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2. A Multicentre Study on Adverse Drug and Vaccine Reactions in Children

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Background: Few data are available on safety of drugs in children. Children are seldom included in clinical trials, and trials specifically designed for children are still lacking. Thus, post-marketing epidemiological studies are of great importance in this field.

Objective: To focus on the role of drugs and vaccines in the occurrence of specific conditions requiring hospitalisation in children.

Methods: An active surveillance of adverse drug and vaccines events started in 1999. This included all children admitted through the Emergency Department for: neurological disorders; cutaneous diseases and vasculitis; thrombocytopenia; endoscopically confirmed gastroduodenal lesions (and/or clinically defined haematemesis and melena). In order to provide risk estimates data are analysed according to a case-control study design. Drug (or vaccine) exposure, in a time period of three (or six) weeks prior to the onset of symptoms that had caused the hospital admission was collected by interviewing the parents with a structured questionnaire.

Drug (or vaccine) exposure of children with one of the selected conditions is compared with exposure of children with the remaining conditions. Children admitted with a specific diagnosis of ADE are also enrolled, but not included in the case-control study.

Results: From November 1999 to December 2005, 2810 children were enrolled. Of these, 436 for ADE, and 2374 for the selected conditions (973 neurological disorders; 903 cutaneous diseases; 291 thrombocytopenia and 207 gastroduodenal lesions). Paracetamol, NSAIDs, antibiotics and corticosteroids were the most prescribed drugs. Children admitted for gastroduodenal lesions were the most exposed to drugs in the three weeks preceding hospitalisation. Increased Odds Ratios (OR) of gastroduodenal lesions were estimated for corticosteroids (OR 3.2; 95% CI 2.1-4.8), NSAIDs (OR 2.8; 95% CI 2.0-3.8), and antibiotics (OR 2.0; 95% CI 1.4-2.7). Metoclopramide and naphazoline were strongly associated with neurological disorders, whereas an increased risk of cutaneous diseases was associated with NSAIDs and antibiotics.

With regard to vaccines an increased OR of thrombocytopenia associated to MMR vaccine was estimated (OR 2.0; 95% –CI 0.9-4.5). An increased risk of developing neurological disorders was observed for any vaccine. Immunisation with hexavalent vaccines almost doubled the risk of apyretic seizures.

Conclusions: The surveillance system appears adequate for studying serious adverse events, and to point out risks related to vaccines and inappropriate or off-label use of drugs in children.