Antibiotics for preterm rupture of membranes

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Key Findings

The review evaluated the effects of administration of antibiotics to women with preterm rupture of membranes (PROM) before 37 weeks, on maternal and neonatal morbidity and mortality, and childhood development.

The use of antibiotics following PROM was associated with:

- Significant reduction in the number of babies born within 48 hours and seven days of administration neonatal infection, use of surfactant, oxygen therapy and abnormal cerebral ultrasound scan prior to discharge from hospital
- No significant reduction in perinatal mortality, birth before 37 weeks, caesarean section rate, respiratory distress syndrome, necrotising enterocolitis
- No evidence of longer-term benefit in the childhood development
- Statistically significant reduction in chorioamnionitis
- No cases on maternal death in the three trials reporting this outcome

Evidence included in this review

Twenty two trials involving 6872 women and babies were included in this review. The trials varied in participants characteristics, type of antibiotics administered (broad spectrum penicillins, erythromycin, clindamycin and gentamycin) and way and duration of antibiotic administration (oral, parenteral; from two doses to until delivery). Most were small trials comparing use of any antibiotic versus placebo, except for one trial which randomised 4826 participants.

Quality assessment

Included trials were assessed to have low or unclear risk of bias. There was heterogeneity due to variability in participant characteristics and antibiotic types and regimens. All but 8 trials described method of randomisation and all but 6 trials were placebo-controlled and were blinded.

Clinical implications

Giving antibiotics to women with PROM reduced the risk of chorioamnionitis and neonatal morbidity and was associated with short-term prolongation of pregnancy. There were no clear long-term benefits and no reduction in perinatal death. No conclusions can be made about type and regimen of the best antibiotic to use but until new evidence is available and based on the findings of a large trial included in the review, the use of co-amoxiclav should be discouraged due to increased risk of neonatal necrotising enterocolitis.
Further research

The review highlights the need for further comparative studies. Future trials should be of adequate size and quality to elucidate long term effects and to assess on the best antibiotic agent for PROM.

Cochrane review


Abstract

Premature birth carries substantial neonatal morbidity and mortality. Subclinical infection is associated with preterm rupture of membranes (PROM). Prophylactic maternal antibiotic therapy might lessen infectious morbidity and delay labour, but could suppress labour without treating underlying infection.

To evaluate the immediate and long-term effects of administering antibiotics to women with PROM before 37 weeks, on maternal infectious morbidity, neonatal morbidity and mortality, and longer-term childhood development.

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (30 September 2013). Randomised controlled trials comparing antibiotic administration with placebo that reported clinically relevant outcomes were included as were trials of different antibiotics. Trials in which no placebo was used were included for the outcome of perinatal death alone.

We extracted data from each report without blinding of either the results or the treatments that women received. We sought unpublished data from a number of authors.

We included 22 trials, involving 6872 women and babies.

The use of antibiotics following PROM is associated with statistically significant reductions in chorioamnionitis (average risk ratio (RR) 0.66, 95% confidence interval (CI) 0.46 to 0.96, and a reduction in the numbers of babies born within 48 hours (average RR 0.71, 95% CI 0.58 to 0.87) and seven days of randomisation (average RR 0.79, 95% CI 0.71 to 0.89). The following markers of neonatal morbidity were reduced: neonatal infection (RR 0.67, 95% CI 0.52 to 0.85), use of surfactant (RR 0.83, 95% CI 0.72 to 0.96), oxygen therapy (RR 0.88, 95% CI 0.81 to 0.96), and abnormal cerebral ultrasound scan prior to discharge from hospital (RR 0.81, 95% CI 0.68 to 0.98). Co-amoxiclav was associated with an increased risk of neonatal necrotising enterocolitis (RR 4.72, 95% CI 1.57 to 14.23).

One study evaluated the children's health at seven years of age (ORACLE Children Study) and found antibiotics seemed to have little effect on the health of children.

Routine prescription of antibiotics for women with preterm rupture of the membranes is associated with prolongation of pregnancy and improvements in a number of short-term neonatal morbidities, but no significant reduction in perinatal mortality. Despite lack of evidence of longer-term benefit in childhood, the advantages on short-term morbidities are such that we would recommend antibiotics are routinely
prescribed. The antibiotic of choice is not clear but co-amoxiclav should be avoided in women due to increased risk of neonatal necrotising enterocolitis.


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Home > Antibiotics for preterm rupture of membranes