



Does antenatal magnesium sulfate lower the risk of cerebral palsy in infants born before 34 weeks?

Yes Magnesium sulfate is effective as primary prevention of cerebral palsy (CP) in preterm infants delivered before 34 weeks' gestation, according to this systematic review and meta-analysis. The authors point out, however, that because CP has no single cause and results from the interaction of multiple risk factors, "it is unlikely that antenatal magnesium sulfate administration alone can prevent all cases of this illness in preterm infants."

Conde-Agudelo A, Romero R. Antenatal magnesium sulfate for the prevention of cerebral palsy in preterm infants less than 34 weeks' gestation: a systematic review and metaanalysis. Am J Obstet Gynecol. 2009;200:595-609.

► EXPERT COMMENTARY

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Cerebral palsy occurs in approximately two of every 1,000 live births in the United States and causes major social and economic hardship for affected children and their families.^{1,2}

Preterm birth is among the most significant risk factors for CP. Although they constitute fewer than 3% of births in the United States, infants born before 34 weeks' gestation account for nearly one of every four new cases of CP.³

To date, few, if any, obstetric interventions have proved to be effective for preventing or reducing the likelihood or consequences of CP. During the 1990s, several observational studies found an association between treatment with magnesium sulfate during pregnancy and a reduction in the risk of CP among infants born preterm or at low birth weight. However, other observational series failed to

confirm this association. As a result, considerable controversy clouded this issue.

Since that time, several randomized, controlled trials have explored the association. The overarching purpose of this meta-analysis by Conde-Agudelo and Romero is to assess the impact of magnesium sulfate for neuroprotection against CP among infants born before 34 weeks' gestation.

Reasons this meta-analysis is credible

Conde-Agudelo and Romero conducted this review in concordance with a prospectively prepared protocol and followed Quality of Reporting of Meta-analyses (QUOROM) guidelines. Their search strategy and literature

WHAT THIS EVIDENCE MEANS FOR PRACTICE

This important analysis suggests that antenatal magnesium sulfate for neuroprotection reduces the frequency of cerebral palsy among infants born before 34 weeks' gestation. The authors recommend magnesium sulfate for this application in patients who are at high risk of delivering before 34 weeks, such as women who have premature rupture of membranes, active labor, or planned delivery within 24 hours.

Although the authors were unable to identify an optimal dosing strategy, they recommended that loading and maintenance dosages of magnesium sulfate and the duration of treatment not exceed 6 g, 1 to 2 g/hour, and 24 hours, respectively.

The findings of this excellent meta-analysis certainly justify continuing research.

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Magnesium sulfate is effective as primary prevention of cerebral palsy in preterm infants delivered before 34 weeks' gestation



review were comprehensive and included all relevant studies in this arena. In addition, they utilized rigorous inclusion criteria and assessed heterogeneity in the various study designs and populations.

Besides including pooled relative risks in the results of the meta-analysis, they also calculated the number needed to treat (NNT), a measure of utility that is important to the clinician and clinical research. In this analysis, the number of women who were at risk of preterm delivery before 34 weeks' gestation who needed to be treated with magnesium sulfate rather than placebo to prevent one case of CP was 52 (95% confidence interval, 31-154).

Last, the authors provided a measure of the impact of the use of magnesium sulfate on the public health and economic sectors, placing the problem and intervention in a broader, highly relevant context.

No revelations about magnesium in multiple versus singleton gestations

The trials included in this meta-analysis had limitations, of course. As a result, Conde-Agudelo and Romero were unable to estimate the direction and magnitude of the effect of magnesium sulfate on the risk of CP among multiple versus singleton gestations. Nor were they able to comment on the relative influence of the various dosing and treatment protocols employed in the primary trials. Therefore, this analysis cannot be used to advocate a specific dosage or protocol. 🚫

References

1. Vohr BR, Msall ME, Wilson D, Wright LL, McDonald S, Poole WK. Spectrum of gross motor function in extremely low birth weight children with cerebral palsy at 18 months of age. *Pediatrics*. 2005;116:123-129.
2. Prevalence and characteristics of children with cerebral palsy in Europe. *Dev Med Child Neurol*. 2002;44:633-640.
3. Yeargin-Allsopp M, Van Naarden Braun K, Doernberg NS, et al. Prevalence of cerebral palsy in 8-year-old children in three areas of the United States in 2002: a multisite collaboration. *Pediatrics*. 2008;121:547-554.

FAST TRACK

The number of women at risk of preterm delivery before 34 weeks who needed to be treated with magnesium sulfate to prevent one case of cerebral palsy was 52

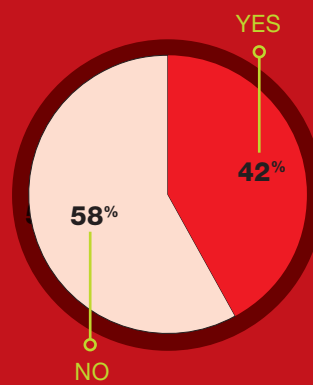
Instant Poll Results



From July 2009

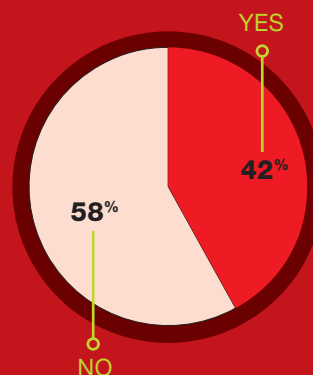
Using the Gail risk calculator

In the past year, I have recommended that postmenopausal women in my practice calculate their 5-year risk of breast cancer using the Gail model calculator.



Rx: chemoprevention

Over the past year, I have prescribed raloxifene or tamoxifen more often than in the past to prevent breast cancer in postmenopausal women at increased risk.



Note: These results should be viewed with caution, as they are based on limited data.