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[Intervention Review]

Vaccines for measles, mumps and rubella in children

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ABSTRACT

Background

Public debate over the safety of the trivalent measles, mumps and rubella (MMR) vaccine, and the resultant drop in vaccination rates in several countries, persists despite its almost universal use and accepted effectiveness.

Objectives

We carried out a systematic review to assess the evidence of effectiveness and unintended effects associated with MMR.

Search methods

We searched the Cochrane Central Register of Controlled Trials (CENTRAL) (*The Cochrane Library* 2004, Issue 4), MEDLINE (1966 to December 2004), EMBASE (1974 to December 2004), Biological Abstracts (from 1985 to December 2004), and Science Citation Index (from 1980 to December 2004). Results from reviews, handsearching and from the consultation of manufacturers and authors were also used.

Selection criteria

Eligible studies were comparative prospective or retrospective trials testing the effects of MMR compared to placebo, do-nothing or a combination of measles, mumps and rubella antigens on healthy individuals up to 15 years of age. These studies were carried out or published by 2004.

Data collection and analysis

We identified 139 articles possibly satisfying our inclusion criteria and included 31 in the review.

Main results

MMR was associated with a lower incidence of upper respiratory tract infections, a higher incidence of irritability, and similar incidence of other adverse effects compared to placebo. The vaccine was likely to be associated with benign thrombocytopenic purpura, parotitis, joint and limb complaints, febrile convulsions within two weeks of vaccination and aseptic meningitis (mumps) (Urabe strain-containing MMR). Exposure to MMR was unlikely to be associated with Crohn's disease, ulcerative colitis, autism or aseptic meningitis (mumps) (Jeryl-Lynn strain-containing MMR). We could not identify studies assessing the effectiveness of MMR that fulfilled our inclusion criteria even though the impact of mass immunisation on the elimination of the diseases has been largely demonstrated.

Authors' conclusions

The design and reporting of safety outcomes in MMR vaccine studies, both pre- and post-marketing, are largely inadequate. The evidence of adverse events following immunisation with MMR cannot be separated from its role in preventing the target diseases.

PLAIN LANGUAGE SUMMARY**Using the combined vaccine for protection of children against measles, mumps and rubella**

Measles, mumps and rubella are three very dangerous infectious diseases which cause a heavy disease, disability and death burden in the developing world. Researchers from the Cochrane Vaccines Field reviewed 139 studies conducted to assess the effects of the live attenuated combined vaccine to prevent measles, mumps and rubella (MMR) in children. MMR protects children against infections of the upper airways but very rarely may cause a benign form of bleeding under the skin and milder forms of measles, mumps and rubella. No credible evidence of an involvement of MMR with either autism or Crohn's disease was found. No field studies of the vaccine's effectiveness were found but the impact of mass immunisation on the elimination of the diseases has been demonstrated worldwide.