

Bilaga 1

107 vetenskapliga studier som du som riksdagsledamot och beslutsfattare bör känna till

Här är en liten del av alla studier som har utförts, vilka tyder på att vacciner är skadliga. Forskare har funnit att vacciner kan orsaka underliggande medicinska tillstånd som läkare och forskare brukar hitta hos barn med diagnos. Dessa tillstånd innefattar gastrointestinala problem, defekt immunsystem, kroniska infektioner, mitokondriella störningar, oxidativ stress, autoimmuna tillstånd, neurologiska störningar, hjärninflammation, skada på blod-hjärnbarriären, anfall, gen-aktivering och -förändring, endokrin dysfunktion, cellulär apoptos och andra störningar.

Vi visar också att adjuvanser med aluminium och kvicksilver är mycket giftiga för människor och för människans hjärna och nerver. Kviksilver finns fortfarande i influensavacciner.

1. YALE SCIENTISTS FIND STRONG ASSOCIATION BETWEEN VACCINATIONS AND ANOREXIA, OCD, AND ANXIETY DISORDER

[Temporal Association of Certain Neuropsychiatric Disorders Following Vaccination of Children and Adolescents: A Pilot Case-Control Study](#)

Frontiers in Psychiatry, January 2017, Douglas L. Leslie, Robert A. Kobre, Brian J. Richmand

Summary: "Subjects with newly diagnosed anorexia nervosa were more likely than controls to have had any vaccination in the previous 3 months [hazard ratio (HR) 1.80, 95% confidence interval 1.21-2.68]. Influenza vaccinations during the prior 3, 6, and 12 months were also associated with incident diagnoses of AN, OCD, and an anxiety disorder. Several other associations were also significant with HRs greater than 1.40 (hepatitis A with OCD and AN; hepatitis B with AN; and meningitis with AN and chronic tic disorder). This pilot epidemiologic analysis implies that the onset of some neuropsychiatric disorders may be temporally related to prior vaccinations in a subset of individuals."

2. ITALIAN SCIENTISTS FIND UNEXPECTED CONTAMINANTS IN ALL PEDIATRIC VACCINES, INCLUDING LEAD, STAINLESS STEEL, TUNGSTEN, IRON, AND CHROMIUM

[New Quality-Control Investigations on Vaccines: Micro- and Nanocontamination](#)

International Journal of Vaccines and Vaccination, January 2017, Dr. Antonietta M. Gatti, Stefano Montanari

Summary: Scientists found contaminants in all vaccines that are not listed on the label of the vaccines. "The analyses carried out show that in all samples checked vaccines contain non biocompatible and bio-persistent foreign bodies which are not declared by the Producers, against which the body reacts in any case. This new investigation represents a new quality control that can be adopted to assess the safety of a vaccine. Our hypothesis is that this contamination is unintentional, since it is probably due to polluted components or procedures of industrial processes (e.g. filtrations) used to produce vaccines, not investigated and not detected by the Producers. If our hypothesis is actually the case, a close inspection of the working places and the full knowledge of the whole procedure of vaccine preparation would probably allow to eliminate the problem."

3. ISRAELI AND ITALIAN SCIENTISTS WARN THAT VACCINE ADJUVANTS (ALUMINUM) ARE CAUSING A WIDE-RANGE OF AUTOIMMUNE CONDITIONS, INCLUDING SJOGREN'S SYNDROME

[Autoimmune/Inflammatory Syndrome Induced by Adjuvants and Sjogren's Syndrome](#)

IMAJ VOL 18, March-April 2016, Serena Colafrancesco, Carlo Perricone, Yehuda Shoenfeld

Summary: "Several case reports have suggested that both vaccines and silicone may trigger the development of SS [Sjogren's syndrome], a chronic systemic autoimmune inflammatory condition involving the exocrine glands]. Aluminum is one of the principal adjuvants used in vaccine formulation and may be responsible for the development of ASIA syndrome. It seems that its ability to behave as an adjuvant might be related to evidence that aluminum salts seem to both induce the activation of dendritic cells and complement components and increase the level of chemokine secretion at the injection site... other vaccines including Bacillus Calmette Guerin (BCG), hepatitis A and/or B and human papillomavirus, should be avoided or considered only in selected patients... There is considerable evidence raising the possibility of vaccine-triggered autoimmunity"

4. INFANTS VACCINATED WITH MULTIPLE VACCINES AT ONCE HAVE MUCH HIGHER HOSPITALIZATIONS AND DEATH RATES THAN INFANTS WHO RECEIVE FEWER SIMULTANEOUS VACCINES

Combining Childhood Vaccines at One Visit Is Not Safe

Journal of American Physicians and Surgeons, Summer 2016, Neil Z. Miller

Summary: "Our study showed that infants who receive several vaccines concurrently, as recommended by CDC, are significantly more likely to be hospitalized or die when compared with infants who receive fewer vaccines simultaneously. It also showed that reported adverse effects were more likely to lead to hospitalization or death in younger infants. The safety of CDC's childhood vaccination schedule was never affirmed in clinical studies. Vaccines are administered to millions of infants every year, yet health authorities have no scientific data from synergistic toxicity studies on all combinations of vaccines that infants are likely to receive. National vaccination campaigns must be supported by scientific evidence."

5. ISRAELI, CANADIAN, AND COLOMBIAN SCIENTISTS SHOW THAT GARDASIL VACCINE TRIGGERS BRAIN INFLAMMATION AND AUTOIMMUNITY IN MICE

Behavioral abnormalities in female mice following administration of aluminum adjuvants and the human papillomavirus (HPV) vaccine Gardasil

Immunol Res, July 2016, Rotem Inbar, Ronen Weiss, Lucija Tomljenovic, Maria-Teresa Arango, Yael Deri, Christopher A. Shaw, Joab Chapman, Miri Blank, Yehuda Shoenfeld

Summary: "Vaccine adjuvants and vaccines may induce autoimmune and inflammatory manifestations in susceptible individuals. To date most human vaccine trials utilize aluminum (Al) adjuvants as placebos despite much evidence showing that Al in vaccine-relevant exposures can be toxic to humans and animals...It appears that Gardasil via its Al adjuvant and HPV antigens has the ability to trigger neuroinflammation and autoimmune reactions, further leading to behavioral changes...In light of these findings, this study highlights the necessity of proceeding with caution with respect to further mass-immunization practices with a vaccine of yet unproven long-term clinical benefit in cervical cancer prevention"

6. ALUMINUM IN VACCINES IS HIGHLY NEUROTOXIC AND EXPOSURE LEVELS GIVEN TO INFANTS HAVE DRAMATICALLY INCREASED

[Aluminum in Childhood Vaccines Is Unsafe](#)

Journal of American Physicians and Surgeons, Winter 2016, Neil Z. Miller

Summary: "Infants and young children throughout the world receive high quantities of aluminum from multiple inoculations. Incremental changes to the vaccination schedule during the past several years significantly increased the quantity of aluminum in childhood shots. Numerous studies provide compelling evidence that injected aluminum can be detrimental to health. Aluminum is capable of remaining in cells long after vaccination and may cause neurologic and autoimmune disorders. During early development, the child's brain is more susceptible to toxins and the kidneys are less able to eliminate them. Thus, children have a greater risk than adults of adverse reactions to aluminum in vaccines. Millions of children every year are injected with vaccines containing mercury and aluminum despite well-established experimental evidence of the potential for additive or synergistic toxicity when an organism is exposed to two or more toxic metals."

7. ALZHEIMER'S VICTIMS HAVE VERY HIGH BRAIN ALUMINUM LEVELS, A POTENT NEUROTOXIN

[Aluminium in brain tissue in familial Alzheimer's disease](#)

Journal of Trace Elements in Medicine and Biology, November 2016, Ambreen Mirza, Andrew King, Claire Troakes, Christopher Exley

Summary: "Aluminium has been shown to be present in brain tissue in sporadic Alzheimer's disease. We have made the first ever measurements of aluminium in brain tissue from 12 donors diagnosed with familial Alzheimer's disease. The concentrations of aluminium were extremely high, for example, there were values in excess of 10mg/g tissue dry wt. in 5 of the 12 individuals. Overall, the concentrations were higher than all previous measurements of brain aluminium except cases of known aluminium-induced encephalopathy. We have supported our quantitative analyses using a novel method of aluminium-selective fluorescence microscopy to visualise aluminium in all lobes of every brain investigated. The unique quantitative data and the stunning images of aluminium in familial Alzheimer's disease brain tissue raise the spectre of aluminium's role in this devastating disease."

8. VACCINES IMPLICATED IN EPIDEMIC OF FOOD ALLERGIES

Evidence that Food Proteins in Vaccines Cause the Development of Food Allergies and Its Implications for Vaccine Policy

Journal of Developing Drugs, 2015, Vinu Arumugham

Summary: "Numerous studies have demonstrated that food proteins contained in vaccines/injections induce food allergy. The IOM's authoritative report has concluded the same. Allergen quantities in vaccines are unregulated. Today kids are more atopic. C-section births bias the newborn's immune system towards IgE synthesis due to sub-optimal gut microbiome [19]. C-section birth rates have gone up 50% in the last few decades. The vaccine schedule has increased the number of vaccine shots to 30-40 and up to five vaccines are simultaneously administered to children. Vaccines also contain adjuvants such as aluminum compounds and pertussis toxin that bias towards IgE synthesis. Given these conditions, the predictable and observed outcome is a food allergy epidemic."

9. CHINESE SCIENTISTS FIND MICE INJECTED WITH THIMEROSAL (VACCINE MERCURY) HAVE BEHAVIORAL IMPAIRMENTS SIMILAR TO AUTISM

Transcriptomic Analyses of Neurotoxic Effects in Mouse Brain After Intermittent Neonatal Administration of Thimerosal,

Toxicological Sciences, March 2014, Xialong Li, Fengqin Qu, Wenjuan Xe, Fengli Wang, Hongmei Lui

Summary: "Thimerosal-treated mice exhibited neural development delay, social interaction deficiency, and inclination of depression. Apparent neuropathological changes were also observed in adult mice neonatally treated with thimerosal. High-throughput RNA sequencing of autistic-behaved mice brains revealed the alternation of a number of canonical pathways involving neuronal development, neuronal synaptic function, and the dysregulation of endocrine system."

10. NEURODEVELOPMENTAL DISORDERS ARE MUCH MORE COMMON IN CHILDREN WHO RECEIVED MERCURY-CONTAINING VACCINES

[A Dose-Response Relationship between Organic Mercury Exposure from Thimerosal-Containing Vaccines and Neurodevelopmental Disorders](#)

Int. J. Environ. Res. Public Health, 2014, David A. Geier, Brian S. Hooker, Janet K. Kern, Paul G. King, Lisa K. Sykes and Mark R. Geier

Summary: "On a per microgram of organic-Hg basis, PDD (odds ratio (OR) = 1.054), specific developmental delay (OR = 1.035), tic disorder (OR = 1.034) and hyperkinetic syndrome of childhood (OR = 1.05) cases were significantly more likely than controls to receive increased organic-Hg exposure. This study provides new epidemiological evidence supporting a significant relationship between increasing organic-Hg exposure from TCVs and the subsequent risk of an ND diagnosis."

11. FULLY VACCINATED CHILDREN REQUIRE MUCH MORE EMERGENCY CARE THAN UNDERVACCINATED CHILDREN

[A Population-Based Cohort Study of Undervaccination in 8 Managed Care Organizations Across the United States](#)

JAMA Pediatrics, January 2013, Jason M. Glanz, PhD; Sophia R. Newcomer, MPH; Komal J. Narwaney, MD, PhD; Simon J. Hambidge, MD, PhD; Matthew F. Daley, MD; Nicole M. Wagner, MPH

Summary: "Children who were undervaccinated because of parental choice had lower rates of outpatient visits, lower rates of ED [emergency room] encounters.. undervaccinated children had lower outpatient visit rates compared with children who were age-appropriately vaccinated."

12. ISRAELI AND ITALIAN RESEARCHERS DEMONSTRATE THAT EXPOSURE TO ALUMINUM IN VACCINES CAN LEAD TO AUTOIMMUNE AND BRAIN DYSFUNCTION

[Autoimmune/inflammatory syndrome induced by adjuvants \(ASIA\) 2013: Unveiling the pathogenic, clinical and diagnostic aspects](#)

Journal of Autoimmunity, October 2013, Carlo Perricone, Serena Colafrancesco, Roei D. Mazor, Alessandra Soriano, Yehuda Shoenfeld

Summary: "The data herein illustrate the critical role of environmental factors in the induction of autoimmunity. Indeed, it is the interplay of genetic susceptibility and environment that is the major player for the initiation of breach of tolerance. Several neurologic demyelinating diseases have been reported following vaccination, the main being Guillaine Barre? syndrome (GBS). Another demyelinating disease associated with vaccines is the acute disseminated encephalomyelitis (ADEM). This is an inflammatory disease of the central nervous system frequently occurring post-vaccination. Rabies, diphtheria tetanus polio, smallpox, measles, mumps, rubella, Japanese B encephalitis, pertussis, influ-enza, hepatitis B, and the Hog vaccines have been called to be involved."

13. CANADIAN RESEARCHERS: ALUMINUM IN VACCINES CAN CAUSE BOTH AUTOIMMUNITY AND NEUROLOGICAL DAMAGE

[Aluminum in the central nervous system \(CNS\): toxicity in humans and animals, vaccine adjuvants, and autoimmunity](#)

Immunol Res, 2013, Chris Shaw, L. Tomljenovic

Summary: "In young children, a highly significant correlation exists between the number of pediatric aluminum-adjuvanted vaccines administered and the rate of autism spectrum disorders. Many of the features of aluminum- induced neurotoxicity may arise, in part, from autoimmune reactions, as part of the ASIA syndrome. Aluminum is added to vaccines to help the vaccine work more effectively, but unlike dietary aluminum which will usually clear rapidly from the body, aluminum used in vaccines and injected is designed to provide a long-lasting cellular exposure. Thus, the problem with vaccine- derived aluminum is really twofold: It drives the immune response even in the absence of a viral or bacterial threat and it can make its way into the central nervous system. It is not really a matter of much debate that aluminum in various forms can be neurotoxic."

14. SCIENTISTS FROM MEXICO AND ISRAEL EXPLAIN ADJUVANTS (ALUMINUM) USED IN VACCINES CAN INDUCE AUTOIMMUNITY

[Autoimmune/inflammatory syndrome induced by adjuvants \(Shoenfeld's syndrome\): clinical and immunological spectrum](#)

Expert Rev. Clin. Immunol. 2013 Olga Vera-Lastra, Gabriela Medina, Maria Del-Pilar Cruz Dominguez, Luis J Jara

Summary: "The activation of the immune system by adjuvants, a desirable effect, could trigger manifestations of autoimmunity or autoimmune disease. Recently, a new syndrome was introduced, autoimmune/inflammatory syndrome induced by adjuvants (ASIA), that includes postvaccination phenomena, macrophagic myofasciitis, Gulf War syndrome and siliconosis. Various adjuvants used in vaccines enhance a specific immune response against antigens and may produce autoimmunity and AID both in experimental models and humans. The clinical and laboratory data support an association between adjuvants and autoimmune diseases."

15. INFANTS RECEIVING MERCURY-CONTAINING VACCINES HAD MUCH HIGHER RATES OF AUTISM THAN INFANTS RECEIVING VACCINES WITHOUT MERCURY

[A two-phase study evaluating the relationship between Thimerosal-containing vaccine administration and the risk for an autism spectrum disorder diagnosis in the United States](#)

Translational Neurodegeneration, David A. Geier, Brian S. Hooker, Janet K. Kern, Paul G. King, Lisa K. Sykes, Mark R. Geier

Summary: "The present study provides new epidemiological evidence supporting an association between increasing organic-Hg [mercury] exposure from Thimerosal-containing childhood vaccines and the subsequent risk of ASD [autism] diagnosis."

16. BRITISH SCIENTISTS SOUNDS THE ALARM ON ALUMINUM TOXICITY AND QUESTIONS LACK OF RESEARCH ON ALUMINUM USED IN VACCINES

Human exposure to aluminium

Environmental Science Processes & Impacts, 2013, Christopher Exley

Summary: "The immunopotency of aluminium has been known for at least 100 years and still today forms the basis for the use of aluminium salts as adjuvants in vaccinations and allergy therapies. What is then surprising is the uncertainty regarding their mechanism of action and burgeoning evidence of their toxicity in potentially susceptible individuals."

17. ISRAELI, ITALIAN, AND CANADIAN RESEARCHERS TIE HPV VACCINE TO PRIMARY OVARIAN FAILURE

Human Papilloma Virus Vaccine and Primary Ovarian Failure: Another Facet of the Autoimmune/Inflammatory Syndrome Induced by Adjuvants

American Journal of Reproductive Immunology, 2013, Selena Colafrancesco, Carlo Perricone, Lucija Tomljenovic, Yehuda Shoenfeld

Summary: "We documented here the evidence of the potential of the HPV vaccine to trigger a life-disabling autoimmune condition. The increasing number of similar reports of post HPV vaccine-linked autoimmunity and the uncertainty of long-term clinical benefits of HPV vaccination are a matter of public health that warrants further rigorous inquiry."

18. INFANTS WHO RECEIVED MORE VACCINES HAD MUCH HIGHER HOSPITALIZATION AND DEATH RATES THAN INFANTS WHO RECEIVED FEWER VACCINES

Relative trends in hospitalizations and mortality among infants by the number of vaccine doses and age, based on the Vaccine Adverse Event Reporting System (VAERS), 1990-2010

Human and Experimental Toxicology, 2012, GS Goldman, NZ Miller

Summary: "The hospitalization rate increased linearly from 11.0% (107 of 969) for 2 doses to 23.5% (661 of 2817) for 8 doses and decreased linearly from 20.1% (154 of 765) for children aged < 0.1 year to 10.7% (86 of 801) for children aged 0.9 year. Our findings show a positive correlation between the number of vaccine doses administered and the percentage of hospitalizations and deaths. Since vaccines are given to millions of infants annually, it is imperative that health authorities have scientific data from synergistic toxicity studies on all combinations of vaccines that infants might receive. Finding ways to increase vaccine safety should be the highest priority."

19. ISRAELI SCIENTISTS EXPLAIN ROLE VACCINE ADJUVANTS (ALUMINUM) ARE PLAYING IN AUTOIMMUNE DISEASES

The spectrum of ASIA: 'Autoimmune (Auto-inflammatory) Syndrome induced by Adjuvants'

Lupus, 2012, N Agmon-Levin, GRV Hughes, Y Shoenfeld

Summary: "It seems that the role of adjuvants [aluminum in vaccines] in the pathogenesis of immune-mediated diseases can no longer be ignored, and the medical community must look towards producing safer adjuvants. Another cornerstone of ASIA is the complex interaction between autoimmunity and adjuvanted vaccines. On the one hand vaccines are beneficial for the vast majority of subjects including those who suffer from autoimmune-rheumatic diseases as delineated in this issue by van Assen and Bijl.¹⁶ On the other hand in a small minority of individuals vaccine can trigger the appearance of autoantibodies as documented by Vista et al.¹⁷ and Perdan-Pirkmajer et al.¹⁸ Moreover, a link between immunization and defined autoimmune diseases has been reported elsewhere and herein."

20. POLISH SCIENTISTS PROPOSE NEW VACCINE SCHEDULE, EXPRESS CONCERN AT HIGH RATE OF VACCINE ADVERSE EVENTS

Neurologic adverse events following vaccination

Prog Health Sci, 2012, Sienkiewicz D., Kuśak W., Okurowska-Zawada B., Paszko-Patej G.

Summary: "Thus, it is not reasonable to assume that manipulation of the immune system through an increasing number of vaccinations during critical periods of brain development will not result in adverse neurodevelopmental outcomes. European countries have different models of vaccination that have been modified in recent decades. In Scandinavian countries, which have the lowest infant mortality, vaccinations are voluntary and infants receive their first vaccination at 3 months of age. In the first year of life, they receive 9 recommended vaccinations, and at 18 months - MMR. The acellular pertussis vaccine (DTaP) is used, as well as IPV. BCG and Hepatitis B vaccines are administered to children from high risk groups. Similar vaccination schedules exist in other European countries, where the vaccination of neonates was abandoned and a ban on the use of thimerosal in vaccines was introduced. Note also that Scandinavian countries have the lowest rates of autism compared to other developed countries in which children are vaccinated much earlier and with greater number of vaccines."

21. CANADIAN RESEARCHERS REVIEW LITERATURE ON AUTOIMMUNITY AND NEUROLOGICAL RISKS FROM VACCINE ADJUVANT ALUMINUM, EXPRESS DOUBTS REGARDING SAFETY TESTING

[Mechanisms of aluminum adjuvant toxicity and autoimmunity in pediatric populations](#), *Lupus*, 2012, L Tomljenovic, CA Shaw

Summary: "Immune challenges during early development, including those vaccine-induced, can lead to permanent detrimental alterations of the brain and immune function. Experimental evidence also shows that simultaneous administration of as little as two to three immune adjuvants can overcome genetic resistance to autoimmunity. In spite of the widespread agreement that vaccines are largely safe and serious adverse complications are extremely rare, a close scrutiny of the scientific literature does not support this view. For example, to date, the clinical trials that could adequately address vaccine safety issues have not been conducted (i.e., comparing health outcomes in vaccinated versus non-vaccinated children). Infants and young children should not be viewed as "small adults." Their unique physiology makes them much more vulnerable to noxious environmental insults in comparison with the adult population. In spite of this, children are routinely exposed to much higher levels of Al vaccine adjuvants than adults, even though adequate safety data on these compounds are lacking. That Al vaccine adjuvants can induce significant autoimmune conditions in humans can hardly be disputed, although still debatable is how common such side effects are. However, the existing data (or lack thereof) raise questions on whether the current vaccines aimed at pediatric populations can be accepted as having adequate safety profiles. Because infants and children represent those who may be most at risk for complications following vaccination, a more rigorous evaluation of potential vaccine-related adverse health impacts in pediatric populations than what has been provided to date is urgently needed."

22. DANISH RESEARCHERS FOUND CHILDREN 8-TIMES MORE LIKELY TO HAVE A FEBRILE SEIZURE ON THE DAY OF VACCINATION OF DTAP-IPV-HIB VACCINE

[Risk of Febrile Seizures and Epilepsy After Vaccination With Diphtheria, Tetanus, Acellular Pertussis, Inactivated Poliovirus, and Haemophilus Influenzae Type b](#)
JAMA 2012, Yuelian Sun, Jakob Christensen, Anders Hviid, Jiong Li

Summary: "DTaP-IPV-Hib vaccination was associated with an increased risk of febrile seizures on the day of the first 2 vaccinations given at 3 and 5 months."

23. HARVARD RESEARCHERS FIND VACCINE MERCURY IMPACTS NEURODEVELOPMENT IN RATS

Maternal Thimerosal Exposure Results in Aberrant Cerebellar Oxidative Stress, Thyroid Hormone Metabolism, and Motor Behavior in Rat Pups; Sex- and Strain-Dependent Effects

Cerebellum, 2012, Z. L. Sulkowski & T. Chen & S. Midha & A. M. Zavacki & Elizabeth M. Sajdel-Sulkowska

Summary: "Our data indicate that maternal TM exposure results in a delayed auditory maturation and impaired motor learning in rat pups. Factors that may contribute to these abnormalities include increased cerebellar oxidative stress and decreased D2 activity resulting local intracerebellar T3 deficiency and altered TH-dependent gene expression. Indeed, provided here is the first evidence of altered TH-dependent gene expression following TM exposure. Our data thus demonstrate a negative neurodevelopmental impact of perinatal TM exposure, which appears to be both strain- and sex-dependent. Although, additional studies are needed, data derived from TM exposure in rats may provide clues relevant to understanding neurodevelopmental consequences of TM exposure in humans.

24. SUNY-STONY BROOK SCIENTISTS FIND BOYS RECEIVING THE HEPATITIS B VACCINE SERIES WERE THREE TIMES MORE LIKELY TO HAVE AUTISM

Hepatitis B Vaccination of Male Neonates and Autism Diagnosis, NHIS 1997-2002

Journal of Toxicology and Environmental Health, April 2010, Carolyn Gallagher and Melody Goodman

Summary: "Boys vaccinated as neonates had threefold greater odds for autism diagnosis compared to boys never vaccinated or vaccinated after the first month of life. Findings suggest that U.S. male neonates vaccinated with the hepatitis B vaccine prior to 1999 (from vaccination record) had a threefold higher risk for parental report of autism diagnosis compared to boys not vaccinated as neonates during that same time period."

25. BRITISH AND SWEDISH SCIENTISTS RAISE CONCERNS ABOUT LIMITED UNDERSTANDING OF VACCINE ALUMINUM'S IMPACT ON THE HUMAN BODY, RAISE RISK OF AUTOIMMUNE RESPONSE

[The immunobiology of aluminium adjuvants: how do they really work?](#)

Trends in Immunology 2010, Christopher Exley, Peter Siesjo, Hakan Eriksson

Summary: "Aluminium adjuvants potentiate the immune response, thereby ensuring the potency and efficacy of typically sparingly available antigen. Their concomitant critical importance in mass vaccination programmes may have prompted recent intense interest in understanding how they work and their safety. Progress in these areas is stymied, however, by a lack of accessible knowledge pertaining to the bioinorganic chemistry of aluminium adjuvants, and, consequently, the inappropriate application and interpretation of experimental models of their mode of action.. In relation to this possible 'indirect adjuvanticity' there are burgeoning examples in the scientific literature of aluminium salts inducing sensitization to substances that might not normally be considered as antigens. For example, such effects may contribute towards allergies to foods"

26. BABY MONKEYS GIVEN U.S. VACCINE SCHEDULE HAD BRAIN ABNORMALITIES IN REGION RESPONSIBLE FOR SOCIAL AND EMOTIONAL DEVELOPMENT

[Influence of pediatric vaccines on amygdala growth and opioid ligand binding in rhesus macaque infants: A pilot study](#)

Acta Neurobiol Exp, 2010, Laura Hewitson, Brian J. Lopresti, Carol Stott

Summary: "The data suggest that vaccine exposure may be associated with significant disturbances in central opioidergic pathways in this model... Volumetric analyses identified significantly greater total brain volume in exposed compared with unexposed animals at both measured time points. These results raise the possibility that multiple vaccine exposures during the previous 3-4 months may have had a significant impact on brain growth and development."

27. SCIENTISTS RAISE CONCERNS ABOUT DENIAL OF ENVIRONMENTAL TOXIN LINK TO AUTISM, REVIEW LITERATURE

[Sorting out the spinning of autism: heavy metals and the question of incidence](#)

Acta Neurobiol, 2010 Mary Catherine DeSoto and Robert T. Hitlan

Summary: "In this paper, we argue that increasingly over the past decade, positions that deny a link to environmental toxins and autism are based on relatively weak science and are disregarding the bulk of scientific literature. The question about toxic exposure and autism is open, with the weight of evidence favoring a connection that is not well understood. Although it is not possible to say with certainty, it seems likely that the connection would be mediated by genetic susceptibility and ability to detoxify. That is, some people have genotypes that confer higher susceptibility to toxic exposures. If so, then 50 years ago few people would have had enough toxic exposure to have the neurological changes that result in autism."

28. RESEARCHERS WARN OF SIZABLE DIFFERENCE IN INDIVIDUAL REACTION TO VACCINES, STRESS NEED TO AVOID INCREASING SIDE EFFECTS OF VACCINES

[Interindividual variations in the efficacy and toxicity of vaccines](#)

Toxicology 2010, Thomas C, Moridani M

Summary: "A number of currently available vaccines have shown significant differences in the magnitude of immune responses and toxicity in individuals undergoing vaccination. A number of factors may be involved in the variations in immune responses, which include age, gender, race, amount and quality of the antigen, the dose administered and to some extent the route of administration, and genetics of immune system. Hence, it becomes imperative that researchers have tools such as genomics and proteomics at their disposal to predict which set of population is more likely to be non-responsive or develop toxicity to vaccines. With the increasing number of side effects associated with a number of vaccines reported over the years, it has become imperative to develop new technologies that can effectively assist in the development and evaluation of vaccines for efficacy and toxicity."

29. VACCINE ALUMINUM INJECTED INTO MICE CREATED SIGNIFICANT MOTOR DEFICITS AND MOTOR NEURON DEGENERATION

[Aluminum hydroxide injections lead to motor deficits and motor neuron degeneration](#)

Journal of Inorg Biochem, February 2010, Christopher A. Shaw

Summary: "Aluminum-treated mice showed significantly increased apoptosis of motor neurons and increases in reactive astrocytes and microglial proliferation within the spinal cord and cortex. Morin stain detected the presence of aluminum in the cytoplasm of motor neurons with some neurons also testing positive for the presence of hyper-phosphorylated tau protein, a pathological hallmark of various neurological diseases, including Alzheimer's disease and frontotemporal dementia. A second series of experiments was conducted on mice injected with six doses of aluminum hydroxide. Behavioral analyses in these mice revealed significant impairments in a number of motor functions as well as diminished spatial memory capacity. The demonstrated neurotoxicity of aluminum hydroxide and its relative ubiquity as an adjuvant suggest that greater scrutiny by the scientific community is warranted. Overall, the results reported here mirror previous work that has clearly demonstrated that aluminum, in both oral and injected forms, can be neurotoxic."

30. NEWBORN MONKEYS GIVEN A MERCURY-CONTAINING HEPATITIS B VACCINE HAD SIGNIFICANT DELAYS IN NEONATAL REFLEXES AND NEUROLOGICAL DEVELOPMENT

[Delayed acquisition of neonatal reflexes in newborn primates receiving a thimerosal-containing Hepatitis B vaccine: Influence of gestational age and birth weight](#)

Neurotoxicology, Sep 2009 Laura Hewitson et. al.

Summary: "In summary, this study provides preliminary evidence of abnormal early neurodevelopmental responses in male infant rhesus macaques receiving a single dose of Thimerosal-containing HB vaccine at birth and indicates that further investigation is merited."

31. FRENCH SCIENTISTS REPORT ALUMINUM FROM VACCINES CAUSES CHRONIC COGNITIVE DYSFUNCTION

[Long-term persistence of vaccine-derived aluminum hydroxide is associated with chronic cognitive dysfunction](#)

Journal of Inorganic Biochemistry, 2009, Couette M1, Boisse MF, Maison P, Brugieres P, Cesaro P, Chevalier X, Gherardi RK, Bachoud-Levi AC, Authier FJ.

Summary: "In conclusion, long-term persistence of vaccine-derived aluminum hydroxide within the body assessed by MMF is associated with cognitive dysfunction, not solely due to chronic pain, fatigue and depression. In conclusion, this work is the first firm demonstration that cognitive dysfunction is a central feature in MMF, this dysfunction being much more frequent and severe than suspected by routine neurological evaluation. Instead of being a non-specific bystander effect of pain, fatigue or depression, MACD seems to reflect an underlying organic, inflammatory or toxic, brain involvement."

32. SWEDISH RESEARCHERS FOUND THAT CHILDREN WHO HAD NATURAL MEASLES INFECTION HAD MUCH LOWER RATES OF ALLERGY THAN CHILDREN VACCINATED AGAINST MEASLES

[Allergic Disease and Atopic Sensitization in Children in Relation to Measles Vaccination and Measles Infection](#)

Pediatrics 2009 Rosenlund H1, Bergstrom A, Alm JS, Swartz J, Scheynius A, van Hage M, Johansen K, Brunekreef B, von Mutius E, Ege MJ, Riedler J, Braun-Fahrlander C, Waser M, Pershagen G; PARSIFAL Study Group.

Summary: "However, in these analyses, measles infection [natural measles] was inversely associated with any allergic symptom or physician's diagnosis of allergy."

33. BOYS RECEIVING THE HEPATITIS B VACCINE SERIES WERE NINE TIMES FOR LIKELY TO NEED SPECIAL EDUCATION AND BE DEVELOPMENTALLY DISABLED

[Hepatitis B triple series vaccine and developmental disability in US children aged 1-9 years](#)

Toxicological and Environmental Chemistry, September 2008, Carolyn Gallagher and Melody Goodman

Summary: "This study investigated the association between vaccination with the Hepatitis B triple series vaccine. The odds of receiving Special Education were approximately nine times as great for vaccinated boys (n 1/4 46) as for unvaccinated boys (n 1/4 7), after adjustment for confounders. This study found statistically significant evidence to suggest that boys in United States who were vaccinated with the triple series Hepatitis B vaccine, were more susceptible to developmental disability than were unvaccinated boys."

34. CHILDREN WHO DELAYED THE TIMING OF THE DPT VACCINE HAD LOWER RATES OF ASTHMA

[Delay in diphtheria, pertussis, tetanus vaccination is associated with a reduced risk of childhood asthma?](#)

Journal of Allergy and Clinical Immunology, 2008, Kara L. McDonald, MS, Shamima I. Huq, BS

Summary: "Early childhood immunizations have been viewed as promoters of asthma development by stimulating a T(H)2-type immune response or decreasing microbial pressure, which shifts the balance between T(H)1 and T(H)2 immunity. Among 11, 531 children who received at least 4 doses of DPT, the risk of asthma was reduced to (1/2) in children whose first dose of DPT was delayed by more than 2 months."

35. A CDC-SPONSORED DATABASE SHOWED MUCH HIGHER RATES OF NEURODEVELOPMENTAL DISABILITIES FROM MERCURY-CONTAINING VACCINES

[Thimerosal exposure in infants and neurodevelopmental disorders: An assessment of computerized medical records in the Vaccine Safety Datalink](#)

Journal of the Neurological Sciences, March 2008, Heather A. Young, David A. Geier, Mark R. Geier

Summary: "Consistent significantly increased rate ratios were observed for autism, autism spectrum disorders, tics, attention deficit disorder, and emotional disturbances with Hg exposure from TCVs. By contrast, none of the control outcomes had significantly increased rate ratios with Hg exposure from TCVs."

36. AUSTRALIAN SCIENTISTS DESCRIBE THE ROLE OF VACCINES IN TRIGGERING ACUTE DISSEMINATED ENCEPHALOMYELITIS ("ADEM")

Post-vaccination encephalomyelitis: Literature review and illustrative case

Journal of Clinical Neuroscience, 2008, Huynh W1, Cordato DJ, Kehdi E, Masters LT, Dedousis C.

Summary: "Post-infectious and post-immunisation encephalomyelitis make up about three-quarters of cases, where the timing of a febrile event is associated with the onset of neurological disease..Post-vaccination Acute disseminated encephalomyelitis has been associated with several vaccines such as rabies, diphtheria-tetanus-polio, smallpox, measles, mumps, rubella, Japanese B encephalitis, pertussis, influenza, hepatitis B, and the Hog vaccine. We review ADEM with particular emphasis on vaccination as the precipitating factor."

37. THE MERCURY USED AS A VACCINE PRESERVATIVE IS FAR MORE NEUROTOXIC THAN THE MERCURY FOUND IN FISH

Comparison of Blood and Brain Mercury Levels in Infant Monkeys Exposed to Methylmercury or Vaccines Containing Thimerosal

Environmental Health Perspectives, August 2005, Thomas M. Burbacher, Danny D. Shen, Noelle Liberato, Kimberly S. Grant, Elsa Cernichiari, and Thomas Clarkson

Summary: The mercury used in vaccines (and still in the flu vaccine given to pregnant women) is far more toxic than the mercury found in fish, because it stays in the brain at much higher levels. "Data from the present study support the prediction that, although little accumulation of Hg in the blood occurs over time with repeated vaccinations, accumulation of Hg in the brain of infants will occur. Thus, conclusion regarding the safety of thimerosal drawn from blood Hg clearance data in human infants receiving vaccines may not be valid, given the significantly slower half-life of Hg in the brain as observed in the infant macaques. There was a much higher proportion of inorganic Hg in the brain of thimerosal monkeys than in the brains of MeHg monkeys (up to 71% vs. 10%). Absolute inorganic Hg concentrations in the brains of the thimerosal-exposed monkeys were approximately twice that of the MeHg monkeys."

38. VACCINE MERCURY DEPLETES A VITAL ANTIOXIDANT, GLUTATHIONE**[Thimerosal Neurotoxicity is Associated with Glutathione Depletion: Protection with Glutathione Precursors](#)**

Neurotoxicology, Jan 2005, S. Jill James, PhD

Summary: "Thimerosal is an antiseptic containing 49.5% ethyl mercury that has been used for years as a preservative in many infant vaccines and in flu vaccines. Environmental methyl mercury has been shown to be highly neurotoxic, especially to the developing brain. Because mercury has a high affinity for thiol (sulfhydryl (-SH)) groups, the thiol-containing antioxidant, glutathione (GSH), provides the major intracellular defense against mercury-induced neurotoxicity. Cultured neuroblastoma cells were found to have lower levels of GSH and increased sensitivity to thimerosal toxicity compared to glioblastoma cells that have higher basal levels of intracellular GSH. Thimerosal-induced cytotoxicity was associated with depletion of intracellular GSH in both cell lines. Although Thimerosal has been recently removed from most children's vaccines, it is still present in flu vaccines given to pregnant women, the elderly, and to children in developing countries."

39. SCIENTISTS IDENTIFY VACCINE MERCURY'S ROLE IN BLOCKING CRUCIAL NEURODEVELOPMENTAL PATHWAYS**[Activation of methionine synthase by insulin-like growth factor-1 and dopamine: a target for neurodevelopmental toxins and thimerosal](#)**

Molecular Psychiatry, 2004, M Waly, H Oltaneu, R Banerjee, S-W Choi, JB Mason, BS Parker, S Sukumar, S Shim, A Sharma

Summary: "The ethylmercury-containing preservative thimerosal inhibited both IGF-1- and dopamine-stimulated methylation with an IC50 of 1nM and eliminated MS activity. Our findings outline a novel growth factor signaling pathway that regulates MS activity and thereby modulates methylation reactions, including DNA methylation. The potent inhibition of this pathway by ethanol, lead, mercury, aluminum and thimerosal suggest that it may be an important target of neurodevelopmental toxins."

40. UTAH STATE SCIENTISTS FIND AUTOIMMUNE REACTION TO MMR IN CHILDREN WITH AUTISM, INCLUDING AUTOIMMUNITY TO MYELIN BASIC PROTEIN, A BRAIN BUILDING-BLOCK

[Abnormal Measles-Mumps-Rubella Antibodies and CNS Autoimmunity in Children with Autism](#)

J Biomed Sci, 2002, Vijendra K. Singh Sheren X. Lin Elizabeth Newell Courtney Nelson

Abstract

Autoimmunity to the central nervous system (CNS), especially to myelin basic protein (MBP), may play a causal role in autism, a neurodevelopmental disorder. Because many autistic children harbor elevated levels of measles antibodies, we conducted a serological study of measles-mumps-rubella (MMR) and MBP autoantibodies. Using serum samples of 125 autistic children and 92 control children, antibodies were assayed by ELISA or immunoblotting methods. ELISA analysis showed a significant increase in the level of MMR antibodies in autistic children. Immunoblotting analysis revealed the presence of an unusual MMR antibody in 75 of 125 (60%) autistic sera but not in control sera. This antibody specifically detected a protein of 73-75 kD of MMR. This protein band, as analyzed with monoclonal antibodies, was immunopositive for measles hemagglutinin (HA) protein but not for measles nucleoprotein and rubella or mumps viral proteins. Thus the MMR antibody in autistic sera detected measles HA protein, which is unique to the measles subunit of the vaccine. Furthermore, over 90% of MMR antibody-positive autistic sera were also positive for MBP autoantibodies, suggesting a strong association between MMR and CNS autoimmunity in autism. Stemming from this evidence, we suggest that an inappropriate antibody response to MMR, specifically the measles component thereof, might be related to pathogenesis of autism.

41. FRENCH SCIENTISTS TIE ALUMINUM ADJUVANT IN VACCINE TO MACROPHAGIC MYOFASCIITIS

[Macrophagic myofasciitis lesions assess long-term persistence of vaccine derived aluminum hydroxide in muscle](#)

Brain, 2001 R.K. Gherardi, M. Coquet, P. Cherin, L. Belec, P. Moretto, P.A. Dreyfus

Summary: "Macrophagic myofasciitis (MMF) is an emerging condition of unknown cause, detected in patients with diffuse arthromyalgias and fatigue, and characterized by muscle infiltration by granular periodic acid-Schiff's reagent-positive macrophages and lymphocytes. Intracytoplasmic inclusions have been observed in macrophages of some patients. To assess their significance, electron microscopy was performed in 40 consecutive cases and chemical analysis was done by microanalysis and atomic absorption spectrometry. Inclusions were constantly detected and corresponded to aluminium hydroxide, an immunostimulatory compound frequently used as a vaccine adjuvant."

42. JAPANESE SCIENTISTS FIND VACCINE-STRAIN OF MEASLES IN THE GUTS OF CHILDREN WITH AUTISM

Detection and Sequencing of Measles Virus from Peripheral Mononuclear Cells from Patients with Inflammatory Bowel Disease and Autism

Digestive Diseases and Sciences, 2000, Hisashi Kawashima, Takayuki Mori, Yasuyo Kashiwagi, Kouji Takekuma

Summary: "Additionally, a new syndrome has been reported in children with autism who exhibited developmental regression and gastrointestinal symptoms (autistic enterocolitis), in some cases soon after MMR vaccine. The sequences obtained from the patients with ulcerative colitis and children with autism were consistent with being vaccine strains. The results were concordant with the exposure history of the patients. Persistence of measles virus was confirmed in PBMC in some patients with chronic intestinal inflammation."

43. CDC SCIENTISTS ADMIT THAT 90% OF INFECTIOUS DISEASE MORTALITY DECREASE IN THE UNITED STATES HAPPENED BEFORE VACCINES WERE AVAILABLE

Annual Summary of Vital Statistics: Trends in the Health of Americans During the 20th Century,

Pediatrics, December 2000, Bernard Guyer, MD, Mary Anne Freeman, MA, Donna M. Strobino, PhD, Edward J. Sondik, PhD

Summary: "Thus vaccination does not account for the impressive declines in mortality seen in the first half of the century...nearly 90% of the decline in infectious disease mortality among US children occurred before 1940, when few antibiotics or vaccine were available."

44. VACCINES WITH MERCURY SIGNIFICANTLY RAISED THE BODY LEVELS OF MERCURY IN INFANTS

Iatrogenic exposure to mercury after hepatitis B vaccination in preterm infants

The Journal of Pediatrics, May 2000, Gregory V. Stajich, PharmD, Gaylord P. Lopez, PharmD, ABAT, Sokei W. Harry, MBBS, MPH, William R. Sexson, MD

Summary: "Thimerosal, a derivative of mercury, is used as a preservative in hepatitis B vaccines. We measured total mercury levels before and after the administration of this vaccine in 15 preterm and 5 term infants. Comparison of pre- and post-vaccination mercury levels showed a significant increase in both preterm and term infants after vaccination. Additionally, post-vaccination mercury levels were significantly higher in preterm infants as compared with term infants. Because mercury is known to be a potential neurotoxin to infants, further study of its pharmacodynamics is warranted."

45. UCLA RESEARCHERS FIND THE DTP VACCINE IS CAUSING ASTHMA

Effects of Diphtheria-Tetanus-Pertussis or Tetanus Vaccination on Allergies and Allergy-Related Respiratory Symptoms Among Children and Adolescents in the United States

Journal of Manipulative and Physiological Therapeutics, 2000, Eric Hurwitz and Hal Morgenstern

Summary: "Asthma and other allergic hypersensitivity reactions and related symptoms may be caused, in part, by the delayed effects of DTP or tetanus vaccination. Because the proportion of US children who have received at least 1 dose of DTP vaccine approaches 100%, the number of allergies and allergy-related conditions attributable to DTP or tetanus vaccination in the United States may be very high. For example, assuming that the estimated vaccination effect is unbiased, 50% of diagnosed asthma cases (2.93 million) in US children and adolescents would be prevented if the DTP or tetanus vaccination was not administered."

46. INFANTS RECEIVING MERCURY-CONTAINING VACCINES DEVELOPED SPEECH DISORDERS, SLEEP DISORDERS, AND AUTISM, ACCORDING TO CDC SCIENTISTS

Increased risk of developmental neurologic impairment after high exposure to thimerosal-containing vaccine in first month of life.

Proceedings of the Epidemic Intelligence Service Annual Conference, April 2000, Verstraeten T, Davis RL, Gu D, DeStefano F.

Summary: "This analysis suggests that high exposure to ethylmercury from thimerosal-containing vaccines in the first month of life increases the risk of subsequent development of neurologic development impairment."

47. INFECTIOUS DISEASE RATES DECLINED PRECIPITOUSLY IN THE UNITED STATES IN THE 20TH CENTURY BEFORE THE IMPLEMENTATION OF A NATIONAL VACCINE PROGRAM

Trends in Infectious Disease Mortality in the United States During the 20th Century

JAMA, January 6, 1999, Gregory L. Armstrong, MD, Laura A. Conn, MPH, Robert W. Pinner, MD

Summary: "During the first 8 decades of the 20th century, the infectious disease mortality rate in the United States declined substantially...Improvements in living conditions, sanitation, and medical care probably accounted for this trend."

48. CDC SCIENTISTS FIND CHILDREN GIVEN THE MMR VACCINE SHED THE MEASLES VIRUS FOR AT LEAST 2 WEEKS AFTER GETTING THE VACCINE, MAKING THEM VECTORS TO SPREAD MEASLES

Detection of Measles Virus RNA in Urine Specimens from Vaccine Recipients,

Journal of Clinical Microbiology, Sept 1995, Paul A. Rota, Ali S. Khan, Edison Durigon, Thomas Yuron, and William Bellini

Summary: "For the study, daily urine samples were obtained from either 15- month-old children or young adults following measles immunization. Overall, measles virus RNA was detected in 10 of 12 children during the 2-week sampling period. In some cases, measles virus RNA was detected as early as 1 day or as late as 14 days after vaccination. Measles virus RNA was also detected in the urine samples from all four of the young adults between 1 and 13 days after vaccination. This assay will enable continued studies of the shedding and transmission of measles virus and, it is hoped, will provide a rapid means to identify measles infection, especially in mild or asymptomatic cases."

1-48 Source: <http://vaccinesafetycommission.org/>

49. ” ‘ASIA’ – AUTOIMMUNE/INFLAMMATORY SYNDROME INDUCED BY ADJUVANTS “

In 2011 a groundbreaking scientific study directly linked the effect of vaccine adjuvants to a range of autoimmune diseases for the first time ever. Defining a new disease syndrome directly connected to the use of vaccine adjuvants encouraged further research by other scientist who have examined and confirmed the correlations in multiple cases.

<http://www.sciencedirect.com/science/article/pii/S0896841110000788>

50. ALUMINUM’S ROLE IN CNS-IMMUNE SYSTEM INTERACTIONS LEADING TO NEUROLOGICAL DISORDERS

Another study, carried out by scientist from University of British Columbia in 2013, presents a large framework of information and data that links aluminum vaccine adjuvants to various neurological disorders. The scientists have linked aluminum’s potential to induce damage at different levels in the Central Nervous System leading to neuronal death, circuit malfunction and ultimately system failure.

http://people.csail.mit.edu/seneff/Shaw_et_al_Immunome_Res_2013.pdf

51. ALUMINUM AS AN ADJUVANT IN CROHN'S DISEASE INDUCTION

As the title of this study suggest, this study highlights the potential role of aluminum adjuvant to the induction of Crohn's disease. Crohn's disease is a type of inflammatory bowel disease (IBD), which seems to be on an almost epidemic rise in our society today.

<https://www.ncbi.nlm.nih.gov/pubmed/22235058>

52. ADVERSE EVENTS FOLLOWING IMMUNIZATION WITH VACCINES CONTAINING ADJUVANTS

In a cross-sectional study carried at the Rheumatology and Immunology Department in a hospital associated with the University of Guadalajara in Mexico, 120 immunized patients were closely monitored to identify the frequencies of post-vaccination clinical syndromes such as autoimmune/inflammatory adverse events that may be induced by adjuvants. The result of the study show data on how vaccines containing adjuvants indeed can bring an increased risk of autoimmune/inflammatory adverse effects.

<https://www.ncbi.nlm.nih.gov/pubmed/23576057>

53. ALUMINUM HYDROXIDE INJECTIONS LEAD TO MOTOR DEFICITS AND MOTOR NEURON DEGENERATION

In this study scientists show that aluminum hydroxide injections lead to neuron degeneration causing various motor deficits just as the title of the study concludes.

<http://www.sciencedirect.com/science/article/pii/S0162013409001809>

54. ALUMINUM VACCINE ADJUVANTS: ARE THEY SAFE?

In yet another study carried out by Neural Dynamics Research Group at the Department of Ophthalmology and Visual Sciences in the University of British Columbia, scientists strongly question the widely accepted notion that aluminum in vaccines are safe. They present experimental research that clearly shows how aluminum adjuvants have a potential to induce serious immunological disorders in humans such as autoimmunity, long-term brain inflammation and further severe neurological complications.

<https://www.ncbi.nlm.nih.gov/pubmed/21568886>

55. BIOPERSISTENCE AND SYSTEMIC DISTRIBUTION OF INTRAMUSCULARLY INJECTED PARTICLES: WHAT IMPACT ON LONG-TERM TOLERABILITY OF ALUM ADJUVANTS?

Research carried out by french scientists link the use of aluminum adjuvants to; diffuse myalgia, chronic exhaustion and cognitive dysfunction. Unfortunately though, the full text article is still only available in French.

<https://www.ncbi.nlm.nih.gov/pubmed/26259285>

56. HUMAN PAPILLOMA VIRUS VACCINE AND PRIMARY OVARIAN FAILURE: ANOTHER FACET OF THE AUTOIMMUNE/INFLAMMATORY SYNDROME INDUCED BY ADJUVANTS.

In a study published in American Journal of Reproductive Immunology, evidence is presented that the HPV vaccine has the potential to trigger a life-disabling autoimmune conditions such as ovarian failure.

<https://www.ncbi.nlm.nih.gov/pubmed/23902317>

57. ALUMINUM IN THE CENTRAL NERVOUS SYSTEM (CNS): TOXICITY IN HUMANS AND ANIMALS, VACCINE ADJUVANTS, AND AUTOIMMUNITY

This study examines the neurotoxicity of aluminum in humans and animals under various conditions. The study highlights that aluminum exposure in adults can lead to to age-related neurological deficits resembling Alzheimer's disease. And in young children, a highly significant correlation seems to exists between the number of aluminum-adjuvanted vaccines and the rate of autism spectrum disorders (ASD's).

<https://www.ncbi.nlm.nih.gov/pubmed/23609067>

58. MERCURY NEUROTOXICITY: MECHANISMS OF BLOOD-BRAIN BARRIER TRANSPORT

A scientific study published in a peer reviewed journal named Neuroscience & Biobehavioral, shows how methylmercury (MeHg) is capable of inducing damage in the Central Nervous System (CNS) through migration into the brain by crossing the blood brain barrier. MeHg is the same form of mercury that occurs in the preservative Thiomersal.

<https://www.ncbi.nlm.nih.gov/pubmed/2190116>

59. DO ALUMINUM VACCINE ADJUVANTS CONTRIBUTE TO THE RISING PREVALENCE OF AUTISM?

As the title of this scientific study suggests, it is exploring if vaccine adjuvants may have a direct role in the increasing occurrence of Autism Spectrum Disorders (ASD's) among the general public. The results show that children from countries with the highest ASD prevalence appear to have the highest exposure to aluminum from vaccines. The increase in exposure to aluminum adjuvants significantly correlates with the increase in ASD prevalence in the United States observed over the last two decades. Also a significant correlation exists between the amounts of aluminum administered to preschool children and the current prevalence of ASD in seven western countries, particularly at 3-4 months of age. The results show that there may be a correlation between aluminum in vaccines and rise of ASD.

<https://www.ncbi.nlm.nih.gov/pubmed/22099159>

60. ARE THERE NEGATIVE CNS IMPACTS OF ALUMINUM ADJUVANTS USED IN VACCINES AND IMMUNOTHERAPY

This study reviews existing literature on aluminum neurotoxicity and questions the use of aluminum salts as vaccine adjuvants because it concludes that aluminum not only has a direct toxic effect on the nervous system, but also a potential ability to impact & trigger autoimmunity. The scientists raise concerns about the increasing use of aluminum salts as vaccine adjuvants because of its ability to trigger autoimmune & inflammatory responses, change gene expression and affect the Central Nervous System (CNS) at every level.

<https://www.ncbi.nlm.nih.gov/pubmed/25428645>

49-60 Source: <http://iterated-reality.com/en/2017/03/11/13-alarming-scientific-studies-about-vaccine-adjuvants-and-preservatives/>

61. Unanswered Questions: A Review of Compensated Cases of Vaccine-Induced Brain Injury

Pace Environmental Law Review, vol. 28, no. 2, 2011

Mary Holland, Louis Conte, Robert Krakow and Lisa Colin

Executive Summary

In 1986, Congress created the Vaccine Injury Compensation Program (VICP) under the National Childhood Vaccine Injury Act (1986 Law). This Program has original jurisdiction for children's claims of vaccine injury. Because almost all children receive multiple vaccinations for daycare and school, it is critically important that the Program provides fundamental fairness, due process and transparency.

This empirical investigation, published in a peer-reviewed law journal, examines claims that the VICP compensated for vaccine-induced encephalopathy and seizure disorder. The VICP has compensated approximately 2,500 claims of vaccine injury since the inception of the program. **This study found 83 cases of acknowledged vaccine-induced brain damage that include autism**, a disorder that affects speech, social communication and behavior. In 21 published cases of the Court of Federal Claims, which administers the VICP, the Court stated that the petitioners had autism or described autism unambiguously. In 62 remaining cases, the authors identified settlement agreements where Health and Human Services (HHS) compensated children with vaccine-induced brain damage, who also have autism or an autism spectrum disorder.

Parents reported the existence of autism in telephone interviews and supplied supplemental materials including medical diagnoses, school records, and completed, standard autism screening questionnaires to verify their reports. In 39 of the 83 cases, or 47% of the cases of vaccine injury reviewed, there is confirmation of autism or autism spectrum disorder beyond parental report.

This finding of autism in compensated cases of vaccine injury is significant. U.S. government spokespeople have been asserting no vaccine-autism link for more than a decade. This finding calls into question the decisions of the Court of Federal Claims in the Omnibus Autism Proceeding in 2009 and 2010 and the statement of Health and Human Services on its website that "HHS has never concluded in any case that autism was caused by vaccination."

<http://digitalcommons.pace.edu/cgi/viewcontent.cgi?article=1681&context=pehr>

62. Infection, vaccines and other environmental triggers of autoimmunity.

Autoimmunity. 2005 May;38(3):235-45.

Abstract

The etiology of autoimmune diseases is still not clear but genetic, immunological, hormonal and environmental factors are considered to be important triggers. Most often autoimmunity is not followed by clinical symptoms unless an additional event such as an environmental factor favors an overt expression. Many environmental factors are known to affect the immune system and may play a role as triggers of the autoimmune mosaic. Infections: bacterial, viral and parasitic infections are known to induce and exacerbate autoimmune diseases, mainly by the mechanism of molecular mimicry. This was studied for some syndromes as for the association between SLE and EBV infection, pediatric autoimmune neuropsychiatric disorders associated with streptococcal infection and more. Vaccines, in several reports were found to be temporally followed by a new onset of autoimmune diseases. The same mechanisms that act in infectious invasion of the host, apply equally to the host response to vaccination. It has been accepted for diphtheria and tetanus toxoid, polio and measles vaccines and GBS. Also this theory has been accepted for MMR vaccination and development of autoimmune thrombocytopenia, MS has been associated with HBV vaccination.

Occupational and other chemical exposures are considered as triggers for autoimmunity. A debate still exists about the role of silicone implants in induction of scleroderma like disease. Not only foreign chemicals and agents have been associated with induction of autoimmunity, but also an intrinsic hormonal exposure, such as estrogens. This might explain the sexual dimorphism in autoimmunity. Better understanding of these environmental risk factors will likely lead to explanation of the mechanisms of onset and progression of autoimmune diseases and may lead to effective preventive involvement in specific high-risk groups. So by diagnosing a new patient with autoimmune disease a wide anamnesis work should be done. <https://www.ncbi.nlm.nih.gov/pubmed/16126512>

63. Aluminum-Induced Entropy in Biological Systems: Implications for Neurological Disease

Journal of Toxicology, Volume 2014 (2014), Article ID 491316, 27 pages

Aluminum (Al) is invariably toxic to living systems and has no known beneficial role in any biological systems. Humans are increasingly exposed to Al from food, water, medicinals, vaccines, and cosmetics, as well as from industrial occupational exposure. Al disrupts biological self-ordering, energy transduction, and signaling systems, thus increasing biosemiotic entropy. Beginning with the biophysics of water, disruption progresses through the macromolecules that are crucial to living processes (DNAs, RNAs, proteoglycans, and proteins). It injures cells, circuits, and subsystems and can cause catastrophic failures ending in death. Al forms toxic complexes with other elements, such as fluorine, and interacts negatively with mercury, lead, and glyphosate. Al negatively impacts the central nervous system in all species that have been studied, including humans. Because of the global impacts of Al on water dynamics and biosemiotic systems, CNS disorders in humans are sensitive indicators of the Al toxicants to which we are being exposed.

Exerpts: "Animal models of neurological disease plainly suggest that the ubiquitous presence of Al in human beings implicates Al toxicants as causally involved in Lou Gehrig's disease (ALS), Alzheimer's disease and autism spectrum disorders." "All these findings plausibly implicate Al adjuvants in pediatric vaccines as causal factors contributing to increased rates of autism spectrum disorders in countries where multiple doses are almost universally administered."

<https://www.hindawi.com/journals/jt/2014/491316/>

64. Hepatitis B vaccination of male neonates and autism diagnosis, NHIS 1997-2002

J Toxicol Environ Health A. 2010;73(24):1665-77. doi: 10.1080/15287394.2010.519317.

Abstract

Universal hepatitis B vaccination was recommended for U.S. newborns in 1991; however, safety findings are mixed. The association between hepatitis B vaccination of male neonates and parental report of autism diagnosis was determined. This cross-sectional study used weighted probability samples obtained from National Health Interview Survey 1997-2002 data sets. Vaccination status was determined from the vaccination record. Logistic regression was used to estimate the odds for autism diagnosis associated with neonatal hepatitis B vaccination among boys age 3-17 years, born before 1999, adjusted for race, maternal education, and two-parent household. **Boys vaccinated as neonates had threefold greater odds for autism diagnosis compared to boys never vaccinated or vaccinated after the first month of life.** Non-Hispanic white boys were 64% less likely to have autism diagnosis relative to nonwhite boys. Findings suggest that U.S. male neonates vaccinated with the hepatitis B vaccine prior to 1999 (from vaccination record) had a threefold higher risk for parental report of autism diagnosis compared to boys not vaccinated as neonates during that same time period. Nonwhite boys bore a greater risk.

<http://www.ncbi.nlm.nih.gov/m/pubmed/21058170/>

65. Associations of prenatal and early childhood mercury exposure with autistic behaviors at 5 years of age: The Mothers and Children's Environmental Health (MOCEH) study

Science of The Total Environment
Volumes 605–606, 15 December 2017, Pages 251-257

We found that blood mercury levels at late pregnancy and early childhood were associated with more autistic behaviors in children at 5 years of age. Further study on the long-term effects of mercury exposure is recommended.

<http://www.sciencedirect.com/science/article/pii/S0048969717316479>

66. Blood Mercury, Arsenic, Cadmium, and Lead in Children with Autism Spectrum Disorder.

Biol Trace Elem Res. 2017 May 8. doi: 10.1007/s12011-017-1002-6.

Abstract

Environmental factors have been implicated in the etiology of autism spectrum disorder (ASD); however, the role of heavy metals has not been fully defined. This study investigated whether blood levels of mercury, arsenic, cadmium, and lead of children with ASD significantly differ from those of age- and sex-matched controls. One hundred eighty unrelated children with ASD and 184 healthy controls were recruited. **Data showed that the children with ASD had significantly ($p < 0.001$) higher levels of mercury and arsenic and a lower level of cadmium.** The levels of lead did not differ significantly between the groups. **The results of this study are consistent with numerous previous studies, supporting an important role for heavy metal exposure, particularly mercury, in the etiology of ASD.** It is desirable to continue future research into the relationship between ASD and heavy metal exposure.

<https://www.ncbi.nlm.nih.gov/pubmed/28480499>

67. Slow CCL2-dependent translocation of biopersistent particles from muscle to brain

BMC Medicine 2013, 11:99 doi:10.1186/1741-7015-11-99, 4 April 2013

Abstract

Background: Long-term biodistribution of nanomaterials used in medicine is largely unknown. This is the case for alum, the most widely used vaccine adjuvant, which is a nanocrystalline compound spontaneously forming micron/submicron-sized agglomerates. Although generally well tolerated, alum is occasionally detected within monocyte-lineage cells long after immunization in presumably susceptible individuals with systemic/neurologic manifestations or autoimmune (inflammatory) syndrome induced by adjuvants (ASIA).

Results: Intramuscular injection of alum-containing vaccine was associated with the appearance of aluminum deposits in distant organs, such as spleen and brain where they were still detected one year after injection. Both fluorescent materials injected into muscle translocated to draining lymph nodes (DLNs) and thereafter were detected associated with phagocytes in blood and spleen. Particles linearly accumulated in the brain up to the six-month endpoint; they were first found in perivascular CD11b+ cells and then in microglia and other neural cells. DLN ablation dramatically reduced the biodistribution. Cerebral translocation was not observed after direct intravenous injection, but significantly increased in mice with chronically altered blood-brain-barrier. Loss/gain-of-function experiments consistently implicated CCL2 in systemic diffusion of Al-Rho particles captured by monocyte-lineage cells and in their subsequent neurodelivery. Stereotactic particle injection pointed out brain retention as a factor of progressive particle accumulation.

Conclusion: Nanomaterials can be transported by monocyte-lineage cells to DLNs, blood and spleen, and, similarly to HIV, may use CCL2-dependent mechanisms to penetrate the brain. This occurs at a very low rate in normal conditions explaining good overall tolerance of alum despite its strong neurotoxic potential. However, continuously escalating doses of this poorly biodegradable adjuvant in the population may become insidiously unsafe, especially in the case of overimmunization or immature/altered blood brain barrier or high constitutive CCL-2 production.

<http://www.biomedcentral.com/1741-7015/11/99>

68. Autism: a form of lead and mercury toxicity

Environ Toxicol Pharmacol. 2014 Nov;38(3):1016-24. doi: 10.1016/j.etap.2014.10.005. Epub 2014 Nov 6.

Abstract

AIM: Autism is a developmental disability characterized by severe deficits in social interaction and communication. The definite cause of autism is still unknown. The aim of this study is to find out the relation between exposure to Lead and/or mercury as heavy metals and autistic symptoms, dealing with the heavy metals with chelating agents can improve the autistic symptoms.

METHOD: Blood and hair samples were obtained from 45 children from Upper Egypt with autism between the ages of 2 and 10 years and 45 children served as controls in the same age range, after taken an informed consent and fill a questionnaire to assess the risk factors. The samples were analyzed blindly for lead and mercury by using atomic absorption and ICP-MS. Data from the two groups were compared, then follow up of the autistic children after treatment with chelating agents were done.

RESULTS: The results obtained showed significant difference among the two groups, there was high level of mercury and lead among those kids with autism. Significant decline in the blood level of lead and mercury with the use of DMSA as a chelating agent. In addition, there was decline in the autistic symptoms with the decrease in the lead and mercury level in blood.

CONCLUSION: Lead and mercury considered as one of the main causes of autism. Environmental exposure as well as defect in heavy metal metabolism is responsible for the high level of heavy metals. Detoxification by chelating agents had great role in improvement of those kids.

<http://www.sciencedirect.com/science/article/pii/S1382668914002415>

69. Administration of aluminium to neonatal mice in vaccine-relevant amounts is associated with adverse long term neurological outcomes.

J Inorg Biochem. 2013 Nov;128:237-44. doi: 10.1016/j.jinorgbio.2013.07.022. Epub 2013 Jul 19.

Our previous ecological studies of autism spectrum disorder (ASD) has demonstrated a correlation between increasing ASD rates and aluminium (Al) adjuvants in common use in paediatric vaccines in several Western countries. The correlation between ASD rate and Al adjuvant amounts appears to be dose-dependent and satisfies 8 of 9 Hill criteria for causality. We have now sought to provide an animal model to explore potential behavioural phenotypes and central nervous system (CNS) alterations using s.c. injections of Al hydroxide in early postnatal CD-1 mice of both sexes. Injections of a "high" and "low" Al adjuvant levels were designed to correlate to either the U.S. or Scandinavian paediatric vaccine schedules vs. control saline-injected mice. Both male and female mice in the "high Al" group showed significant weight gains following treatment up to sacrifice at 6 months of age. Male mice in the "high Al" group showed significant changes in light-dark box tests and in various measures of behaviour in an open field. Female mice showed significant changes in the light-dark box at both doses, but no significant changes in open field behaviours. These current data implicate Al injected in early postnatal life in some CNS alterations that may be relevant for a better understanding of the aetiology of ASD.

Repetitive administration of aluminium to neonatal mice in amounts comparable to those to children receive via routine vaccinations significantly increases anxiety and reduces exploratory behaviour and locomotor activities. The neurodisruptive effects of aluminium are long-lasting and persist for 6 months following injection.

<http://www.sciencedirect.com/science/article/pii/S0162013413001773>

70. A comparison of temporal trends in United States autism prevalence to trends in suspected environmental factors

Environ Health. 2014; 13: 73.

Results: The CDDS and IDEA data sets are qualitatively consistent in suggesting a strong increase in autism prevalence over recent decades. The quantitative comparison of IDEA snapshot and constant-age tracking trend slopes suggests that ~75-80% of the tracked increase in autism since 1988 is due to an actual increase in the disorder rather than to changing diagnostic criteria. Most of the suspected environmental toxins examined have flat or decreasing temporal trends that correlate poorly to the rise in autism. Some, including lead, organochlorine pesticides and vehicular emissions, have strongly decreasing trends. Among the suspected toxins surveyed, polybrominated diphenyl ethers, aluminum adjuvants, and the herbicide glyphosate have increasing trends that correlate positively to the rise in autism.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4177682/>

71. Toxic Metals and Essential Elements in Hair and Severity of Symptoms among Children with Autism

Maedica (Buchar). 2012 Jan; 7(1): 38–48.

Conclusion: Our data supports the historic evidence that heavy metals play a role in the development of ASD. In combination with an inadequate nutritional status the toxic effect of metals increase along with the severity of symptoms.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3484795/>

72. Abnormal measles-mumps-rubella antibodies and CNS autoimmunity in children with autism.

J Biomed Sci. 2002 Jul-Aug;9(4):359-64.

Abstract

Autoimmunity to the central nervous system (CNS), especially to myelin basic protein (MBP), may play a causal role in autism, a neurodevelopmental disorder. Because many autistic children harbor elevated levels of measles antibodies, we conducted a serological study of measles-mumps-rubella (MMR) and MBP autoantibodies. Using serum samples of 125 autistic children and 92 control children, antibodies were assayed by ELISA or immunoblotting methods. ELISA analysis showed a significant increase in the level of MMR antibodies in autistic children. Immunoblotting analysis revealed the presence of an unusual MMR antibody in 75 of 125 (60%) autistic sera but not in control sera. This antibody specifically detected a protein of 73-75 kD of MMR. This protein band, as analyzed with monoclonal antibodies, was immunopositive for measles hemagglutinin (HA) protein but not for measles nucleoprotein and rubella or mumps viral proteins. Thus the MMR antibody in autistic sera detected measles HA protein, which is unique to the measles subunit of the vaccine. Furthermore, over 90% of MMR antibody-positive autistic sera were also positive for MBP autoantibodies, suggesting a strong association between MMR and CNS autoimmunity in autism. Stemming from this evidence, we suggest that an inappropriate antibody response to MMR, specifically the measles component thereof, might be related to pathogenesis of autism.

<https://www.ncbi.nlm.nih.gov/pubmed/12145534>

73. Impact of environmental factors on the prevalence of autistic disorder after 1979

Journal of Public Health and Epidemiology, Vol.6(9), pp. 271-284, September 2014. Theresa A. Deisher, Ngoc V. Doan, Angelica Omaiye, Kumiko Koyama, Sarah Bwabye

Abstract

The aim of this study was to investigate a previously overlooked, universally introduced environmental factor, fetal and retroviral contaminants in childhood vaccines, absent prior to change points (CPs) in autistic disorder (AD) prevalence with subsequent dose-effect evidence and known pathologic mechanisms of action. Worldwide population based cohort study was used for the design of this study. The United States, Western Australia, United Kingdom and Denmark settings were used. All live born infants who later developed autistic disorder delivered after 1 January 1970, whose redacted vaccination and autistic disorder diagnosis information is publicly available in databases maintained by the US Federal Government, Western Australia, UK, and Denmark. The live births, grouped by father's age, were from the US and Australia. The children vaccinated with MMRII, Varicella and Hepatitis A vaccines varied from 19 to 35 months of age at the time of vaccination. Autistic disorder birth year change points were identified as 1980.9, 1988.4 and 1996 for the US, 1987 for UK, 1990.4 for Western Australia, and 1987.5 for Denmark. Change points in these countries corresponded to introduction of or increased doses of human fetal cell line-manufactured vaccines, while no relationship was found between paternal age or Diagnostic and Statistical Manual (DSM) revisions and autistic disorder diagnosis. Further, linear regression revealed that Varicella and Hepatitis A immunization coverage was significantly correlated to autistic disorder cases. R software was used to calculate change points. Autistic disorder change points years are coincident with introduction of vaccines manufactured using human fetal cell lines, containing fetal and retroviral contaminants, into childhood vaccine regimens. This pattern was repeated in the US, UK, Western Australia and Denmark. Thus, rising autistic disorder prevalence is directly related to vaccines manufactured utilizing human fetal cells. Increased paternal age and DSM revisions were not related to rising autistic disorder prevalence.

<http://www.academicjournals.org/journal/JPHE/article-abstract/C98151247042>

74. A Positive Association found between Autism Prevalence and Childhood Vaccination uptake across the U.S. Population

Journal of Toxicology and Environmental Health, Part A: Current Issues Volume 74, Issue 14, 2011, Pages 903 - 916

Abstract

The reason for the rapid rise of autism in the United States that began in the 1990s is a mystery. Although individuals probably have a genetic predisposition to develop autism, researchers suspect that one or more environmental triggers are also needed. One of those triggers might be the battery of vaccinations that young children receive. Using regression analysis and controlling for family income and ethnicity, the relationship between the proportion of children who received the recommended vaccines by age 2 years and the prevalence of autism (AUT) or speech or language impairment (SLI) in each U.S. state from 2001 and 2007 was determined. A positive and statistically significant relationship was found: The higher the proportion of children receiving recommended vaccinations, the higher was the prevalence of AUT or SLI. A 1% increase in vaccination was associated with an additional 680 children having AUT or SLI. Neither parental behavior nor access to care affected the results, since vaccination proportions were not significantly related (statistically) to any other disability or to the number of pediatricians in a U.S. state. The results suggest that although mercury has been removed from many vaccines, other culprits may link vaccines to autism. Further study into the relationship between vaccines and autism is warranted.

<http://www.ncbi.nlm.nih.gov/pubmed/21623535>

75. Effect of thimerosal on the neurodevelopment of premature rats.

World J Pediatr. 2013 Nov;9(4):356-60. doi: 10.1007/s12519-013-0443-z. Epub 2013 Nov 14.

CONCLUSIONS:

The negative adverse consequences on neurodevelopment observed in the present study are consistent with previous studies; this study raised serious concerns about adverse neurodevelopmental disorder such as autism in humans following the ongoing worldwide routine administration of thimerosal containing vaccines to infants.

<https://www.ncbi.nlm.nih.gov/pubmed/24235069>

76. Lasting neuropathological changes in rat brain after intermittent neonatal administration of thimerosal.

Folia Neuropathol. 2010;48(4):258-69. Olczak M, Duszczyk M, Mierzejewski P, Wierzba-Bobrowicz T, Majewska MD.

Department of Pharmacology and Physiology of the Nervous System, Institute of Psychiatry and Neurology, ul. Sobieskiego 9, Warsaw, Poland.

Abstract

Thimerosal, an organomercurial added as a preservative to some vaccines, is a suspected iatrogenic factor, possibly contributing to paediatric neurodevelopmental disorders including autism. We examined the effects of early postnatal administration of thimerosal (four i.m. injections, 12 or 240 µg THIM-Hg/kg, on postnatal days 7, 9, 11 and 15) on brain pathology in Wistar rats. Numerous neuropathological changes were observed in young adult rats which were treated postnatally with thimerosal. They included: ischaemic degeneration of neurons and "dark" neurons in the prefrontal and temporal cortex, the hippocampus and the cerebellum, pathological changes of the blood vessels in the temporal cortex, diminished synaptophysin reaction in the hippocampus, atrophy of astroglia in the hippocampus and cerebellum, and positive caspase-3 reaction in Bergmann astroglia. These findings document neurotoxic effects of thimerosal, at doses equivalent to those used in infant vaccines or higher, in developing rat brain, suggesting likely involvement of this mercurial in neurodevelopmental disorders.

<http://www.termia.pl/Original-paper-Lasting-neuropathological-changes-in-rat-brain-after-intermittent-neonatal-administration-of-thimerosal,20,15811,1,1,1.html>

77. Persistent behavioral impairments and alterations of brain dopamine system after early postnatal administration of thimerosal in rats.

2011 Sep 30;223(1):107-18. doi: 10.1016/j.bbr.2011.04.026. Epub 2011 Apr 28.

Abstract

The neurotoxic organomercurial thimerosal (THIM), used for decades as vaccine preservative, is a suspected factor in the pathogenesis of some neurodevelopmental disorders. Previously we showed that neonatal administration of THIM at doses equivalent to those used in infant vaccines or higher, causes lasting alterations in the brain opioid system in rats. Here we investigated neonatal treatment with THIM (at doses 12, 240, 1440 and 3000 $\mu\text{g Hg/kg}$) on behaviors, which are characteristically altered in autism, such as locomotor activity, anxiety, social interactions, spatial learning, and on the brain dopaminergic system in Wistar rats of both sexes. Adult male and female rats, which were exposed to the entire range of THIM doses during the early postnatal life, manifested impairments of locomotor activity and increased anxiety/neophobia in the open field test. In animals of both sexes treated with the highest THIM dose, the frequency of prosocial interactions was reduced, while the frequency of asocial/antisocial interactions was increased in males, but decreased in females. Neonatal THIM treatment did not significantly affect spatial learning and memory. THIM-exposed rats also manifested reduced haloperidol-induced catalepsy, accompanied by a marked decline in the density of striatal D₂ receptors, measured by immunohistochemical staining, suggesting alterations to the brain dopaminergic system. Males were more sensitive than females to some neurodisruptive/neurotoxic actions of THIM. These data document that early postnatal THIM administration causes lasting neurobehavioral impairments and neurochemical alterations in the brain, dependent on dose and sex. If similar changes occur in THIM/mercurial-exposed children, they could contribute do neurodevelopmental disorders.

<http://www.ncbi.nlm.nih.gov/pubmed/21549155>

78. B-Lymphocytes from a Population of Children with Autism Spectrum Disorder and Their Unaffected Siblings Exhibit Hypersensitivity to Thimerosal

J Toxicol. 2013;2013:801517. Epub 2013 Jun 9.

Abstract

The role of thimerosal containing vaccines in the development of autism spectrum disorder (ASD) has been an area of intense debate, as has the presence of mercury dental amalgams and fish ingestion by pregnant mothers. We studied the effects of thimerosal on cell proliferation and mitochondrial function from B-lymphocytes taken from individuals with autism, their nonautistic twins, and their nontwin siblings. Eleven families were examined and compared to matched controls. B-cells were grown with increasing levels of thimerosal, and various assays (LDH, XTT, DCFH, etc.) were performed to examine the effects on cellular proliferation and mitochondrial function. A subpopulation of eight individuals (4 ASD, 2 twins, and 2 siblings) from four of the families showed thimerosal hypersensitivity, whereas none of the control individuals displayed this response. The thimerosal concentration required to inhibit cell proliferation in these individuals was only 40% of controls. Cells hypersensitive to thimerosal also had higher levels of oxidative stress markers, protein carbonyls, and oxidant generation.

This suggests certain individuals with a mild mitochondrial defect may be highly susceptible to mitochondrial specific toxins like the vaccine preservative thimerosal.

<http://www.ncbi.nlm.nih.gov/pubmed/23843785>

79. Thimerosal-Derived Ethylmercury Is a Mitochondrial Toxin in Human Astrocytes: Possible Role of Fenton Chemistry in the Oxidation and Breakage of mtDNA

J Toxicol. 2012; 2012: 373678. Published online Jun 28, 2012. doi: 10.1155/2012/373678

Abstract

Thimerosal generates ethylmercury in aqueous solution and is widely used as preservative. We have investigated the toxicology of Thimerosal in normal human astrocytes, paying particular attention to mitochondrial function and the generation of specific oxidants. We find that ethylmercury not only inhibits mitochondrial respiration leading to a drop in the steady state membrane potential, but also concurrent with these phenomena increases the formation of superoxide, hydrogen peroxide, and Fenton/Haber-Weiss generated hydroxyl radical. These oxidants increase the levels of cellular aldehyde/ketones. Additionally, we find a five-fold increase in the levels of oxidant damaged mitochondrial DNA bases and increases in the levels of mtDNA nicks and blunt-ended breaks. Highly damaged mitochondria are characterized by having very low membrane potentials, increased superoxide/hydrogen peroxide production, and extensively damaged mtDNA and proteins. These mitochondria appear to have undergone a permeability transition, an observation supported by the five-fold increase in Caspase-3 activity observed after Thimerosal treatment.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3395253/>

80. Altered urinary porphyrins and mercury exposure as biomarkers for autism severity in Egyptian children with autism spectrum disorder

Metabolic Brain Disease

Eman M. Khaled Nagwa A. Meguid Geir Bjørklund Email author Amr Gouda Mohamed H. Bahary Adel Hashish Nermin M. Sallam Salvatore Chirumbolo Mona A. El-Bana

Abstract

Autism spectrum disorder (ASD) is a complex neurodevelopmental disorder that affects social, communication, and behavioral development. Recent evidence supported but also questioned the hypothetical role of compounds containing mercury (Hg) as contributors to the development of ASD. Specific alterations in the urinary excretion of porphyrin-containing ring catabolites have been associated with exposure to Hg in ASD patients. In the present study, the level of urinary porphyrins, as biomarkers of Hg toxicity in children with ASD, was evaluated, and its correlation with severity of the autistic behavior further explored. A total of 100 children was enrolled in the present study. They were classified into three groups: children with ASD (40), healthy controls (40), and healthy siblings of the ASD children (20). Children with ASD were diagnosed using DSM-IV-TR, ADI-R, and CARS tests. Urinary porphyrins were evaluated within the three groups using high-performance liquid chromatography (HPLC), after plasma evaluation of mercury (Hg) and lead (Pb) in the same groups. Results showed that children with ASD had significantly higher levels of Hg, Pb, and the porphyrins pentacarboxyporphyrin, coproporphyrin, precoproporphyrin, uroporphyrins, and hexacarboxyporphyrin compared to healthy controls and healthy siblings of the ASD children. However, there was no significant statistical difference in the level of heptacarboxyporphyrin among the three groups, while a significant positive correlation between the levels of coproporphyrin and precoproporphyrin and autism severity was observed. Mothers of ASD children showed a higher percentage of dental amalgam restorations compared to the mothers of healthy controls suggesting that high Hg levels in children with ASD may relate to the increased exposure to Hg from maternal dental amalgam during pregnancy and lactation. The results showed that the ASD children in the present study had increased blood Hg and Pb levels compared with healthy control children indicating that disordered porphyrin metabolism might interfere with the pathology associated with the autistic neurologic phenotype. The present study indicates that coproporphyrin and precoproporphyrin may be utilized as possible biomarkers for heavy metal exposure and autism severity in children with ASD.

<http://link.springer.com/article/10.1007/s11011-016-9870-6>

81. Uncoupling of ATP-mediated Calcium Signaling and Dysregulated IL-6 Secretion in Dendritic Cells by Nanomolar Thimerosal

Environmental Health Perspectives, July 2006.
Samuel R. Goth, Ruth A. Chu Jeffrey P. Gregg

Dendritic cells are exquisitely sensitive to Thimerosal, with one mechanism involving the uncoupling of positive and negative regulation of Ca²⁺ signals contributed by RyR1.

Excerpt: "Our findings that DCs primarily express the RyR1 channel complex and that this complex is uncoupled by very low levels of THI with dysregulated IL-6 secretion raise intriguing questions about a molecular basis for immune dysregulation and the possible role of the RyR1 complex in genetic susceptibility of the immune system to mercury."

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1513334/>

82. Interplay of glia activation and oxidative stress formation in fluoride and aluminium exposure.

Pathophysiology. 2015 Mar;22(1):39-48. doi: 10.1016/j.pathophys.2014.12.001. Epub 2014 Dec 13.

RESULT AND CONCLUSION:

Aluminium, fluoride and a combination of aluminium-fluoride treatments caused an increase in brain lipid peroxidation products and reactive oxygen species (ROS) formation. Similarly, an increase in glial activation and inflammatory response were seen in these groups versus the control. Oxidative stress induced glial activation (GFAP) and increased the expression of B cells (CD20). This also corresponded to the extent of tissue damage and lipid peroxidation observed. Taken together, the results suggest a close link between oxidative stress neuroinflammation and degeneration in aluminium-fluoride toxicity.

<http://www.ncbi.nlm.nih.gov/pubmed/25577494>

83. Nanomolar aluminum induces pro-inflammatory and pro-apoptotic gene expression in human brain cells in primary culture.

J Inorg Biochem. 2005 Sep;99(9):1895-8.

Abstract

Aluminum, the most abundant neurotoxic metal in our biosphere, has been implicated in the etiology of several neurodegenerative disorders including Alzheimer's disease (AD). To further understand aluminum's influence on gene expression, we examined total messenger RNA levels in untransformed human neural cells exposed to 100 nanomolar aluminum sulfate using high density DNA microarrays that interrogate the expression of every human gene. Preliminary data indicate that of the most altered gene expression levels, 17/24 (70.8%) of aluminum-affected genes, and 7/8 (87.5%) of aluminum-induced genes exhibit expression patterns similar to those observed in AD. The seven genes found to be significantly up-regulated by aluminum encode pro-inflammatory or pro-apoptotic signaling elements, including NF-kappaB subunits, interleukin-1beta precursor, cytosolic phospholipase A2, cyclooxygenase-2, beta-amyloid precursor protein and DAXX, a regulatory protein known to induce apoptosis and repress transcription. The promoters of genes up-regulated by aluminum are enriched in binding sites for the stress-inducible transcription factors HIF-1 and NF-kappaB, suggesting a role for aluminum, HIF-1 and NF-kappaB in driving atypical, pro-inflammatory and pro-apoptotic gene expression. The effect of aluminum on specific stress-related gene expression patterns in human brain cells clearly warrant further investigation. <http://www.sciencedirect.com/science/article/pii/S0162013405001182>

84. Blood Levels of Mercury Are Related to Diagnosis of Autism: A Reanalysis of an Important Data Set

Journal of Child Neurology, Vol. 22, No. 11, 1308-1311 (2007)

M. Catherine DeSoto, PhD, Robert T. Hitlan, PhD -Department of Psychology, University of Northern Iowa, Cedar Falls, Iowa

Abstract

The question of what is leading to the apparent increase in autism is of great importance. Like the link between aspirin and heart attack, even a small effect can have major health implications. If there is any link between autism and mercury, it is absolutely crucial that the first reports of the question are not falsely stating that no link occurs. We have reanalyzed the data set originally reported by Ip et al. in 2004 and have found that the original p value was in error and that a significant relation does exist between the blood levels of mercury and diagnosis of an autism spectrum disorder. Moreover, the hair sample analysis results offer some support for the idea that persons with autism may be less efficient and more variable at eliminating mercury from the blood.

<http://jcn.sagepub.com/cgi/content/abstract/22/11/1308>

85. Empirical Data Confirm Autism Symptoms Related to Aluminum and Acetaminophen Exposure

Entropy, November 7, 2012

Stephanie Seneff, Robert M. Davidson and Jingjing Liu

Abstract

Autism is a condition characterized by impaired cognitive and social skills, associated with compromised immune function. The incidence is alarmingly on the rise, and environmental factors are increasingly suspected to play a role. This paper investigates word frequency patterns in the U.S. CDC Vaccine Adverse Events Reporting System (VAERS) database. Our results provide strong evidence supporting a link between autism and the aluminum in vaccines. A literature review showing toxicity of aluminum in human physiology offers further support. Mentions of autism in VAERS increased steadily at the end of the last century, during a period when mercury was being phased out, while aluminum adjuvant burden was being increased. Using standard log-likelihood ratio techniques, we identify several signs and symptoms that are significantly more prevalent in vaccine reports after 2000, including cellulitis, seizure, depression, fatigue, pain and death, which are also significantly associated with aluminum-containing vaccines. We propose that children with the autism diagnosis are especially vulnerable to toxic metals such as aluminum and mercury due to insufficient serum sulfate and glutathione. A strong correlation between autism and the MMR (Measles, Mumps, Rubella) vaccine is also observed, which may be partially explained via an increased sensitivity to acetaminophen administered to control fever.

<http://www.mdpi.com/1099-4300/14/11/2227>

86. Developmental Regression and Mitochondrial Dysfunction in a Child With Autism

J Child Neurol. 2006 Feb;21(2):170-2.

Abstract

Autistic spectrum disorders can be associated with mitochondrial dysfunction. We present a singleton case of developmental regression and oxidative phosphorylation disorder in a 19-month-old girl. Subtle abnormalities in the serum creatine kinase level, aspartate aminotransferase, and serum bicarbonate led us to perform a muscle biopsy, which showed type I myofiber atrophy, increased lipid content, and reduced cytochrome c oxidase activity. There were marked reductions in enzymatic activities for complex I and III. Complex IV (cytochrome c oxidase) activity was near the 5% confidence level. To determine the frequency of routine laboratory abnormalities in similar patients, we performed a retrospective study including 159 patients with autism (Diagnostic and Statistical Manual of Mental Disorders-IV and Childhood Autism Rating Scale) not previously diagnosed with metabolic disorders and 94 age-matched controls with other neurologic disorders. Aspartate aminotransferase was elevated in 38% of patients with autism compared with 15% of controls ($P < .0001$). The serum creatine kinase level also was abnormally elevated in 22 (47%) of 47 patients with autism. These data suggest that further metabolic evaluation is indicated in autistic patients and that defects of oxidative phosphorylation might be prevalent.

Excerpt: "Children who have (mitochondrial-related) dysfunctional cellular energy metabolism might be more prone to undergo autistic regression between 18 and 30 months of age if they also have infections or immunizations at the same time."

<http://jcn.sagepub.com/cgi/content/abstract/21/2/170>

87. Thimerosal Neurotoxicity is Associated with Glutathione Depletion: Protection with Glutathione Precursors

Neurotoxicology. 2005 Jan;26(1):1-8.

James SJ, Slikker W 3rd, Melnyk S, New E, Pogribna M, Jernigan S.

Department of Pediatrics, University of Arkansas for Medical Sciences and Arkansas Children's Hospital Research Institute, Little Rock, AR

Abstract

Thimerosal is an antiseptic containing 49.5% ethyl mercury that has been used for years as a preservative in many infant vaccines and in flu vaccines. Environmental methyl mercury has been shown to be highly neurotoxic, especially to the developing brain. Because mercury has a high affinity for thiol (sulfhydryl (-SH)) groups, the thiol-containing antioxidant, glutathione (GSH), provides the major intracellular defense against mercury-induced neurotoxicity. Cultured neuroblastoma cells were found to have lower levels of GSH and increased sensitivity to thimerosal toxicity compared to glioblastoma cells that have higher basal levels of intracellular GSH. Thimerosal-induced cytotoxicity was associated with depletion of intracellular GSH in both cell lines. Pretreatment with 100 microM glutathione ethyl ester or N-acetylcysteine (NAC), but not methionine, resulted in a significant increase in intracellular GSH in both cell types. Further, pretreatment of the cells with glutathione ethyl ester or NAC prevented cytotoxicity with exposure to 15 microM Thimerosal. Although Thimerosal has been recently removed from most children's vaccines, it is still present in flu vaccines given to pregnant women, the elderly, and to children in developing countries. The potential protective effect of GSH or NAC against mercury toxicity warrants further research as possible adjunct therapy to individuals still receiving Thimerosal-containing vaccinations.

<http://www.ncbi.nlm.nih.gov/pubmed/15527868>

88. Aluminum adjuvant linked to gulf war illness induces motor neuron death in mice

Neuromolecular Med. 2007;9(1):83-100.

Abstract

Gulf War illness (GWI) affects a significant percentage of veterans of the 1991 conflict, but its origin remains unknown. Associated with some cases of GWI are increased incidences of amyotrophic lateral sclerosis and other neurological disorders. Whereas many environmental factors have been linked to GWI, the role of the anthrax vaccine has come under increasing scrutiny. Among the vaccine's potentially toxic components are the adjuvants aluminum hydroxide and squalene. To examine whether these compounds might contribute to neuronal deficits associated with GWI, an animal model for examining the potential neurological impact of aluminum hydroxide, squalene, or aluminum hydroxide combined with squalene was developed. Young, male colony CD-1 mice were injected with the adjuvants at doses equivalent to those given to US military service personnel. All mice were subjected to a battery of motor and cognitive-behavioral tests over a 6-mo period postinjections. Following sacrifice, central nervous system tissues were examined using immunohistochemistry for evidence of inflammation and cell death. Behavioral testing showed motor deficits in the aluminum treatment group that expressed as a progressive decrease in strength measured by the wire-mesh hang test (final deficit at 24 wk; about 50%). Significant cognitive deficits in water-maze learning were observed in the combined aluminum and squalene group (4.3 errors per trial) compared with the controls (0.2 errors per trial) after 20 wk. Apoptotic neurons were identified in aluminum-injected animals that showed significantly increased activated caspase-3 labeling in lumbar spinal cord (255%) and primary motor cortex (192%) compared with the controls. Aluminum-treated groups also showed significant motor neuron loss (35%) and increased numbers of astrocytes (350%) in the lumbar spinal cord. The findings suggest a possible role for the aluminum adjuvant in some neurological features associated with GWI and possibly an additional role for the combination of adjuvants.

<http://www.ncbi.nlm.nih.gov/pubmed/17114826>

89. A Case Series of Children with Apparent Mercury Toxic Encephalopathies Manifesting with Clinical Symptoms of Regressive Autistic Disorder

J Toxicol Environ Health A. 2007 May 15;70(10):837-51.

Abstract

Impairments in social relatedness and communication, repetitive behaviors, and stereotypic abnormal movement patterns characterize autism spectrum disorders (ASDs). It is clear that while genetic factors are important to the pathogenesis of ASDs, mercury exposure can induce immune, sensory, neurological, motor, and behavioral dysfunctions similar to traits defining or associated with ASDs. The Institutional Review Board of the Institute for Chronic Illnesses (Office for Human Research Protections, U.S. Department of Health and Human Services, IRB number IRB00005375) approved the present study. A case series of nine patients who presented to the Genetic Centers of America for a genetic/developmental evaluation are discussed. Eight of nine patients (one patient was found to have an ASD due to Rett's syndrome) (a) had regressive ASDs; (b) had elevated levels of androgens; (c) excreted significant amounts of mercury post chelation challenge; (d) had biochemical evidence of decreased function in their glutathione pathways; (e) had no known significant mercury exposure except from Thimerosal-containing vaccines/Rho(D)-immune globulin preparations; and (f) had alternate causes for their regressive ASDs ruled out. There was a significant dose-response relationship between the severity of the regressive ASDs observed and the total mercury dose children received from Thimerosal-containing vaccines/Rho (D)-immune globulin preparations. Based upon differential diagnoses, 8 of 9 patients examined were exposed to significant mercury from Thimerosal-containing biologic/vaccine preparations during their fetal/infant developmental periods, and subsequently, between 12 and 24 mo of age, these previously normally developing children suffered mercury toxic encephalopathies that manifested with clinical symptoms consistent with regressive ASDs. Evidence for mercury intoxication should be considered in the differential diagnosis as contributing to some regressive ASDs."

<http://www.ncbi.nlm.nih.gov/pubmed/17454560>

90. Thimerosal induces neuronal cell apoptosis by causing cytochrome c and apoptosis-inducing factor release from mitochondria.

International Journal of Molecular Medicine, 2006

There is a worldwide increasing concern over the neurological risks of thimerosal (ethylmercury thiosalicylate) which is an organic mercury compound that is commonly used as an antimicrobial preservative. In this study, we show that thimerosal, at nanomolar concentrations, induces neuronal cell death through the mitochondrial pathway. Thimerosal, in a concentration- and time-dependent manner, decreased cell viability as assessed by calcein-ethidium staining and caused apoptosis detected by Hoechst 33258 dye. Thimerosal-induced apoptosis was associated with depolarization of mitochondrial membrane, generation of reactive oxygen species, and release of cytochrome c and apoptosis-inducing factor (AIF) from mitochondria to cytosol. Although thimerosal did not affect cellular expression of Bax at the protein level, we observed translocation of Bax from cytosol to mitochondria. Finally, caspase-9 and caspase-3 were activated in the absence of caspase-8 activation. Our data suggest that thimerosal causes apoptosis in neuroblastoma cells by changing the mitochondrial microenvironment.

<http://thescipub.com/html/10.3844/ajbbbsp.2008.198.207>

91. Possible Immunological Disorders in Autism: Concomitant Autoimmunity and Immune Tolerance

The Egyptian Journal of Immunology, 2006

Abstract

Autism is a pervasive developmental disorder that affect children early in their life. Immunological disorders is one of several contributing factors that have been suggested to cause autism. Thirty autistic children aged 3-6 years and thirty non-autistic psychologically-free siblings were studied. Circulating IgA and IgG autoantibodies to casein and gluten dietary proteins were detected by enzyme-immunoassays (EIA). Circulating IgG antibodies to measles, mumps and rubella vaccine (M.M.R) and cytomeglovirus were investigated by EIA. Results revealed high seropositivity for autoantibodies to casein and gluten: 83.3% and 50% respectively in autistic children as compared to 10% and 6.7% positivity in the control group. Surprisingly, circulating anti-measles, anti-mumps and anti-rubella IgG were positive in only 50%, 73.3% and 53.3% respectively as compared to 100% positivity in the control group. Anti-CMV IgG was positive in 43.3% of the autistic children as compared to 7% in the control group. It is concluded that, autoimmune response to dietary proteins and deficient immune response to measles, mumps and rubella vaccine antigens might be associated with autism, as a leading cause or a resulting event. Further research is needed to confirm these findings.

<http://app.egyptlearn.com/eji/pdf/HQ2007-03680.pdf>

92. Mitochondrial Energy-Deficient Endophenotype in Autism

American Journal of Biochemistry and Biotechnology 4 (2): 198-207, 2008

Abstract

While evidence points to a multigenic etiology of most autism, the pathophysiology of the disorder has yet to be defined and the underlying genes and biochemical pathways they subserve remain unknown. Autism is considered to be influenced by a combination of various genetic, environmental and immunological factors; more recently, evidence has suggested that increased

vulnerability to oxidative stress may be involved in the etiology of this multifactorial disorder.

Furthermore, recent studies have pointed to a subset of autism associated with the biochemical endophenotype of mitochondrial energy deficiency, identified as a subtle impairment in fat and carbohydrate oxidation. This phenotype is similar, but more subtle than those seen in classic mitochondrial defects. In some cases the beginnings of the genetic underpinnings of these mitochondrial defects are emerging, such as mild mitochondrial dysfunction and secondary carnitine deficiency observed in the subset of autistic patients with an inverted duplication of chromosome 15q11-q13. In addition, rare cases of familial autism associated with sudden infant death syndrome (SIDS) or associated with abnormalities in cellular calcium homeostasis, such as malignant hyperthermia or cardiac arrhythmia, are beginning to emerge. Such special cases suggest that the pathophysiology of autism may comprise pathways that are directly or indirectly involved in mitochondrial energy production and to further probe this connection three new avenues seem worthy of exploration: 1) metabolomic clinical studies provoking controlled aerobic exercise stress to expand the biochemical phenotype, 2) high-throughput expression arrays to directly survey activity of the genes underlying these biochemical pathways and 3) model systems, either based upon neuronal stem cells or model genetic organisms, to discover novel genetic and environmental inputs into these pathways.

<http://thescipub.com/html/10.3844/ajbbbsp.2008.198.207>

93. Pediatric Vaccines Influence Primate Behavior, and Amygdala Growth and Opioid Ligand Binding

Friday, May 16, 2008: IMFAR

Abstract

Background: Macaques are commonly used in pre-clinical vaccine safety testing, but the combined childhood vaccine regimen, rather than individual vaccines, has not been studied. Childhood vaccines are a possible causal factor in autism, and abnormal behaviors and anomalous amygdala growth are potentially inter-related features of this condition.

Objectives: The objective of this study was to compare early infant cognition and behavior with amygdala size and opioid binding in rhesus macaques receiving the recommended childhood vaccines (1994-1999), the majority of which contained the bactericidal preservative ethylmercurithiosalicylic acid (thimerosal).

Methods: Macaques were administered the recommended infant vaccines, adjusted for age and thimerosal dose (exposed; N=13), or saline (unexposed; N=3). Primate development, cognition and social behavior were assessed for both vaccinated and unvaccinated infants using standardized tests developed at the Washington National Primate Research Center. Amygdala growth and binding were measured serially by MRI and by the binding of the non-selective opioid antagonist [¹¹C]diprenorphine, measured by PET, respectively, before (T1) and after (T2) the administration of the measles-mumps-rubella vaccine (MMR).

Results: Compared with unexposed animals, significant neurodevelopmental deficits were evident for exposed animals in survival reflexes, tests of color discrimination and reversal, and learning sets. Differences in behaviors were observed between exposed and unexposed animals and within the exposed group before and after MMR vaccination. Compared with unexposed animals, exposed animals showed attenuation of amygdala growth and differences in the amygdala binding of [¹¹C]diprenorphine. Interaction models identified significant associations between specific aberrant social and non-social behaviors, isotope binding, and vaccine exposure.

Conclusions: This animal model, which examines for the first time, behavioral, functional, and neuromorphometric consequences of the childhood vaccine regimen, mimics certain neurological abnormalities of autism. The findings raise important safety issues while providing a potential model for examining aspects of causation and disease pathogenesis in acquired disorders of behavior and development.

<https://www.ncbi.nlm.nih.gov/pubmed/20628439>

94. Thimerosal exposure in infants and neurodevelopmental disorders: An assessment of computerized medical records in the Vaccine Safety Datalink.

Young HA, Geier DA, Geier MR.

The George Washington University School of Public Health and Health Services, Department of Epidemiology and Biostatistics, United States.

Abstract

The study evaluated possible associations between neurodevelopmental disorders (NDs) and exposure to mercury (Hg) from Thimerosal-containing vaccines (TCVs) by examining the automated Vaccine Safety Datalink (VSD). A total of 278,624 subjects were identified in birth cohorts from 1990-1996 that had received their first oral polio vaccination by 3 months of age in the VSD. The birth cohort prevalence rate of medically diagnosed International Classification of Disease, 9th revision (ICD-9) specific NDs and control outcomes were calculated. Exposures to Hg from TCVs were calculated by birth cohort for specific exposure windows from birth-7 months and birth-13 months of age. Poisson regression analysis was used to model the association between the prevalence of outcomes and Hg doses from TCVs. Consistent significantly increased rate ratios were observed for autism, autism spectrum disorders, tics, attention deficit disorder, and emotional disturbances with Hg exposure from TCVs. By contrast, none of the control outcomes had significantly increased rate ratios with Hg exposure from TCVs. Routine childhood vaccination should be continued to help reduce the morbidity and mortality associated with infectious diseases, but efforts should be undertaken to remove Hg from vaccines. Additional studies should be conducted to further evaluate the relationship between Hg exposure and NDs.

<http://www.ncbi.nlm.nih.gov/pubmed/18482737>

95. Hepatitis B triple series vaccine and developmental disability in US children aged 1-9 years

Journal Toxicological & Environmental Chemistry, Volume 90, Issue 5 September 2008 , pages 997 - 1008

Abstract

This study investigated the association between vaccination with the Hepatitis B triple series vaccine prior to 2000 and developmental disability in children aged 1–9 years (n = 1824), proxied by parental report that their child receives early intervention or special education services (EIS). National Health and Nutrition Examination Survey 1999–2000 data were analyzed and adjusted for survey design by Taylor Linearization using SAS version 9.1 software, with SAS callable SUDAAN version 9.0.1. The odds of receiving EIS were approximately nine times as great for vaccinated boys (n = 46) as for unvaccinated boys (n = 7), after adjustment for confounders. This study found statistically significant evidence to suggest that boys in United States who were vaccinated with the triple series Hepatitis B vaccine, during the time period in which vaccines were manufactured with thimerosal, were more susceptible to developmental disability than were unvaccinated boys.

<http://www.tandfonline.com/doi/abs/10.1080/02772240701806501#.Ue8MEY1wqSo>

96. Induction of metallothionein in mouse cerebellum and cerebrum with low-dose thimerosal injection.

Cell Biology and Toxicology. 2009 Apr 9. [Epub ahead of print]

It is thought that the cerebellum is a sensitive organ against thimerosal. As a result of the present findings, in combination with the brain pathology observed in patients diagnosed with autism, the present study helps to support the possible biological plausibility for how low-dose exposure to mercury from thimerosal-containing vaccines may be associated with autism.

<http://www.ncbi.nlm.nih.gov/pubmed/19357975>

97. Influence of pediatric vaccines on amygdala growth and opioid ligand binding in rhesus macaque infants: A pilot study

Acta Neurobiol Exp 2010, 70: 147–164 Polish Neuroscience Society - PTBUN, Nencki Institute of Experimental Biology

Abstract

This longitudinal, case-control pilot study examined amygdala growth in rhesus macaque infants receiving the complete US childhood vaccine schedule (1994-1999). Longitudinal structural and functional neuroimaging was undertaken to examine central effects of the vaccine regimen on the developing brain. Vaccine-exposed and saline-injected control infants underwent MRI and PET imaging at approximately 4 and 6 months of age, representing two specific timeframes within the vaccination schedule. Volumetric analyses showed that exposed animals did not undergo the maturational changes over time in amygdala volume that was observed in unexposed animals. After controlling for left amygdala volume, the binding of the opioid antagonist [11C]diprenorphine (DPN) in exposed animals remained relatively constant over time, compared with unexposed animals, in which a significant decrease in [11C]DPN binding occurred. These results suggest that maturational changes in amygdala volume and the binding capacity of [11C]DPN in the amygdala was significantly altered in infant macaques receiving the vaccine schedule. The macaque infant is a relevant animal model in which to investigate specific environmental exposures and structural/functional neuroimaging during neurodevelopment.

<http://adventuresinautism.com/Hewitsonetal2010.pdf>

98. Cultured lymphocytes from autistic children and non-autistic siblings up-regulate heat shock protein RNA in response to thimerosal challenge.

Neurotoxicology. 2006 Sep;27(5):685-92. Epub 2006 Jun 16.

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Abstract

There are reports suggesting that some autistic children are unable to mount an adequate response following exposure to environmental toxins. This potential deficit, coupled with the similarity in clinical presentations of autism and some heavy metal toxicities, has led to the suggestion that heavy metal poisoning might play a role in the etiology of autism in uniquely susceptible individuals. Thimerosal, an anti-microbial preservative previously added routinely to childhood multi-dose vaccines, is composed of 49.6% ethyl mercury. Based on the levels of this toxin that children receive through routine immunization schedules in the first years of life, it has been postulated that thimerosal may be a potential triggering mechanism contributing to autism in susceptible individuals. One potential risk factor in these individuals may be an inability to adequately up-regulate metallothionein (MT) biosynthesis in response to presentation of a heavy metal challenge. To investigate this hypothesis, cultured lymphocytes (obtained from the Autism Genetic Resource Exchange, AGRE) from autistic children and non-autistic siblings were challenged with either 10 microM ethyl mercury, 150 microM zinc, or fresh media (control). Following the challenge, total RNA was extracted and used to query "whole genome" DNA microarrays. Cultured lymphocytes challenged with zinc responded with an impressive up-regulation of MT transcripts (at least nine different MTs were over-expressed) while cells challenged with thimerosal responded by up-regulating numerous heat shock protein transcripts, but not MTs. Although there were no apparent differences between autistic and non-autistic sibling responses in this very small sampling group, the differences in expression profiles between those cells treated with zinc versus thimerosal were dramatic. Determining cellular response, at the level of gene expression, has important implications for the understanding and treatment of conditions that result from exposure to neurotoxic compounds.

http://www.genome-explorations.com/images/pdfs_publications/10-Cultured%20lymphocytes%20from%20autistic%20children%20and%20non-autis.pdf

99. Sensitization effect of thimerosal is mediated in vitro via reactive oxygen species and calcium signaling.

Toxicology. 2010 July - August;274(1-3):1-9. Epub 2010 May 10.

Migdal C, Foggia L, Tailhardat M, Courtellemont P, Haftek M, Serres M.

Thimerosal, a mercury derivative composed of ethyl mercury chloride (EtHgCl) and thiosalicylic acid (TSA), is widely used as a preservative in vaccines and cosmetic products and causes cutaneous reactions. Since dendritic cells (DCs) play an essential role in the immune response, the sensitization potency of chemicals was studied in vitro using U937, a human promyelomonocytic cell line that is used as a surrogate of monocytic differentiation and activation. Currently, this cell line is under ECVAM (European Center for the Validation of Alternative Methods) validation as an alternative method for discriminating chemicals. Thimerosal and mercury derivatives induced in U937 an overexpression of CD86 and interleukin (IL)-8 secretion similarly to 1-chloro-2,4-dinitrobenzene (DNCB), a sensitizer used as a positive control for DC activation. Non-sensitizers, dichloronitrobenzene (DCNB), TSA and sodium dodecyl sulfate (SDS), an irritant, had no effect. U937 activation was prevented by cell pretreatment with N-acetyl-L-cysteine (NAC) but not with thiol-independent antioxidants except vitamin E which affected CD86 expression by preventing lipid peroxidation of cell membranes. Thimerosal, EtHgCl and DNCB induced glutathione (GSH) depletion and reactive oxygen species (ROS) within 15min; another peak was detected after 2h for mercury compounds only. MitoSOX, a specific mitochondrial fluorescent probe, confirmed that ROS were essentially produced by mitochondria in correlation with its membrane depolarization. Changes in mitochondrial membrane permeability induced by mercury were reversed by NAC but not by thiol-independent antioxidants. Thimerosal and EtHgCl also induced a calcium (Ca²⁺) influx with a peak at 3h, suggesting that Ca²⁺ influx is a secondary event following ROS induction as Ca²⁺ influx was suppressed after pretreatment with NAC but not with thiol-independent antioxidants. Ca²⁺ influx was also suppressed when culture medium was deprived of Ca²⁺ confirming the specificity of the measure. In conclusion, these data suggest that thimerosal induced U937 activation via oxidative stress from mitochondrial stores and mitochondrial membrane depolarization with a primordial effect of thiol groups. A cross-talk between ROS and Ca²⁺ influx was demonstrated.

<http://www.sciencedirect.com/science/article/pii/S0300483X10002040>

100. Theoretical aspects of autism: Causes—A review

Journal of Immunotoxicology, January-March 2011, Vol. 8, No. 1 , Pages 68-79

Autism, a member of the pervasive developmental disorders (PDDs), has been increasing dramatically since its description by Leo Kanner in 1943. First estimated to occur in 4 to 5 per 10,000 children, the incidence of autism is now 1 per 110 in the United States, and 1 per 64 in the United Kingdom, with similar incidences throughout the world. Searching information from 1943 to the present in PubMed and Ovid Medline databases, this review summarizes results that correlate the timing of changes in incidence with environmental changes. Autism could result from more than one cause, with different manifestations in different individuals that share common symptoms. Documented causes of autism include genetic mutations and/or deletions, viral infections, and encephalitis following vaccination. Therefore, autism is the result of genetic defects and/or inflammation of the brain. The inflammation could be caused by a defective placenta, immature blood-brain barrier, the immune response of the mother to infection while pregnant, a premature birth, encephalitis in the child after birth, or a toxic environment.

<http://informahealthcare.com/doi/abs/10.3109/1547691X.2010.545086>

101. Iatrogenic exposure to mercury after hepatitis B vaccination in preterm infants

The Journal of Pediatrics, Volume 136, Issue 5, May 2000, Pages 679–681

Thimerosal, a derivative of mercury, is used as a preservative in hepatitis B vaccines. We measured total mercury levels before and after the administration of this vaccine in 15 preterm and 5 term infants. Comparison of pre- and post-vaccination mercury levels showed a significant increase in both preterm and term infants after vaccination. Additionally, post-vaccination mercury levels were significantly higher in preterm infants as compared with term infants. Because mercury is known to be a potential neurotoxin to infants, further study of its pharmacodynamics is warranted.

<http://www.sciencedirect.com/science/article/pii/S0022347600896560>

102. Administration of thimerosal to infant rats increases overflow of glutamate and aspartate in the prefrontal cortex: protective role of dehydroepiandrosterone sulfate.

Neurochem Res. 2012 Feb;37(2):436-47. Epub 2011 Oct 21.

Abstract

Thimerosal, a mercury-containing vaccine preservative, is a suspected factor in the etiology of neurodevelopmental disorders. We previously showed that its administration to infant rats causes behavioral, neurochemical and neuropathological abnormalities similar to those present in autism. Here we examined, using microdialysis, the effect of thimerosal on extracellular levels of neuroactive amino acids in the rat prefrontal cortex (PFC). Thimerosal administration (4 injections, i.m., 240 µg Hg/kg on postnatal days 7, 9, 11, 15) induced lasting changes in amino acid overflow: an increase of glutamate and aspartate accompanied by a decrease of glycine and alanine; measured 10-14 weeks after the injections. Four injections of thimerosal at a dose of 12.5 µg Hg/kg did not alter glutamate and aspartate concentrations at microdialysis time (but based on thimerosal pharmacokinetics, could have been effective soon after its injection). Application of thimerosal to the PFC in perfusion fluid evoked a rapid increase of glutamate overflow. Coadministration of the neurosteroid, dehydroepiandrosterone sulfate (DHEAS; 80 mg/kg; i.p.) prevented the thimerosal effect on glutamate and aspartate; the steroid alone had no influence on these amino acids. Coapplication of DHEAS with thimerosal in perfusion fluid also blocked the acute action of thimerosal on glutamate. In contrast, DHEAS alone reduced overflow of glycine and alanine, somewhat potentiating the thimerosal effect on these amino acids. Since excessive accumulation of extracellular glutamate is linked with excitotoxicity, our data imply that neonatal exposure to thimerosal-containing vaccines might induce excitotoxic brain injuries, leading to neurodevelopmental disorders. DHEAS may partially protect against mercurials-induced neurotoxicity.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3264864/?tool=pubmed>

103. Hepatitis B vaccine induces apoptotic death in Hepa1-6 cells

Apoptosis. 2012 Jan 17. Hamza H, Cao J, Li X, Li C, Zhu M, Zhao S. Key Lab of Agricultural Animal Genetics, Breeding, and Reproduction of Ministry of Education, College of Animal Science and Technology, Huazhong Agricultural University, Wuhan, 430070, People's Republic of China,

Abstract

Vaccines can have adverse side-effects, and these are predominantly associated with the inclusion of chemical additives such as aluminum hydroxide adjuvant. The objective of this study was to establish an in vitro model system amenable to mechanistic investigations of cytotoxicity induced by hepatitis B vaccine, and to investigate the mechanisms of vaccine-induced cell death. The mouse liver hepatoma cell line Hepa1-6 was treated with two doses of adjuvanted (aluminium hydroxide) hepatitis B vaccine (0.5 and 1 µg protein per ml) and cell integrity was measured after 24, 48 and 72 h. Hepatitis B vaccine exposure increased cell apoptosis as detected by flow cytometry and TUNEL assay. Vaccine exposure was accompanied by significant increases in the levels of activated caspase 3, a key effector caspase in the apoptosis cascade. Early transcriptional events were detected by qRT-PCR. We report that hepatitis B vaccine exposure resulted in significant upregulation of the key genes encoding caspase 7, caspase 9, Inhibitor caspase-activated DNase (ICAD), Rho-associated coiled-coil containing protein kinase 1 (ROCK-1), and Apoptotic protease activating factor 1 (Apaf-1). Upregulation of cleaved caspase 3,7 were detected by western blot in addition to Apaf-1 and caspase 9 expressions argues that cell death takes place via the intrinsic apoptotic pathway in which release of cytochrome c from the mitochondria triggers the assembly of a caspase activation complex. We conclude that exposure of Hepa1-6 cells to a low dose of adjuvanted hepatitis B vaccine leads to loss of mitochondrial integrity, apoptosis induction, and cell death, apoptosis effect was observed also in C2C12 mouse myoblast cell line after treated with low dose of vaccine (0.3, 0.1, 0.05 µg/ml). In addition In vivo apoptotic effect of hepatitis B vaccine was observed in mouse liver.

<http://www.ncbi.nlm.nih.gov/pubmed/22249285>

104. Inflammatory Responses to Trivalent Influenza Virus Vaccine Among Pregnant Women

Vaccine. 2011 Nov 8;29(48):8982-7. doi: 10.1016/j.vaccine.2011.09.039. Epub 2011 Sep 22.

Abstract

In the U.S., seasonal trivalent influenza vaccination (TIV) is currently universally recommended for all pregnant women. However, data on the maternal inflammatory response to vaccination is lacking and would better delineate the safety and clinical utility of immunization. In addition, for research purposes, vaccination has been used as a mild immune trigger to examine in vivo inflammatory responses in nonpregnant adults. The utility of such a model in pregnancy is unknown. Given the clinical and empirical justifications, the current study examined the magnitude, time course, and variance in inflammatory responses following seasonal influenza virus vaccination among pregnant women.

Conclusions

Trivalent influenza virus vaccination elicits a measurable inflammatory response among pregnant women. There is sufficient variability in response for testing associations with clinical outcomes. As adverse perinatal health outcomes including preeclampsia and preterm birth have an inflammatory component, a tendency toward greater inflammatory responding to immune triggers may predict risk of adverse outcomes, providing insight into biological mechanisms underlying risk. The inflammatory response elicited by vaccination is substantially milder and more transient than seen in infectious illness, arguing for the clinical value of vaccination. However, further research is needed to confirm that the mild inflammatory response elicited by vaccination is benign in pregnancy

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3204610/#!po=5.55556>

105. Elevated maternal C-reactive protein and autism in a national birth cohort.

Mol Psychiatry. 2013 Jan 22. doi: 10.1038/mp.2012.197.

Brown AS, Sourander A, Hinkka-Yli-Salomäki S, McKeague IW, Sundvall J, Surcel HM.

Department of Psychiatry, Columbia University College of Physicians and Surgeons, New York State Psychiatric Institute, New York, NY, USA, Department of Epidemiology, Columbia University Mailman School of Public Health, New York, NY, USA.

Abstract

Autism is a complex neuropsychiatric syndrome with a largely unknown etiology. Inflammation during pregnancy may represent a common pathway by which infections and other insults increase risk for the disorder. Hence, we investigated the association between early gestational C-reactive protein (CRP), an established inflammatory biomarker, prospectively assayed in maternal sera, and childhood autism in a large national birth cohort with an extensive serum biobank. Other strengths of the cohort included nearly complete ascertainment of pregnancies in Finland (N=1.2 million) over the study period and national psychiatric registries consisting of virtually all treated autism cases in the population. Increasing maternal CRP levels, classified as a continuous variable, were significantly associated with autism in offspring. For maternal CRP levels in the highest quintile, compared with the lowest quintile, there was a significant, 43% elevated risk. This finding suggests that maternal inflammation may have a significant role in autism, with possible implications for identifying preventive strategies and pathogenic mechanisms in autism and other neurodevelopmental disorders. Molecular Psychiatry advance online publication, 22 January 2013; doi:10.1038/mp.2012.197.

<http://www.ncbi.nlm.nih.gov/pubmed/23337946>

106. Neurologic adverse events following vaccination

Prog Health Sci 2012, Vol 2 , No1

Abstract

The present review summarizes data on neurological adverse events following vaccination in the relation to intensity, time of onset, taking into account the immunological and non-immunological mechanisms. The authors described the physiological development of the immune system and the possible immune system responses following vaccination. Toxic property of thimerosal - a mercury-containing preservative used in some vaccines was presented. The neurological complications after vaccination were described. The role of vaccination in the natural course of infectious diseases and the current immunizations schedule in Poland was discussed.

Discussion by Sienkiewicz et. al: "Among the "major" neurological complications, usually manifesting more than 48 hours after vaccination and which might be the cause of permanent damage to the central nervous system (CNS), the following are listed: seizures - especially if there is no increase in body temperature, hypotonic-hyporesponsive episodes, postvaccinal encephalitis, postvaccinal encephalopathy [6, 8-11] and autism [10, 12-14]."

<http://progress.umb.edu.pl/sites/progress.umb.edu.pl/files/129-141.pdf>

107. Detection and sequencing of measles virus from peripheral mononuclear cells from patients with inflammatory bowel disease and autism.

Dig Dis Sci. 2000 Apr;45(4):723-9.

Abstract

It has been reported that measles virus may be present in the intestine of patients with Crohn's disease. Additionally, a new syndrome has been reported in children with autism who exhibited developmental regression and gastrointestinal symptoms (autistic enterocolitis), in some cases soon after MMR vaccine. It is not known whether the virus, if confirmed to be present in these patients, derives from either wild strains or vaccine strains. In order to characterize the strains that may be present, we have carried out the detection of measles genomic RNA in peripheral mononuclear cells (PBMC) in eight patients with Crohn's disease, three patients with ulcerative colitis, and nine children with autistic enterocolitis. As controls, we examined healthy children and patients with SSPE, SLE, HIV-1 (a total of eight cases). RNA was purified from PBMC by Ficoll-paque, followed by reverse transcription using AMV; cDNAs were subjected to nested PCR for detection of specific regions of the hemagglutinin (H) and fusion (F) gene regions. Positive samples were sequenced directly, in nucleotides 8393-8676 (H region) or 5325-5465 (from noncoding F to coding F region). One of eight patients with Crohn disease, one of three patients with ulcerative colitis, and three of nine children with autism, were positive. Controls were all negative. The sequences obtained from the patients with Crohn's disease shared the characteristics with wild-strain virus. The sequences obtained from the patients with ulcerative colitis and children with autism were consistent with being vaccine strains. The results were concordant with the exposure history of the patients. Persistence of measles virus was confirmed in PBMC in some patients with chronic intestinal inflammation.

<http://www.ncbi.nlm.nih.gov/pubmed/10759242>

61-107 Source: [Ginger Taylor MS](#)