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An assessment of the impact of thimerosal on childhood neurodevelopmental disorders

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Summary

The prevalence of autism in the US has risen from 1 in ~2500 in the mid-1980s to 1 in ~300 children in the mid-1990s. The purpose of this study was to evaluate whether mercury from thimerosal in childhood vaccines contributed to neurodevelopmental disorders. Neurodevelopmental disorder dose-response curves for increasing mercury doses of thimerosal in childhood vaccines were determined based upon examination of the Vaccine Adverse Events Reporting System (VAERS) database and the 2001 US' Department of Education Report. The instantaneous dosage of mercury children received in comparison to the Food and Drug Administration (FDA)'s maximum permissible dose for the oral ingestion of methylmercury was also determined. The dose-response curves showed increases in odds ratios of neurodevelopmental disorders from both the VAERS and US Department of Education data closely linearly correlated with increasing doses of mercury from thimerosal-containing childhood vaccines and that for overall odds ratios statistical significance was achieved. Similar slopes and linear regression coefficients for autism odds ratios in VAERS and the US Department of Education data help to mutually validate each other. Controls employed in the VAERS and US Department of Education data showed minimal biases. The evidence presented here shows that the occurrence of neurodevelopmental disorders following thimerosal-containing childhood vaccines does not appear to be coincidental.

Introduction

Thimerosal is an organic mercury compound. It is metabolized to ethylmercury and thiosalicylate and has been present since the 1930s as a preservative in many vaccines and pharmaceutical products to prevent bacterial and fungal contamination.

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One has published the first epidemiological evidence showing a direct association between thimerosal-containing childhood vaccines and neurodevelopmental disorders in children [1, 2]. It has been shown that there was from a 2–6-fold statistically significant increased incidence of neurodevelopment disorders following an additional 75–100 microgram dosage of mercury from thimerosal-containing childhood vaccines in comparison to thimerosal-free childhood vaccines [1]. One has also shown that there were dose-response curves demonstrating a close correlation between increasing mercury doses from childhood vaccines and childhood neurodevelopmental disorders [2].

The purpose of this study was to extend previous studies and integrate statistical and dose-response curve methodologies into a single analysis evaluating mercury doses from childhood vaccines and childhood neurodevelopmental disorders. In the first part of this study, the dose-response was evaluated of increasing mercury doses from thimerosal-containing Diphtheria-Tetanus-acellular Pertussis (DTaP) vaccine in comparison to thimerosal-free DTaP vaccines for neurodevelopmental disorders from 1997–2001, based upon examination of the Vaccine Adverse Events Reporting System (VAERS) database. Secondly, the 2001 US' Department of Education Report [3] was evaluated on the prevalence of neurodevelopmental disorders and the average dosage of mercury that children received as part of their childhood immunization schedules in birth cohorts in comparison to a baseline measurement. The final part of this analysis studied the instantaneous dosage of mercury children received in comparison to the Food and Drug Administration (FDA)'s maximum permissible dose for the oral ingestion of methylmercury as part of the 2002 recommended childhood immunization schedule. It was determined by the FDA in 1999 that, under the recommended childhood immunization schedule, infants might be exposed to cumulative doses of ethylmercury that exceed some federal safety guidelines established for oral ingestion of methylmercury [4].

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