Different classes of antibiotics given to women routinely for preventing infection at caesarean section

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RHL Summary

Key findings

This updated review found:

- Penicillins and cephalosporines have similar positive effect on the prevention of infection at cesarean section.
- Benefits seem not to improve with the use of extended-spectrum antibiotics.
- There is a lack of information on regard to post-discharge infections, infant outcomes and bacterial resistance.

Evidence included in this review

Twenty-nine trials comparing different types of antibiotics giving routinely at 6367 women undergoing caesarean section were included in this review. Studies were conducted in developed countries in the 80’s and 90’s.

Quality assessment

Only three studies were of adequate sequence generation and allocation concealment. For the remaining, the risk of bias is unclear.

Clinical implications

Antibiotics mostly compared were different generations of cephalosporines with different types of penicillins, with no significant differences seen for endometritis, maternal fever, wound infection, urinary tract infection or adverse events. Third generation of cephalosporines seemed to show lower risk of wound infection when compared with aminopenicillins and higher risk of endometritis when compared with extended-spectrum penicillins. None of trials assessed on baby outcomes, post-discharge infection or bacterial resistance. Trials comparing other antibiotic regimens did not contribute data for present outcomes.

Further research

Future trials should be of good quality, conducted in developed and developing countries. These trials need to assess the effect of different types of antibiotics giving routinely to women at elective and non-elective caesarean section on the prevention of pre and post-discharge infection in the mother and their impact on

Abstract

Caesarean section increases the risk of postpartum infection for women and prophylactic antibiotics have been shown to reduce the incidence; however, there are adverse effects. It is important to identify the most effective class of antibiotics to use and those with the least adverse effects.

To determine, from the best available evidence, the balance of benefits and harms between different classes of antibiotic given prophylactically to women undergoing caesarean section.

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (30 September 2014) and reference lists of retrieved papers.

We included randomised controlled trials comparing different classes of prophylactic antibiotics given to women undergoing caesarean section. We excluded trials that compared drugs with placebo or drugs within a specific class; these are assessed in other Cochrane reviews.

Two review authors independently assessed the studies for inclusion, assessed risk of bias and carried out data extraction.

We included 35 studies of which 31 provided data on 7697 women. For the main comparison between cephalosporins versus penicillins, there were 30 studies of which 27 provided data on 7299 women. There was a lack of good quality data and important outcomes often included only small numbers of women.

For the comparison of a single cephalosporin versus a single penicillin (Comparison 1 subgroup 1), we found no significant difference between these classes of antibiotics for our chosen most important seven outcomes namely: maternal sepsis - there were no women with sepsis in the two studies involving 346 women; maternal endometritis (risk ratio (RR) 1.11, 95% confidence interval (CI) 0.81 to 1.52, nine studies, 3130 women, random effects, moderate quality of the evidence); maternal wound infection (RR 0.83, 95% CI 0.38 to 1.81, nine studies, 1497 women, random effects, low quality of the evidence), maternal urinary tract infection (RR 1.48, 95% CI 0.89 to 2.48, seven studies, 1120 women, low quality of the evidence) and maternal composite adverse effects (RR 2.02, 95% CI 0.18 to 21.96, three studies, 1902 women, very low quality of the evidence). None of the included studies looked for infant sepsis nor infant oral thrush.

This meant we could only conclude that the current evidence shows no overall difference between the different classes of antibiotics in terms of reducing maternal infections after caesarean sections. However, none of the studies reported on infections diagnosed after the initial postoperative hospital stay. We were unable to assess what impact, if any, the use of different classes of antibiotics might have on bacterial resistance.
Based on the best currently available evidence, cephalosporins and penicillins have similar efficacy at caesarean section when considering immediate postoperative infections. We have no data for outcomes on the baby, nor on late infections (up to 30 days) in the mother. Clinicians need to consider bacterial resistance and women's individual circumstances.

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