

No effect of MMR withdrawal on the incidence of autism: a total population study

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Background: A causal relationship between the measles, mumps, and rubella (MMR) vaccine and occurrence of autism spectrum disorders (ASD) has been claimed, based on an increase in ASD in the USA and the UK after introduction of the MMR vaccine. However, the possibility that this increase is coincidental has not been eliminated. The unique circumstances of a Japanese MMR vaccination program provide an opportunity for comparison of ASD incidence before and after termination of the program.

Methods: This study examined cumulative incidence of ASD up to age seven for children born from 1988 to 1996 in Kohoku Ward (population approximately 300,000), Yokohama, Japan. ASD cases included all cases of pervasive developmental disorders according to ICD-10 guidelines.

Results: The MMR vaccination rate in the city of Yokohama declined significantly in the birth cohorts of years 1988 through 1992, and not a single vaccination was administered in 1993 or thereafter. In contrast, cumulative incidence of ASD up to age seven increased significantly in the birth cohorts of years 1988 through 1996 and most notably rose dramatically beginning with the birth cohort of 1993.

Conclusions: The significance of this finding is that MMR vaccination is most unlikely to be a main cause of ASD, that it cannot explain the rise over time in the incidence of ASD, and that withdrawal of MMR in countries where it is still being used cannot be expected to lead to a reduction in the incidence of ASD.

Keywords: MMR vaccine, autism, incidence, etiology, regression, total population study.

Abbreviations: ISCO-68: International Standard Classification of Occupations, 1968; DISCOVERY: Detection and Invention System in the COMMunity for VERy Young children with developmental disorders; YACHT: Young Autism and other developmental disorders Checkup Tool.