

# The role of mercury in the pathogenesis of autism

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THESE AUTHORS NOTE:

“Early exposure to hazardous substances may underlie some cases of neurodevelopmental disorders, including ADHD, learning disabilities, and speech/language difficulties.”

“In 1999, thimerosal used as a vaccine preservative was identified as a widespread source of organic mercury exposure in infants.”

Mercury (Hg) is a heavy metal that is highly neurotoxic.

The amount of mercury in vaccines exceeded US EPA safety guidelines on a cumulative basis.

“Certain individuals may exhibit severe adverse reactions to low doses of Hg which are otherwise largely benign to the majority of those exposed.”

“Some individuals with idiopathic autism spectrum disorder (ASD) may represent such a sensitive population.”

Consider the following:

- (1) ASD traits are known to arise from mercury exposure
- (2) The onset of ASD symptoms is temporally associated with administration of immunizations
- (3) The increase in the prevalence of autism in the 1990s closely follows the introduction of two mercury-containing vaccines
- (4) Elevated mercury has been detected in autistic patients

ASD may now affect as many as one in 150 US children.

Thimerosal is still used in many products worldwide.

Thimerosal is 49.6% ethylmercury (EtHg) by weight.

Until early 2001, thimersol was a component of most Hepatitis B, *Haemophilus influenzae* type B, and Diphtheria/Tetanus/Pertussis vaccines, which were routinely administered to infants at birth and at ages 2, 4, 6, and 15–18 months.

"The cumulative amount of mercury injected in the first 6 months of life was 187.5 micrograms."

Thimerosal-containing vaccines can significantly raise blood Hg levels in infants.

Characteristics of both adverse mercury effects and of ASD included lowered performance on tests of attention, memory, language, and fine motor skills.

"A CDC analysis of computerized HMO medical records found statistically significant associations between increased exposure to thimerosal from infant immunizations and attention deficit disorder, speech/language delay, and tics," which are common features of ASD.

Exposure to mercury can give rise to the symptoms and traits defining or commonly found in ASD individuals.

"Mercury can cause impairments in social interaction, communication difficulties, and repetitive and stereotyped patterns of behavior, which comprise the three autism diagnostic criteria."

"Mercury can induce features prominent in ASD such as sensory abnormalities, emotional/psychological changes, movement disorder, impairments in abstract or complex thinking, severe sleep disturbances, and self injurious behavior."

"The discovery and increase in the reported prevalence of autism parallels the introduction and spread of thimerosal-containing vaccines."

"Autism was first described in 1943 among children born in the 1930s."

"Thimerosal was first added to childhood vaccines in the 1930s."

"Prior to 1970, classic autism was estimated to occur in approximately 1 in 2000 children, while the average prevalence reported by studies from 1970 to 1990 is 1 in 1000."

"This period was a time of increased immunization in the developed world."

"By 1995, the National Institutes of Health reported an autism prevalence of 1 in 500 children, and in 2000 the CDC identified approximately 1 in 250 children with classic autism."

"It was in the early 1990s that the thimerosal-containing HiB and Hepatitis B vaccines became part of the routine infant schedule."

The onset of autistic symptoms follows the administration of vaccines with thimerosal, and symptom emergence is consistent with that of mercury toxicity.

"Nearly all American children are immunized but less than 1% have ASD. This pattern is consistent with response to low dose mercury exposure, which is characterized by wide inter-individual variation."

"Acrodynia, a severe disease of early childhood prevalent 50 years ago, illustrates this phenomenon. Acrodynia was caused by small amounts of mercuric chloride in teething powders. Although use of the powders was widespread, only a small percentage of children developed the disease."

Clinicians treating autistic patients have reported improvement in function after mercury removal from chelation.

Thimersol is still found in many pediatric vaccines used in developing nations, in all US influenza vaccines, in all diphtheria and tetanus vaccines, in some immunoglobulins routinely given to pregnant Rh-negative women, and some over-the-counter ear drops and nasal sprays.

#### KEY POINTS FROM DAN MURPHY

- (1) Now, as many as 1 in every 150 US children has autism.
- (2) Autism was unknown prior to 1943s, and was first documented in children born in the 1930s.
- (3) Mercury was put into vaccinations in the 1930s.
- (4) The increased prevalence of Autism parallels the increase in childhood vaccinations with mercury.
- (5) Mercury is found in all US flu vaccines, diphtheria and tetanus vaccines.