Magnesium sulphate for women at risk of preterm birth for neuroprotection of the fetus

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ABSTRACT

Background
Epidemiological and basic science evidence suggests that magnesium sulphate before birth may be neuroprotective for the fetus.

Objectives
To assess the effects of magnesium sulphate as a neuroprotective agent when given to women considered at risk of preterm birth.

Search methods
We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (31 August 2008).

Selection criteria
Randomised controlled trials of antenatal magnesium sulphate therapy in women threatening or likely to give birth at less than 37 weeks' gestational age. For one subgroup analysis, studies were broadly categorised by the primary intent of the study into "neuroprotective intent", or "other intent (maternal neuroprotective - pre-eclampsia)", or "other intent (tocolytic)".

Data collection and analysis
At least two authors assessed trial eligibility and quality, and extracted data.

Main results
Five trials (6145 babies) were eligible for this review. Antenatal magnesium sulphate therapy given to women at risk of preterm birth substantially reduced the risk of cerebral palsy in their child (relative risk (RR) 0.68; 95% Confidence interval (CI) 0.54 to 0.87; five trials; 6145 infants). There was also a significant reduction in the rate of substantial gross motor dysfunction (RR 0.61; 95% CI 0.44 to 0.85; four trials; 5980 infants). No statistically significant effect of antenatal magnesium sulphate therapy was detected on paediatric mortality (RR 1.04; 95% CI 0.92 to 1.17; five trials; 6145 infants), or on other neurological impairments or disabilities in the first few years of life. Overall there were no significant effects of antenatal magnesium therapy on combined rates of mortality with cerebral palsy.
although there were significant reductions for the neuroprotective groups RR 0.85; 95% CI 0.74 to 0.98; four trials; 4446 infants, but not for the other intent subgroups. There were higher rates of minor maternal side effects in the magnesium groups, but no significant effects on major maternal complications.

Authors’ conclusions

The neuroprotective role for antenatal magnesium sulphate therapy given to women at risk of preterm birth for the preterm fetus is now established. The number of women needed to be treated to benefit one baby by avoiding cerebral palsy is 63 (95% confidence interval 43 to 155). Given the beneficial effects of magnesium sulphate on substantial gross motor function in early childhood, outcomes later in childhood should be evaluated to determine the presence or absence of later potentially important neurological effects, particularly on motor or cognitive function.

**PLAIN LANGUAGE SUMMARY**

**Magnesium sulphate for women at risk of preterm birth for neuroprotection of the fetus**

Magnesium sulphate given to women at risk of preterm birth helps to protect the baby's brain and improve long-term outcomes.

Babies born too early (preterm) have a higher risk of dying in the first weeks of life than babies born at term, and those who survive often have damage in the form of cerebral palsy (a disorder where the ability to move the arms or legs normally is reduced), blindness, deafness or physical disabilities. This can cause huge distress for parents. Magnesium is an important element essential for normal body functions. Magnesium sulphate may help to reduce damage to a preterm baby's brain. However, it has adverse effects in the mother of flushing, sweating, nausea, vomiting, headaches and a rapid heartbeat (palpitations). This review identified five studies involving 6145 infants and shows that magnesium sulphate therapy protects the preterm baby's brain from cerebral palsy.