CAUSATION

Routine childhood vaccinations did not increase the risk of incident type 1 diabetes in Danish children


Q Are routinely administered childhood vaccines associated with an increased incidence of type 1 diabetes mellitus in a cohort of Danish children?

METHODS

Design: a cohort study of children followed up from birth to a mean age of 6.4 years.

Setting: Denmark.

Participants: 739 694 children born in Denmark from January 1990 to December 2000.

Risk factors: vaccinations with any of 6 groups of vaccines including Haemophilus influenza type b; diphtheria, tetanus, and inactivated poliovirus; diphtheria, tetanus, acellular pertussis, and inactivated poliovirus; whole cell pertussis; measles, mumps, and rubella; and oral poliovirus (data from vaccination reports of the National Board of Health). Sensitivity analyses considered the presence of a sibling with type 1 diabetes as a predisposing factor.

Outcomes: incidence of type 1 diabetes (from January 1990 to December 2001) (data from the Danish National Hospital Register).

MAIN RESULTS

The incidence of type 1 diabetes was 0.14 cases/1000 person-years among all children, and 6.2 cases/1000 person-years among those who had a sibling with type 1 diabetes. Routine childhood vaccinations were not associated with an increased incidence of type 1 diabetes mellitus among all children or among those who had a sibling with type 1 diabetes (table).

CONCLUSION

Routinely administered childhood vaccines were not associated with an increased incidence of type 1 diabetes mellitus in a cohort of Danish children.

Association between routinely administered childhood vaccines and incident type 1 diabetes mellitus in Danish children at a mean age of 6.4 years*

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Rate ratio (95% CI)</th>
<th>All children†</th>
<th>Children with ≥1 sibling with type 1 diabetes‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemophilus influenza type b</td>
<td>0.91 (0.74 to 1.12)</td>
<td>1.38 (0.58 to 3.31)</td>
<td></td>
</tr>
<tr>
<td>Diphtheria, tetanus, and inactivated poliovirus</td>
<td>1.02 (0.75 to 1.37)</td>
<td>3.03 (0.41 to 22.63)</td>
<td></td>
</tr>
<tr>
<td>Diphtheria, tetanus, acellular pertussis, and inactivated poliovirus</td>
<td>0.96 (0.71 to 1.30)</td>
<td>1.36 (0.50 to 3.70)</td>
<td></td>
</tr>
<tr>
<td>Measles, mumps, and rubella</td>
<td>1.14 (0.90 to 1.45)</td>
<td>0.86 (0.34 to 2.14)</td>
<td></td>
</tr>
<tr>
<td>Oral poliovirus</td>
<td>1.08 (0.74 to 1.57)</td>
<td>2.01 (0.46 to 8.71)</td>
<td></td>
</tr>
</tbody>
</table>

*Rate ratios (comparing rates in children vaccinated with ≥1 dose v unvaccinated) show that all associations are not significant; CI defined in glossary.
†Rate ratios adjusted for age, calendar period, and sex.
‡Rate ratios adjusted for age, calendar period, sex, and number of siblings.

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