INFLAMMATION AND INFLAMMATORY BOWEL DISEASE

Effect of Pentavac and measles-mumps-rubella (MMR) vaccination on the intestine

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Background: The safety of infant vaccination has been questioned in recent years. In particular it has been suggested that the measles, mumps, and rubella (MMR) vaccination leads to brain damage manifesting as autism consequent to the development of an “enterocolitis” in the immediate post-vaccination period.

Aim: To assess if MMR vaccination is associated with subclinical intestinal inflammation, which is central to the autistic “enterocolitis” theory.

Methods: We studied 109/58 infants, before and two and four weeks after immunisation with Pentavac and MMR vaccines, for the presence of intestinal inflammation (faecal calprotectin).

Results: Neither vaccination was associated with any significant increase in faecal calprotectin concentrations.

Conclusions: The failure of the MMR vaccination to cause an intestinal inflammatory response provides evidence against the proposed gut-brain interaction that is central to the autistic “enterocolitis” hypothesis.

SUBJECTS AND METHODS

Iceland has a developed health service with a centralised vaccination programme that results in infant vaccination rates approaching 100%. Pentavac (Pasteur Mérieux, France) vaccination (against diphtheria, tetanus, pertussis, polio, Haemophilus influenza type b) is performed at three, five, and 12 months of age and MMR (Priorix; SmithKline Beecham) vaccination at 18 months. One hundred and nine infants attending two of the vaccination centres of Southwest Iceland participated. These were consecutive infants where the parents had been sent a pre-attendance information leaflet explaining the nature and aims of the research. All of those approached participated. No infant met the predetermined specific exclusion criteria to this study which included those specified by the makers of the vaccines, the presence of intestinal diseases, or ingestion of medications that are associated with intestinal permeability-inflammation.

The infants were studied by measuring faecal calprotectin (Calprest, Calprotech Ltd, London, UK) one week before Pentavac (at 12 months of age) and MMR (at 18 months) vaccination, and two and four weeks later, respectively. Pentavac does not contain mercury, which has been proposed to predispose to the toxicity of MMR. The pre-Pentavac measurement served as the normal reference range. The faecal calprotectin

Table 1 Faecal calprotectin concentrations (mg/l) before and after Pentavac and measles-mumps-rubella (MMR) vaccination

<table>
<thead>
<tr>
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<th>Pentavac</th>
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<th>MMR</th>
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<td></td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
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<td>0 week</td>
<td>109</td>
<td>101</td>
<td>81</td>
<td>63</td>
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<td>2 weeks</td>
<td>39</td>
<td>40</td>
<td>36</td>
<td>38</td>
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<td>4 weeks</td>
<td>218</td>
<td>295</td>
<td>273</td>
<td>207</td>
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There were no significant differences between calprotectin levels at the different time points and sequential studies showed no significant changes following vaccination.
intestinal pathology
the postulated consequential effect on brain function.
controversial but rather highlight the possible role and effect
concentrations of calprotectin (110 mg/l; 95% confidence lim-
in infants undergoing immunisation. The upper limit of faecal
eases, including multiple sclerosis.
est. This hypothesis was formulated in an attempt to explain
against the MMR induced autistic “enterocolitis” theory. This
virus itself is not enterotoxic in healthy infants which argues
inflammatory response suggests that the measles vaccine
post-vaccination period. This lack of a detectable intestinal
our apparently healthy children during the four week
Ethics Committee.
ACKNOWLEDGEMENT
There was no evidence that either Pentavac or MMR vacci-
nation provoked subclinical intestinal inflammation in any of
our apparently healthy children during the four week post-vaccination period. This lack of a detectable intestinal
inflammatory response suggests that the measles vaccine
virus itself is not enterotoxic in healthy infants which argues
against the MMR induced autitic “enterocolitis” theory. This
does not however rule out the possibility that vaccination
might have an adverse effect on susceptible infants that are
perhaps immune compromised or with an immunological
metabolism that predisposes them to autoimmune disease.

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