Use of nifedipine in the hypertensive diseases of pregnancy

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Authors' objectives
To review available data about the use of nifedipine to treat hypertension in pregnancy.

Searching
MEDLINE, Excerpta Medica and BIOSIS Previews were searched from 1984 onwards for studies published in the English language, using the headings 'nifedipine', 'hypertension in pregnancy', 'uteroplacental blood flow', 'maternal/fetal hemodynamics', 'pre-eclampsia' and 'pregnancy outcome'.

Study selection
Study designs of evaluations included in the review
The authors do not provide any details of the designs of the included studies.

Specific interventions included in the review
Acute administration of nifedipine, either alone or in conjunction with other blood-pressure medications including hydralazine, methyldopa, labetalol, atenolol, or methyldopa plus atenolol and hydralazine. Chronic administration of nifedipine, either alone, with hydralazine or magnesium sulphate, or after maximal doses of labetalol, atenolol or methyldopa had failed to control blood-pressure.

Participants included in the review
Pregnant women with or without hypertension, tocolysis or systemic sclerosis were included.

Outcomes assessed in the review
Maternal outcomes such as haemodynamics, contraction prevention, proteinuria or glucosuria, and Caesarean section; fetal outcomes such as haemodynamics, neonatal complications, gestational age at delivery and foetal distress; and adverse effects.

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 authors performed the selection.

Assessment of study quality
The authors do not state that they assessed quality.

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

Methods of synthesis
How were the studies combined?
A narrative synthesis was undertaken. No details of selection or weighting are provided. The studies were considered in 2 groups, namely acute and chronic administration of nifedipine.

How were differences between studies investigated?
Differences between the studies were not investigated.
Results of the review
Acute administration: 9 studies with a total of 182 participants. Chronic administration: 7 studies with a total of 316 participants.

Acute administration: 3 studies reported a significant reduction in maternal blood-pressure; 2 studies reported a significant reduction in maternal mean arterial pressure; 4 studies reported increases in maternal heart rate; no significant change in foetal heart rate or blood flow was reported in any of the studies. Maternal side-effects included facial flushing (11 patients), headaches (9 patients) and hypotension (2 patients).

Chronic administration: in the single study comparing nifedipine with hydralazine, nifedipine imparted a significantly greater degree of blood-pressure control, more term deliveries and greater prolongation of pregnancy; in addition, nifedipine produced significantly less foetal distress and fewer days in neonatal intensive care unit. Maternal side-effects included headache (5 patients) and hypotension (3 patients).

Cost information
Compared with hydralazine, the use of nifedipine resulted in decreased hospitalisation charges due to the reduced time spent in neonatal intensive care units.

Authors' conclusions
Current data are insufficient to recommend nifedipine for initial antihypertensive drug therapy in pregnancy. More clinical trials are required.

CRD commentary
There was no quality control of included articles, or details of the review methodology or the trial designs. With the exception of 1 study (200 patients), sample sizes were very small and included less than 51 patients; moreover, 3 studies were performed with only one patient. Of the 9 reported studies of acute administration of nifedipine, 1 involved comparison with a placebo, another was a comparison with hydralazine, and 1 study consisted of 2 case reports. Of the 7 reported studies of chronic administration, only 1 was a comparison of nifedipine and hydralazine, and 2 were single-patient case studies. There were no details of randomisation for any of the comparisons.

Bibliographic details

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MeSH
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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.