

Serological Detection of Measles Virus in Relation to Autoimmunity in Autism

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Abstract: Autoimmunity to brain myelin protein (MBP) secondary to a measles infection may cause autistic regression in some children with this neurodevelopmental disorder. We hypothesized that measles-mumps-rubella (MMR) immunization is a source of measles infection; hence the serological link between MMR and MBP antibodies might exist in autistic children. To test the hypothesis, we conducted a serological study of MBP, MMR and neuron-axon filament protein (NAFP) in serum and cerebral spinal fluid (CSF) of autistic children. Antibodies were assayed by immunoblotting with MBP, NAFP and MMR as antigens. We found that a significant number of autistic children had antibodies to MBP (up to 88% positive) and antibodies to MMR (up to 65% positive), but not to NAFP. Normal children did not harbor these antibodies. Moreover, the analysis of paired samples (serum and CSF) from 7 autistic children also revealed a high degree of serological association between MMR and MBP: 50% of CSF had MMR antibodies, 86% of CSF had MBP antibodies, 75% of sera had MMR antibodies and 100% of sera had MBP antibodies. Therefore, as indicated by paired analysis of serum and CSF samples, there is a strong correlation between MMR antibodies and MBP autoantibodies in autism. By using monoclonal antibodies, we characterized that the MMR antibodies are due to the measles subunit, but not due to mumps or rubella subunits, of the polyvalent vaccine. Furthermore, the MMR and MBP antibodies are not cross-reactive because the pre-incubation of MBP with MMR did not block the binding of MBP antibodies. In light of the new evidence presented here, we suggest that the MMR vaccine in some cases of autism might cause autoimmunity and it might do so by bringing on an atypical measles infection that does not produce a typical measles rash but manifests neurological symptoms upon immunization.

Note: The MMR antibody has been previously reported to be the hemagglutinin protein of the vaccine measles virus (MV-HA). *“Immunoblotting analysis showed the presence of an unusual MMR antibody in 60% (75 of 125) of autistic children, but none of the 92 normal children had this antibody. Moreover, by using MMR blots and monoclonal antibodies, we found that the specific increase of MV antibodies or “MMR” antibodies was related to measles hemagglutinin antigen (MV-HA)”* ([Singh, VK. Abnormal Measles Serology and Autoimmunity in Autistic Children, Journal of Allergy and Clinical Immunology 109, no. 1, page S232, Jan. 2002.](#)) **It is confirmed here (in an additional population) that this antibody is not typically produced during normal immune response to the vaccine.**

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