicle*, February 12, 2002.