Betamimetics for inhibiting preterm labour

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RHL summary

Findings of the review: This review aimed to assess the effects of betamimetics given to women with preterm labour. Twenty trials published between 1966 and 2010 undertaken in high-income countries contributed data to this review. Fewer women who had received betamimetics compared with placebo gave birth within 48 hours and within seven days. However, no reduction in the preterm birth (before 37 weeks) was noted. No statistically significant differences with the use of betamimetics versus placebo were found in relation to perinatal, neonatal or infant deaths, respiratory distress syndrome, cerebral palsy, and necrotizing enterocolitis, although the majority of women in the trials were above 32 weeks’ gestation. Betamimetics were associated with withdrawal from treatment due to adverse effects, maternal chest pain, dyspnoea, palpitations, tremor, headaches, hypokalaemia, hyperglycaemia, nausea and vomiting, nasal stiffness, and fetal tachycardia. Although nine trials had compared different types of betamimetics, no conclusions could be drawn because of small size of trials and inadequacy of study quality.

Implementation: Betamimetics are effective in delaying preterm birth which can be used to transfer women to tertiary care or to give a course of corticosteroids. However, caution should be exercised when betamimetics are used as they are associated with significant adverse effects. No data is currently available to support the use of any particular betamimetic.

Cochrane review


Abstract

Preterm birth is a major contributor to perinatal mortality and morbidity worldwide. Tocolytic agents are drugs used to inhibit uterine contractions. Betamimetics are tocolytic agents that have been widely used, especially in resource-poor countries.

To assess the effects of betamimetics given to women with preterm labour.

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (31 December 2013) and reference lists of retrieved studies.
Randomised controlled trials of betamimetics, administered by any route or any dose, in the treatment of women in preterm labour where betamimetics were compared with other betamimetics, placebo or no treatment.

Two review authors assessed risk of bias and extracted the data independently.

Twenty-eight trials were assessed as eligible for inclusion in the review, but eight did not report any outcome data relevant to the review. Results are based on the 20 trials that contributed data.

Twelve trials, involving 1367 women, compared betamimetics with placebo. Betamimetics decreased the number of women in preterm labour giving birth within 48 hours (average risk ratio (RR) 0.68, 95% confidence interval (CI) 0.53 to 0.88, 10 trials, 1209 women). There was a decrease in the number of births within seven days (average RR 0.80; 95% CI 0.65 to 0.98, five trials, 911 women) but there was no evidence of a reduction in preterm birth (before 37 weeks' gestation) (RR 0.95; 95% CI 0.88 to 1.03, 10 trials, 1212 women). No benefit was demonstrated for betamimetics for perinatal death (RR 0.84; 95% CI 0.46 to 1.55, 11 trials, 1332 infants), or neonatal death (RR 0.90; 95% CI 0.27 to 3.00, six trials, 1174 infants). No significant effect was demonstrated for respiratory distress syndrome (RR 0.87; 95% CI 0.71 to 1.08, eight trials, 1239 infants). A few trials reported on cerebral palsy, infant death and necrotising enterocolitis; no significant differences between groups were identified for any of these outcomes. Betamimetics were significantly associated with the following outcomes: withdrawal from treatment due to adverse effects; maternal chest pain; dyspnoea; palpitation; tremor; headaches; hypokalaemia; hyperglycaemia; nausea or vomiting; nasal stuffiness; and fetal tachycardia.

Nine trials compared different types of betamimetics. Other betamimetics were compared with ritodrine in five trials (n = 948). Other comparisons were examined in single trials: hexoprenaline compared with salbutamol (n = 140), slow versus moderate release salbutamol (n = 52) and salbutamol compared with terbutaline (n = 200). Trials were small, varied, and of insufficient quality to delineate any consistent patterns of effect.

Betamimetics help to delay birth, which may give time to allow women to be transferred to tertiary care or to complete a course of antenatal corticosteroids. However, multiple adverse effects must be considered. The data are too few to support the use of any particular betamimetic.

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