Cochrane Library

Cochrane Database of Systematic Reviews

Techniques for preventing hypotension during spinal anaesthesia for caesarean section (Review)

Cyna AM, Andrew M, Emmett RS, Middleton P, Simmons SW

Cyna AM, Andrew M, Emmett RS, Middleton P, Simmons SW.
Techniques for preventing hypotension during spinal anaesthesia for caesarean section.
Cochrane Database of Systematic Reviews 2006, Issue 4. Art. No.: CD002251.
DOI: 10.1002/14651858.CD002251.pub2.

www.cochranelibrary.com

WILEY

[Intervention Review]

Techniques for preventing hypotension during spinal anaesthesia for caesarean section

Allan M Cyna[1], Marion Andrew[2], Richard S Emmett[2], Philippa Middleton[3], Scott W Simmons[4]

[1]Department of Women's Anaesthesia, Women's and Children's Hospital, Adelaide, Australia. [2]Department of Obstetrics and Gynaecology Anaesthesia, Women's and Children's Hospital, Adelaide, Australia. [3]ARCH: Australian Research Centre for Health of Women and Babies, Discipline of Obstetrics and Gynaecology, The University of Adelaide, Adelaide, Australia. [4]Department of Anaesthesia, Mercy Hospital for Women, Heidelberg, Australia

Contact address: Allan M Cyna, Department of Women's Anaesthesia, Women's and Children's Hospital, 72 King William Road, Adelaide, South Australia, 5006, Australia. allan.cyna@health.sa.gov.au.

Editorial group: Cochrane Pregnancy and Childbirth Group.
Publication status and date: Edited (no change to conclusions), published in Issue 11, 2010.

Citation: Cyna AM, Andrew M, Emmett RS, Middleton P, Simmons SW. Techniques for preventing hypotension during spinal anaesthesia for caesarean section. *Cochrane Database of Systematic Reviews* 2006, Issue 4. Art. No.: CD002251. DOI: 10.1002/14651858.CD002251.pub2.

ABSTRACT

Background

Maternal hypotension, the most frequent complication of spinal anaesthesia for caesarean section, can be associated with severe nausea or vomiting which can pose serious risks to the mother (unconsciousness, pulmonary aspiration) and baby (hypoxia, acidosis and neurological injury).

Objectives

To assess the effects of prophylactic interventions for hypotension following spinal anaesthesia for caesarean section.

Search methods

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (November 2005). We updated this search on 30 June 2010 and added the results to the awaiting classification section of the review.

Selection criteria

Randomised controlled trials comparing interventions to prevent hypotension with placebo or alternative treatment in women having spinal anaesthesia for caesarean section.

Data collection and analysis

Three review authors independently assessed eligibility and methodological quality of studies, and extracted data.

Main results

We included 75 trials (a total of 4624 women). Crystalloids were more effective than no fluids (relative risk (RR) 0.78, 95% confidence interval (CI) 0.60 to 1.00; one trial, 140 women, sequential analysis) and colloids were more effective than crystalloids (RR 0.68, 95% CI 0.52 to 0.89; 11 trials, 698 women) in preventing hypotension following spinal anaesthesia at caesarean section. No differences were detected for different doses, rates or methods of administering colloids or crystalloids. Ephedrine was significantly more effective than control (RR 0.51, 95% CI 0.33 to 0.78; seven trials, 470 women) or crystalloid (RR 0.70, 95% CI 0.50 to 0.96; four trials, 293 women) in preventing hypotension. No significant differences in hypotension were seen between ephedrine and phenylephrine (RR 0.95, 95% CI 0.37 to 2.44; three trials, 97 women) and phenylephrine was more effective than controls (RR 0.27, 95% CI 0.16 to 0.45; two trials, 110 women). High rates

or doses of ephedrine may increase hypertension and tachycardia incidence. Lower limb compression was more effective than control (no leg compression) (RR 0.69, 95% CI 0.53 to 0.90; seven trials, 399 women) in preventing hypotension, although different methods of compression appeared to vary in their effectiveness. No other comparisons between different physical methods such as position were shown to be effective, but these trials were often small and thus underpowered to detect true effects should they exist.

Authors' conclusions

While interventions such as colloids, ephedrine, phenylephrine or lower leg compression can reduce the incidence of hypotension, none have been shown to eliminate the need to treat maternal hypotension during spinal anaesthesia for caesarean section. No conclusions can be drawn regarding rare adverse effects due to the relatively small numbers of women studied.

[Note: The 89 citations in the awaiting classification section of the review may alter the conclusions of the review once assessed.]

PLAIN LANGUAGE SUMMARY

Techniques for preventing hypotension during spinal anaesthesia for caesarean section

The incidence of hypotension during spinal anaesthesia for caesarean section is reduced by administering intravenous fluids, the drugs ephedrine or phenylephrine, or by leg compression.

Spinal anaesthesia is commonly used for caesarean section. Advantages for the mother include remaining awake for the birth, avoiding risks of general anaesthesia and facilitating effective postoperative pain relief. The commonest side-effect of spinal anaesthesia is hypotension, which is often accompanied by nausea or vomiting, or both. Severe hypotension poses serious risks to mother (such as loss of consciousness) and baby (such as lack of oxygen and brain damage). The review of 75 trials (4624 women) found that no single method completely prevents hypotension, but the incidence is reduced by administering intravenous fluids, the drugs ephedrine or phenylephrine, and by compressing the legs with bandages, stockings or inflatable boots.