CORRESPONDENCE

Vaccination Status and Health in Children and Adolescents: Findings of the German Health Interview and Examination Survey for Children and Adolescents (KiGGS)

by Dr. oec. troph. Roma Schmitz, Dr. med. Christina Poethko-Müller MSc, Dr. rer. nat. Sabine Reiter, PD Dr. med. Martin Schlaud in volume 7/2011

The Timing of the Vaccination Is Important

When reading an article that gives unqualified praise to "protective vaccinations" in the first sentence one cannot help but doubt the authors' objectivity. The conclusion in the abstract—that no differences have been observed with regard to allergic disorders—also raises skepticism, since unvaccinated subjects in two of the three age groups under investigations tendentially showed fewer infections and atopic disorders than those who were vaccinated, and none of the unvaccinated children younger than 10 had developed asthma. The lack of statistical significance may be due to the low number of unvaccinated subjects included, which means that a credible statement about the risk of allergies is altogether impossible.

Another limitation of the article is the undifferentiated inclusion into the "vaccinated" group of all children who were vaccinated at some point in their lives. In order to determine adverse effects of vaccinations on the immune system it would seem that the timing of the vaccination is the crucial factor—which, in the past decades, has continually been brought forward. These days, entire conferences are dedicated to the negative effects of early vaccination on the immune system (1). A large-scale Canadian study found more than double the risk of asthma in 7-year-olds who were vaccinated in the 3rd month of their lives compared with those who were vaccinated after the 5th month (2).

A further limitation is the lack of differentiation by number and type of vaccinations. Measles and pertussis vaccinations affect the immune system in very different ways. The working group around Bernsen cited by Schmitz published a study in 2008 in which children vaccinated against pertussis were confirmed to have an increased risk of allergies when they finally did contract pertussis after all. Mascart described in details the long-term cytokine changes after pertussis vaccination in very young infants (3).

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Many Questions Remained Unanswered

Unfortunately the authors overlooked important, and already published, studies that indicate an association between vaccinations and atopic disorders. The Parsifal Study (1) established this association for the vaccination against measles, mumps, and rubella (MMR), and the study reported by Silverberg et al for varicella vaccination (2).

Many questions are still waiting to be answered:

- Why were the children in one of the groups unvaccinated (illness?), and how is it possible to expect any answers, considering their small number?
- Why was asthma (as the end point of the allergy patient's "career") not medically diagnosed?
- In unvaccinated individuals, no asthma cases occurred in those under the age of ten How can the authors state that the incidence is identical to that of vaccinated subjects?
- Why was the allergy rate among parents in the comparison groups not studied in a differentiated way?
- Why were the numbers and timings of vaccinations not included?

Vaccination after the 3rd month of life with hexavalent vaccines plus pneumococci would disrupt the Th1–Th2 balance undoubtedly more than single tetanus vaccination in the 2nd year of life. This balance is of crucial importance for the risk of allergies. However, all those who received any vaccinations were treated exactly the same in the study.

Finally, preventive measures in childhood should be expected to have a positive effect for people's entire lifespans. However, it is apparent that some childhood diseases would reduce the incidence of tumor disease in adulthood (3) (mumps—ovarian cancer, varicella—glioblastoma). For this reason I think it is highly desirable to set up a healthcare commission that tests all preventive measures —not only vaccinations—for their evidence base and economic value, such as was stipulated in the Wuppertal manifesto of October 2010.

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In Reply:

Our evaluation of the data from the German health interview and examination survey for children and adolescents (KiGGS) with regard to possible associations between vaccinations and specific health problems in children and adolescents (1) was meant as a contribution to bringing the discussion back to facts and provide answers about the situation in Germany. We did not claim to provide conclusive answers to each and every unanswered question regarding the subject of vaccination. This can be done only by means of a general overview of all available epidemiological and experimental evidence and not on the basis of individual studies.

The atopic disorders we included were diagnosed by doctors. In order to avoid biases, we did not include patients who had not been vaccinated for health reasons in our analyses.

We intentionally differentiated between individuals who had not received any vaccinations at all and those who had received at least one vaccination, because it is exactly this distinction that is of central importance in numerous inquiries to the Robert Koch-Institute. Owing to the low prevalence of unvaccinated people, however, we determined only 94 definitely unvaccinated patients out of a total of 17 641 individuals. The evaluation results did not reach statistical significance in the occurrence of atopic disorders or the frequency of infections between unvaccinated and vaccinated patients. The question of whether larger case numbers would have yielded the same differences between groups, but to a statistically significant degree, cannot be answered on the basis of our data. Such speculations would, however, also become necessary regarding those between-group differences whereby unvaccinated children tendentially have more instances of impaired health than vaccinated children. Further differentiating analyses of the KiGGS data—for example, considering the number of vaccination doses—are currently under way.

With regard to possible health effects of vaccinations, numerous studies have been published whose results partly point at associations in the direction of increased risks, partly at associations pointing in the direction of reduced risk, or no association at all. A meta-analysis by Balicer et al. showed neither a risk increasing effect nor a risk reducing effect with regard to asthma for the diphtheria/tetanus/pertussis (DTP) or Bacille Calmette-Guérin (BCG) vaccines (2). In a study including children who had received the MMR vaccine and children who had not, Bernsen et al. found an increased risk for atopic disorders after contracting measles and a reduced risk for atopic disorders after contracting rubella (3). The evaluation of the EPAAC study showed no association between vaccinations in the first year of life and the development or severity of atopic dermatitis or sensitization, even in children with an increased risk for allergies (4). The clinical guideline on preventing allergies includes a clear recommendation in favor of the vaccinations recommended by the German Federal Standing Committee on Vaccination (Ständige Impfkommission, STIKO), since systematic evaluation of the relevant literature did not yield any proof of an increased risk for allergies (although it did provide indications of a reduced risk) after vaccinations.

Whether, and the extent to which, the timing of the vaccination is important for the immune system is an important question in our opinion, but finding an answer requires specialized studies. We do not think that enough proof exists to support the conclusion that childhood diseases might prevent tumors in adulthood.

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