Intrapartum antibiotics for maternal Group B Streptococcus: do they improve neonatal outcomes?

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An evidence summary based on the following systematic review: Ohlsson, A. & Shah, V.S. (2014) *Intrapartum antibiotics for known maternal Group B streptococcal colonization.* Cochrane Database of Systematic Reviews 2014, Issue 6. Art. No.: CD007467.

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- The use of Intrapartum antibiotics for known maternal Group B Streptococcus did not reduce the risk of neonatal death.
- The incidence of early GBS infection in neonates was reduced with IAP when compared to no treatment.
- The incidence of late onset GBS was not reduced with IAP when compared to no treatment.
- IAP had no effect on maternal outcomes including sepsis
- There was no difference in outcomes for intrapartum ampicillin versus penicillin

Background to the review

Group B *Streptococcus* (GBS) infection in pregnancy can increase the risk of neonatal infection from mother to baby during labour. This can cause early and late onset sepsis in new-borns, maternal infection, stillbirth and may contribute to preterm delivery[1].

In 2014-2015, the incidence of early-onset GBS in the UK and Ireland within the first 6 days of life was 0.57/1000 births (517 cases)[2]. Of these births, 5.2% died (27 cases).

Current guidelines recommend that Intrapartum Antibiotic Prophylaxis (IAP) should be offered to women who have been identified as having GBS infection during their current pregnancy[3]. However, treating all women with the infection increases exposure to adverse effects from the antibiotics (adverse reactions, antibiotic resistance).

Purpose of the review

This review aimed to assess the impact of administering IAP during labour for maternal GBS on mortality from any cause, GBS infection and infections other than GBS.

What methods did the review use?

Reviewers searched the Cochrane Pregnancy and Childbirth Group's Trials Register for randomised controlled trials (RCTs) that assessed the impact of IAP on neonatal GBS infections. Trials were included that administered IAP to mothers know to be GBS positive at any time during the pregnancy. The comparison groups were mothers who received no treatment, a placebo treatment or a different type of antibiotic.

The primary outcomes they were interested in were neonatal mortality by any cause, from early onset GBS infection (within 7 days of birth) or

mortality from infections caused by bacteria other than GBS.

Secondary outcomes included early GBS infection, late onset GBS sepsis (>7 days) and maternal outcomes including postpartum infection and sepsis.

How good is the review and the quality of included studies?

This was a Cochrane review adopting high-quality methodology. All identified studies were assessed by two reviewers for inclusion in the review. Included studies were subsequently assessed using the Cochrane risk of bias tool. Reviewers assessed the likelihood and level of bias and whether it was likely to impact on the findings.

Overall, the quality of the included studies was found to be poor and the risk of bias was 'high' for one or more key domains in how the studies were conducted. This seriously weakens confidence in the interpretation of the results.

What are the results of the review?

The review included data from 852 women in four trials. Three of these trials (including 500 women) evaluated the effectiveness of IAP against receiving no treatment. One trial compared the effects of ampicillin versus penicillin.

They found that there was no significant effect of IAP compared to no treatment on neonatal mortality from any cause including GBS or from other bacterial infections.

There was a significant reduction in the incidence of early GBS infection in neonates when treated with IAP compared to no treatment. The reviewers estimated that to see a benefit, 25 women would need to be treated. There was also a significant reduction in the incidence of probable early GBS infection in neonates following IAP compared to no treatment.

There were no significant differences in the incidence of late onset GBS infection or infection due to other causes in neonates. Maternal outcomes including sepsis or postpartum infection indicated no significant differences.

One trial (including 352 women) assessed the use of ampicillin versus penicillin and found no significant difference in outcome for mother or baby.

How do the authors interpret the results?

Administering antibiotics during the intrapartum period appeared to reduce the early onset of GBS infection. However, the authors exercise caution with these results as they found a high risk of bias in the study methodology and execution. They conclude that there is insufficient evidence to recommend IAP for reducing the early onset of neonatal GBS. They also state that information is lacking on whether intrapartum ampicillin is preferable to penicillin for women with GBS infection.

The authors comment that given the common practice of administering IAP to women with GBS, it has been poorly studied. The implication for research is that future studies should ensure they are both well-designed and conducted.

What are the limitations of the review?

The authors raised concerns regarding the completeness and applicability of the evidence. These include a lack of pre-set sample sizes and a lack of placebo treatments within the control groups. They also note that the women and care-providers within the studies were aware of the group assignment.

Who are the authors and where is it published?

The primary authors are from the University of Toronto. The review is published in the Cochrane Database of Systematic Reviews (the leading journal and database for systematic reviews in health care).

References

[1]Lawn JE, Bianchi-Jassir F, Russell N et al. (2017) 'Group B Streptococcal Disease Worldwide for Pregnant Women, Stillbirths, and Children: Why, What, and how To Undertake Estimates?'. *Clin Infect Dis*; **65**(suppl 2):S89–99

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[3]Hughes RG, Brocklehurst P, Steer PJ et al., on behalf of the Royal College of Obstetricians and Gynaecologists. (2017) 'Prevention of early-onset neonatal group B streptococcal disease. Green-top Guideline No. 36'. *BJOG*;**124**:e280–e305.

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