Magnesium sulfate therapy in preeclampsia and eclampsia

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Authors' objectives
To review the available evidence regarding efficacy, benefits and risks of magnesium sulphate seizure prophylaxis in women with pre-eclampsia or eclampsia.

Searching
MEDLINE (1966 to February, 1998). The search terms are given. Bibliographies of retrieved articles were scanned and experts were consulted to provide additional references.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs), non-randomised controlled trials of "historical interest", "classic" observational studies and recent retrospective studies.

Specific interventions included in the review
Magnesium sulphate therapy. Control therapies included phenytoin, diazepam, lytic cocktail, dihydralazine, methyl dopa, nifedipine, nimodipine, labetalol and placebo

Participants included in the review
Women with pre-eclampsia or eclampsia and hypertensive disorders of pregnancy.

Outcomes assessed in the review
Incidence of seizures or recurrent seizures.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the reviewers performed the selection.

Assessment of study quality
Studies were assessed in terms of the U.S. Preventive Services Task Force levels of evidence (Fisher, 1989). The authors do not state how the papers were assessed for validity, or how many of the reviewers performed the validity assessment.

Data extraction
The authors do not state how the data were extracted for the review, or how many of the reviewers performed the data extraction.

Methods of synthesis
How were the studies combined?
The randomised controlled trials were grouped into those investigating eclamptic seizures; severe eclampsia and hypertensive disorders. Poled relative risks and 95% confidence intervals were presented for the severe eclampsia studies only.

How were differences between studies investigated?
The authors do not state how differences between the studies were investigated.
Results of the review
Fourteen randomised, controlled trials (5952 participants) and 5 retrospective studies; the two largest of these involved a total of 2560 participants.

Treatment of eclamptic seizures: recurrent seizures occurred in 88/932 (9.4%) patients treated with magnesium sulphate compared with 216/935 (23.1%) patients in the control groups.

Treatment of severe pre-eclampsia: seizures occurred in 7/815 (0.9%) of patients treated with magnesium sulphate compared with 22/793 (2.8%) in control groups. RR =0.31 (95% CI: 0.13, 0.72).

Treatment of hypertensive disorders: seizures occurred in 0/1228 of the magnesium sulphate group compared with 10/1249 of the control group (p <0.001 - test not specified).

Authors' conclusions
Magnesium sulphate for eclampsia appears to be well supported by level 1 evidence. There also appears to be strong support for seizure prophylaxis with magnesium sulphate in women with severe pre-eclampsia. However, there is limited evidence to support routine seizure prophylaxis in women with mild gestational hypertension of pre-eclampsia.

CRD commentary
This review is based on a fairly well defined question, which details the target population and intervention. Only one database was searched for relevant literature and this was limited to English language; however, additional references were sought in bibliographies and through consultation with experts. It is possible that relevant literature, especially any published in languages other than English, may have been missed. The inclusion criteria were briefly described in the abstract but the rationale for the inclusion of non-randomised material is unclear. The authors maintain that the included studies were assessed in terms of "levels of evidence" but these are not presented for the included studies. No details are given of the processes involved in study selection, validity assessment or data-extraction. Only very limited study details are given in the tables and not all the studies are discussed in the text. Generally, the studies are summarised in the narrative; however, statistical pooling has been used for one group of studies (patients with severe pre-eclampsia), without explanation. There is no discussion of heterogeneity.

The scarce details given of the review processes prevent proper assessment of the quality of this article; consequently any conclusions should be treated with caution.

Implications of the review for practice and research
Practice: The authors state 'The evidence to date confirms the efficacy of magnesium sulphate therapy for women with eclampsia and severe pre-eclampsia'.

Research: The authors state 'there is a need for a randomised controlled trial to determine the efficacy of magnesium sulphate therapy for women with mild pre-eclampsia and gestational hypertension'.

Bibliographic details

PubMedID
9794688

Other publications of related interest
Indexing Status
Subject indexing assigned by NLM

MeSH
Anticonvulsants /adverse effects /pharmacology /therapeutic use; Eclampsia /complications; Female; Humans; Magnesium Sulfate /adverse effects /pharmacology /therapeutic use; Pre-Eclampsia /complications; Pregnancy; Seizures /drug therapy /etiology

AccessionNumber
11998001877

Date bibliographic record published
30/11/2000

Date abstract record published
30/11/2000

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.