Antibiotics for prelabour rupture of membrane at or near term

22 September 2015

RHL summary

Key Findings

This updated review found:

- No significant reduction in the risk of early-onset neonatal sepsis, maternal chorioamnionitis and/or endometritis, stillbirth, neonatal and perinatal mortality.
- A trend towards reduced early-onset neonatal sepsis and reduced maternal infections in the late labour induction group was found in a sub-group analysis.
- No data was reported on breastfeeding, discharge from hospital and cost-effectiveness.

Evidence included in this review

Four randomized controlled trials including 2639 women were reviewed. Trials included were conducted in Spain, Egypt, Chile and Portugal, two of them in 1998, one in 2012 and one in 2014. Two trials compared antibiotics to placebo and the remains two antibiotic to no treatment. Gestation were of 36 weeks or more, singleton and without major obstetric complications. All studies initiated induction of labour with intravenous oxytocin at PROM diagnoses. In one trial it was immediate (less than 12 hours), in two studies after 12 hours, and in other study used attending physician criteria. Heterogeneity was high. Only one study screened for Group B Streptococcus. Antibiotics used were parental ampicillin with gentamicin, ampicillin/sulbactam, and cefuroxime with clindamycin. There was an increased risk of caesarean section and duration of maternal stay in hospital with the use of antibiotics probably due to more hypertension and pre-eclampsia in the mothers of this group.

Quality assessment

One trial was considered to be at low risk of bias. The second trial was at unclear risk of bias because methodological data was not reported.

Clinical implications

There is not enough evidence to support the use of prophylactic antibiotics in women with prelabour rupture of membranes (PROM) at or near term. The latency between membrane rupture and birth is probably the fact to be considered.

Further research

There is a need of trials powered enough to conclude on serious maternal morbidity, stillbirth, neonatal and
perinatal mortality, long-term infant outcomes, development of resistant organisms and costs.

Cochrane review

Citation: Wojcieszek AM, Stock OM, Flenady V. Antibiotics for prelabour rupture of membranes at or near term. Cochrane Database of Systematic Reviews 2014, Issue 10. Art. No.: CD001807. DOI: 10.1002/14651858.CD001807.pub2.

Abstract

Prelabour rupture of the membranes (PROM) at or near term (defined in this review as 36 weeks' gestation or beyond) increases the risk of infection for the woman and her baby. The routine use of antibiotics for women at the time of term PROM may reduce this risk. However, due to increasing problems with bacterial resistance and the risk of maternal anaphylaxis with antibiotic use, it is important to assess the evidence addressing risks and benefits in order to ensure judicious use of antibiotics. This review was undertaken to assess the balance of risks and benefits to the mother and infant of antibiotic prophylaxis for PROM at or near term.

To assess the effects of antibiotics administered prophylactically to women with PROM at 36 weeks' gestation or beyond, on maternal, fetal and neonatal outcomes.

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (31 July 2014).

All randomised trials that compared outcomes for women and infants when antibiotics were administered prophylactically for prelabour rupture of the membranes at or near term, with outcomes for controls (placebo or no antibiotic).

Two review authors independently extracted the data and assessed risk of bias in the included studies. Additional data were received from the investigators of included studies.

This update includes an additional two studies involving 1801 women, giving a total of four included studies of 2639 women. Whereas the previous version of this review showed a statistically significant reduction in endometritis with the use of antibiotics, no such effect was shown in this update (average risk ratio (RR) 0.34, 95% confidence interval (CI) 0.05 to 2.31). No differences were shown on the primary outcome measures of probable early-onset neonatal sepsis (average RR 0.69, 95%; CI 0.21 to 2.33); definite early-onset neonatal sepsis (average RR 0.57, 95% CI 0.08 to 4.26); maternal infectious morbidity (chorioamnionitis and/or endometritis) (average RR 0.48, 95% CI 0.20 to 1.15); stillbirth (RR 3.00, 95% CI 0.61 to 14.82); and perinatal mortality (RR 1.98, 95% CI 0.60 to 6.55), though the number of cases in the control group for these outcomes was low. There were no cases of neonatal mortality or serious maternal outcome in the studies assessed. Caesarean section was increased with the use of antibiotics (RR 1.33, 95% CI 1.09 to 1.61) as was duration of maternal stay in hospital (mean difference (MD) 0.06 days, 95% CI 0.01 to 0.11), largely owing to one study of 1640 women where repeat caesarean section, increased baseline hypertension and pre-eclampsia were evident in the antibiotic group, despite random allocation and allocation concealment.

Subgroup analyses by timing of induction (early induction versus late induction) showed no difference in either probable or definite early-onset neonatal sepsis in the early induction group (RR 1.47, 95% CI 0.80 to 2.70 and RR 1.29, 95% CI 0.48 to 3.44, respectively) or the late induction group (RR 0.14, 95% CI 0.02 to 1.13 and RR 0.16, 95% CI 0.02 to 1.34, respectively), although there were trends toward reduced probable
and definite early-onset neonatal sepsis in the late induction group. A test for subgroup differences confirmed a differential effect of the intervention on probable early-onset neonatal sepsis between the subgroups ($\text{Chi}^2 = 4.50$, df = 1 ($P = 0.03$), $I^2 = 77.8\%$). No difference in maternal infectious morbidity (chorioamnionitis and/or endometritis) was found in either subgroup, though again there was a trend towards reduced maternal infectious morbidity in the late induction group (average RR 0.34, 95% CI 0.08 to 1.47). No differences were shown in stillbirth or perinatal mortality. The quality of the evidence for the primary outcomes using GRADE was judged to be low to very low.

This updated review demonstrates no convincing evidence of benefit for mothers or neonates from the routine use of antibiotics for PROM at or near term. We are unable to adequately assess the risk of short- and long-term harms from the use of antibiotics due to the unavailability of data. Given the unmeasured potential adverse effects of antibiotic use, the potential for the development of resistant organisms, and the low risk of maternal infection in the control group, the routine use of antibiotics for PROM at or near term in the absence of confirmed maternal infection should be avoided.