A two-phased population epidemiological study of the safety of thimerosal-containing vaccines: a follow-up analysis

Medical Science Monitor

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This article has 55 references

FROM ABSTRACT:

Background:
Thimerosal is an mercury containing preservative in vaccines.

Toxicokinetic studies have shown children received doses of mercury from thimerosal-containing vaccines (TCVs) that were in excess of safety guidelines.

Previously, an ecological study showing a significant association between TCVs and neurodevelopmental disorders (NDs) in the US was published in this journal.

Material/Methods:
A two-phased population-based epidemiological study was undertaken.

Phase one evaluated reported NDs to the Vaccine Adverse Event Reporting System (VAERS) following thimerosal containing Diphtheria-Tetanus-acellular-Pertussis (DTaP) vaccines in comparison to thimerosal-free DTaP vaccines administered from 1997 through 2001.

Phase two evaluated the automated Vaccine Safety Datalink (VSD) for cumulative exposures to mercury from TCVs at 1-, 2-, 3-, and 6-months of age for infants born from 1992 through 1997 and the eventual risk of developing NDs.

Results:
Phase one showed significantly increased risks for autism, speech disorders, mental retardation, personality disorders, and thinking abnormalities reported to VAERS following thimerosal-containing DTaP vaccines in comparison to thimerosal-free DTaP vaccines.

Phase two showed significant associations between cumulative exposures to thimerosal and the following types of NDs: unspecified developmental delay, tics, attention deficit disorder (ADD), language delay, speech delay, and neurodevelopmental delays in general.

Conclusions:
This study showed that exposure to mercury from TCVs administered in the US was a consistent significant risk factor for the development of NDs.
It is clear from these data and other recent publications linking TCVs with NDs that thimerosal-free vaccines should be made available.

THESE AUTHORS ALSO NOTE:

“The United States is in the midst of an epidemic of neurodevelopmental disorders.”

There was a 4-fold increase in childhood autism in the decade between mid 1980s to mid 1990s.

“In 2004, the Department of Health and Human Services and the American Academy of Pediatrics issued an Autism ALARM stating that presently 1 in 166 children have an autistic disorder, and 1 in 6 children have a developmental and/or behavior disorder.” [WOW!]

“Autism, once a rare disorder, has now been found to be more prevalent than childhood cancer, diabetes and Down Syndrome.”

The increase in autism is not due to immigration or from altered diagnostic criteria for autism.

Thimerosal is an ethylmercury-containing preservative that has been added to many vaccines.

“Thimerosal has been recognized by the California Environmental Protection Agency, Office of Environmental Health Hazard Assessment as a developmental toxin, meaning that it can cause birth defects, low birth weight, biological dysfunctions, or psychological or behavior deficits that become manifest as the child grows, and that maternal exposure during pregnancy can disrupt the development or even cause the death of the fetus.”

“Despite this fact, thimerosal is still routinely added to several vaccines given to US children and pregnant women (e.g. influenza, Tetanus-diphtheria, meningitis, and monovalent tetanus).”

Many nations still add thimerosal to many of their pediatric vaccines.

Standard vaccine practices in the United States has exposed many children to levels of mercury that exceeded Federal Safety Guidelines and exceeded the United States Environmental Protection Agency (EPA)’s permissible mercury limit.

As the Centers for Disease Control and Prevention (CDC) have expanded the childhood immunizations, there has been an increase in neurodevelopmental disorders in the United States.
If US infants received all of the recommended thimerosal-containing vaccines, they could have been exposed to:

- 12.5 micrograms (µg) of mercury at birth
- 62.5 µg of mercury at 2 months
- 50 µg of mercury at 4 months
- 62.5 µg of mercury at 6 months
- 50 µg of mercury at 18 months

**TOTALING 237.5 µg of mercury by 18 months of age**

If 3 thimerosal-containing influenza vaccines were administered during this 18 months, the total mercury exposure could have been **275 µg of mercury**.

Exposure to mercury can cause “immune, sensory, neurological, motor, and behavioral dysfunctions similar to traits defining or associated with autistic disorders.”

There is a linear correlation between the amount of mercury children receive from thimerosal-containing vaccines and the prevalence of autism. [Important]

This study used the VAERS database, which uses patients from the entire United States, but the authors acknowledge that not all vaccine-associated adverse events experienced are reported. Consequently, this study would actually under report the relationship between autism and mercury containing vaccines.

Adverse events reported in VAERS, included conjunctivitis and febrile seizures.

Other ingredients in the vaccines other than mercury include formaldehyde, aluminum, and gelatin [a source of glutamate].

The thimerosal content of childhood vaccines used was:
- Hepatitis B vaccine: 25 µg (12.5 µg of mercury)
- Haemophilus Influenzae Type b (Hib): 50 micrograms (25 µg of mercury)
- Diphtheria-Tetanus-Pertussis: 50 micrograms (25 µg of mercury)

The Polio, Mumps, Rubella, Varicella, and Pneumococcal vaccines do not contain mercury.

RESULTS

The median age for adverse event reports reported was 1.3 years-old.

This study showed a significant association between “thimerosal-containing DTP vaccines and neurodevelopmental disorders, in comparison to thimerosal-free DTP vaccines, for the following neurodevelopmental disorders, including: autism (80% increased risk), speech disorders (160% increased risk), mental retardation (220% increased risk), personality disorders (130% increased risk), thinking abnormalities (370% increased risk). [WOW!]
This study showed that for each 1 microgram of mercury exposure there was increasing risk for the child to develop tics, attention deficit disorder (ADD), unspecified developmental delays, language delay, speech delay, and developmental delays.

Therefore, there were “significant associations between cumulative thimerosal exposure and outcomes.”

DISCUSSION

“The results of the present examination of the VAERS database show a significant relationship between thimerosal-containing childhood vaccines and childhood neurodevelopmental disorders.”

“The data demonstrate that a significant risk factor for the development of neurodevelopmental disorders was the amount of mercury children received from thimerosal-containing childhood immunizations.”

“Importantly, all other neurodevelopmental disorders reflected a higher odds ratio than autism,” which “argues strongly against the possibility of media bias effect of reporting about the alleged association to autism.”

This study “favors an association between thimerosal-containing vaccines and neurodevelopmental disorders.” [Important]

In further considering the results of the present study, it must be noted that none of the children examined in this study truly represent a thimerosal free population.

The “increased risks observed for neurodevelopmental disorders represent a considerable underestimate of the true risk of additional doses of thimerosal from vaccines.” [Important]

Other sources of mercury include anti-Rho immune globulin, seafood, manufacturing plant emissions, dental amalgams, and other pharmaceuticals. These other sources of mercury would affect the entire population.

This study showed “significant positive correlations between exposure to thimerosal-containing childhood vaccines at specific times and the relative risk of eventually developing neurodevelopmental disorders,” including autism, some childhood psychosis, stammering, tics, repetitive movements, sleep disorders, eating disorders, enuresis, disturbances of emotions, attention deficit syndrome, developmental language/speech delay, and mental retardation.

This study shows “strong evidence of a relationship between the administration of thimerosal-containing childhood vaccines in the United States and neurodevelopmental disorders.”
This study shows a “consistent significant overall causal association between thimerosal-containing vaccine exposure and neurodevelopmental disorders.”

“Other large population-based epidemiological studies conducted outside the United States have not shown an apparent relationship between thimerosal-containing childhood vaccines and neurodevelopmental disorders. However, they have been conducted in countries (e.g. England, Denmark, and Sweden) utilizing very different exposures to mercury from thimerosal-containing childhood vaccines. In these countries, children were exposed to doses of mercury from thimerosal-containing childhood vaccines that were approximately 1/3rd as much as those administered in US childhood vaccines. Additionally, the children in these countries received thimerosal-containing childhood vaccines in a much less rigorous schedule (i.e. in the United States, mercury dosing from thimerosal-containing childhood vaccines began on the day of birth, and continued at periodic intervals, throughout the first 6 months of life).”

Five other US epidemiological studies have “found a significant association between thimerosal-containing childhood vaccines and neurodevelopmental disorders.” [Important]

A 2003 study “demonstrated that the severity of autism was inversely proportional to the level of mercury in their baby hair, which was very low compared to controls, and suggested that autistic children had an inability to excrete mercury.” [IMPORTANT because the ability to excrete mercury is linked to levels of the antioxidant/detoxifier glutathione]

Autistic children have significantly higher body-burdens of mercury than normal children following exposure to mercury.

There is a significant decrease in the “plasma concentration of cysteine (19% reduction) and glutathione (46% reduction), both of which are crucial for mercury excretion, in autistic children in comparison to control children.”

Autistic children have less mercury in their first haircut because they have a 3-fold decrease in glutathione comparison to control children. These autistic children also have a significant increase in oxidative stress. [This is important because glutathione is our key antioxidant (reduces oxidative stress) and our key detoxifier of heavy metals, including mercury.]

“The inability to properly eliminate mercury is particularly troubling.”

“Thimerosal crosses the blood-brain barrier and placental barriers” resulting in appreciable mercury content in the brain.

Studies show that thimerosal induces membrane and DNA damage within hours of exposure.
Studies show that mercury markedly disrupted neuronal membrane structure and growth.

“Mercury is a potent factor in neurodegeneration.”

“It has been reported that the neurotoxicity of thimerosal is associated with depletion of glutathione.” [Very Important]

The cysteine-SH group of glutathione binds mercury and protects essential proteins from functional inactivation.

“Glutathione is the major mechanism of mercury excretion, and individuals with genetic deficiencies in glutathione synthesis will be less able to excrete mercury and will be more sensitive to its adverse effects.” [Very Important]

Animal studies show that males are considerably more sensitive than females to the neurotoxic effects of mercury, and this study shows that “neurodevelopmental disorders are significantly more prevalent in males than females.”

Studies show that autistic children have a “severe imbalance in the ratio of active to inactive glutathione, the body's most important tool for detoxifying and excreting metals.” [Very Important]

Autistic children have a significant impairment of all five measurements of the body's ability to maintain a healthy glutathione defense.

Nearly all autistic children have low glutathione levels, which renders them “poorly equipped to mount a defense against a number of neurotoxic compounds, including mercury.”

Studies “concluded that these findings raise serious concerns about the studies that have allegedly proven the safety of mercury in vaccines,” including the Institute of Medicine’s 2004 conclusion that there is no relationship between thimerosal and autism.

These authors conclude that making thimerosal free vaccines readily available should be a priority.

KEY POINTS FROM DAN MURPHY:

1) Thimerosal is a mercury-containing preservative in vaccines.

2) Vaccinated children received doses of mercury from thimerosal-containing vaccines that are in excess of safety guidelines.

3) Exposure to mercury from thimerosal containing vaccines is a consistent significant risk factor for the development of neurodevelopmental disorders.
4) “The United States is in the midst of an epidemic of neurodevelopmental disorders.”

5) 1 in 166 US children have an autistic disorder.

6) 1 in 6 US children have a developmental and/or behavior disorder. [WOW!]

7) Autism, once rare, is now more prevalent than childhood cancer, diabetes and Down Syndrome.

8) Thimerosal is recognized as a developmental toxin that can cause birth defects, low birth weight, biological dysfunctions, or psychological or behavior deficits that manifest as the child grows.

9) Thimerosal is still routinely added to several vaccines given to US children and pregnant women, including influenza, Tetanus-diphtheria, and meningitis.

10) As the Centers for Disease Control and Prevention (CDC) have expanded childhood immunizations, there has been an increase in neurodevelopmental disorders in the United States.

11) If US infants received all of the recommended thimerosal-containing vaccines, they could have been exposed to 237.5 µg of mercury by 18 months of age, and even more if they also received flu vaccinations.

12) There is a linear correlation between the amount of mercury children receive from thimerosal-containing vaccines and the prevalence of autism. [Important]

13) Vaccines also contain formaldehyde, aluminum, and gelatin [a source of glutamate].

14) This study showed a significant association between thimerosal-containing DTP vaccines and neurodevelopmental disorders, including an 80% increased risk for autism, an 160% increased risk for speech disorders, a 220% increased risk for mental retardation, a 130% increased risk for personality disorders, and a 370% increased risk for thinking abnormalities.

15) Other sources of mercury include anti-Rho immune globulin, seafood, manufacturing plant emissions, dental amalgams, and other pharmaceuticals.

16) This study shows “strong evidence of a relationship between the administration of thimerosal-containing childhood vaccines in the United States and neurodevelopmental disorders.”

17) The studies that claim thimerosal-containing vaccines are safe are bogus because they are done in Europe where the vaccinations contain only 1/3rd of the
mercury used in US vaccinations, and they are administered over a longer period of time. Therefore, these studies are not comparable to what is being done in the US.

18) The hair of autistic babies is very low in mercury because these babies have very low levels of the antioxidant/detoxifier glutathione. Glutathione is crucial for mercury excretion, as it attaches to toxic metals so that can be eliminated through a number of mechanisms, including through hair growth.

19) The neurotoxicity of thimerosal is associated with glutathione depletion.

20) Studies alleging that mercury in vaccines is safe are mistaken.

21) Thimerosal should be removed from all vaccines.

COMMENTS FROM DAN MURPHY, NOTE THE FOLLOWING:

Science News
April 16, 2005

Blood Hints at Autism’s Source

Researchers have identified a biochemical peculiarity in the blood of autistic children.

“The incidence of autism has gone up dramatically in the last 15 years,” notes S. Jill James, director of biochemical genetics at Arkansas Children’s Hospital in Little Rock. “Because genes don’t change that fast, this points to something in the environment as a trigger,” she says.

James found an unusual biochemical fingerprint in the blood of 100% of 75 autistic kids, while none of 75 normal kids had the biochemical marker.

“The autistic youngsters had unusually low concentrations of the antioxidant glutathione in their cells.”

“This pattern is consistent with an inability to detoxify poisons, especially heavy metals, such as mercury or lead,” James says. “That’s because the antioxidant normally binds to heavy metals, and the body then targets the molecular complex for elimination.”

James suspects that autism develops under the combined effect of genetic mutations that deplete glutathione and exposure of a child to heavy metals or other poisons.

“One of the most controversial theories about autism is that vaccines preserved with the mercury-containing chemical thimerosal can cause the condition.”

“Dietary treatments could boost glutathione in children carrying the genes that reduce the antioxidant,” says James. [These dietary strategies are listed below]
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Your Body’s Most Powerful Protector

Your #1 Antioxidant

Your #1 Detoxifier
(It attaches to Toxic Metals Like Mercury, Lead and Cadmium and Targets Them for Elimination)

Glutamate---Cysteine---Glycine

To Increase Glutathione, The Rate Limiting Factor Is Cysteine

A) Homocysteine \(\xrightarrow{B6, B12, Folic Acid} \) Cysteine

(Complete Omega-3 Co-Factors From Nutri-West: 800-443-3333)
Each 2 Tablets contains: B-12 400 mcg, Vitamin C 500 mg, Vitamin B-2 (Riboflavin) 50 mg, Vitamin B-6 50 mg, Folic Acid 800 mcg, Magnesium Chelate 150 mg, Selenium 1 mcg, Reduced Glutathione 50 mg, Policosanol 5 mg [this is important because Policosanol, in this dosage, has proven to lower blood lipids better than statin drugs], CoQ10 5 mg, Alpha Lipoic Acid 5 mg.

Take 2 Per Day

B) N-Acetyl Cysteine, or NAC
(Complete Glutathione From Nutri-West: 800-443-3333)
Each Tablet contains: N-Acetyl Cysteine 60 mg, Alpha Lipoic Acid 10 mg, L-Glutamine 15 mg, Vitamin C 75 mg, Selenium Chelate 10 mcg, Milk Thistle 50 mg, Silybin 10 mg, Thiamin 10 mg, Riboflavin 10 mg, B-6 5 mg, B-12 50 mcg, Vitamin E Succinate (natural) 10 i.u., Magnesium Chelate 5 mg, Zinc Chelate 500 mcg, Rosemary 75 mg, Curcumin extract (from Turmeric 10 mg, Superoxide dismutase-G (Glutathione) 25 mg, Reduced Glutathione 5 mg.

Take 2 – 6 Per Day

C) Undenatured Whey Protein
(Complete Whey-G From Nutri-West: 800-443-3333)
Each Tablespoon contains: Undenatured Whey 6375 mg, Quercetin 42.5 mg, Ginger 42.5 mg, Curcumin 21.25 mg, Boswellia 42.5 mg, Chamomile 42.5mg, Lou Han Guo 21.25 mg (natural herbal sweetener), Glutathione 850 mcg, Superoxide Dismutase Type G (glutathione) 42.5 mg, Rice Bran 1741 mg (for natural B-Vitamins)

Take 1 or 2 Tablespoons Per Day