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[Intervention Review]

Screening and subsequent management for gestational diabetes for improving maternal and infant health

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ABSTRACT

Background

Gestational diabetes mellitus (GDM) is a form of diabetes that occurs in pregnancy. Although GDM usually resolves following birth, it is associated with significant morbidities for mother and baby both perinatally and in the long term. There is strong evidence to support treatment for GDM. However, there is little consensus on whether or not screening for GDM will improve maternal and infant health and if so, the most appropriate protocol to follow.

Objectives

To assess the effects of different methods of screening for GDM and maternal and infant outcomes.

Search methods

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (1 December 2013).

Selection criteria

Randomised and quasi-randomised trials evaluating the effects of different methods of screening for GDM.

Data collection and analysis

Two review authors independently conducted data extraction and quality assessment. We resolved disagreements through discussion or through a third author.

Main results

We included four trials involving 3972 women in the review. One quasi-randomised trial compared risk factor screening with universal or routine screening by 50 g oral glucose challenge testing. Women in the universal screening group were more likely to be diagnosed with GDM (one trial, 3152 women, risk ratio (RR) 0.44, 95% confidence interval (CI) 0.26 to 0.75). This trial did not report on the

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other primary outcomes of the review (positive screen for GDM, mode of birth, large-for-gestational age, or macrosomia). Considering secondary outcomes, infants of mothers in the risk factor screening group were born marginally earlier than infants of mothers in the routine screening group (one trial, 3152 women, mean difference (MD) -0.15 weeks, 95% CI -0.27 to -0.03).

The remaining three trials evaluated different methods of administering a 50 g glucose load. Two small trials compared glucose monomer with glucose polymer testing, with one of these trials including a candy bar group. One trial compared a glucose solution with food. No differences in diagnosis of GDM were found between each comparison. However, in one trial significantly more women in the glucose monomer group screened positive for GDM than women in the candy bar group (80 women, RR 3.49, 95% CI 1.05 to 11.57). The three trials did not report on the primary review outcomes of mode of birth, large-for-gestational age or macrosomia. Overall, women drinking the glucose monomer experienced fewer side effects from testing than women drinking the glucose polymer (two trials, 151 women, RR 2.80, 95% CI 1.10 to 7.13). However, we observed substantial heterogeneity between the trials for this result ($I^2 = 61\%$).

Authors' conclusions

There was insufficient evidence to determine if screening for gestational diabetes, or what types of screening, can improve maternal and infant health outcomes.

PLAIN LANGUAGE SUMMARY

Screening for gestational diabetes and subsequent management for improving maternal and infant health

Gestational diabetes mellitus (GDM) is a form of diabetes that can develop during pregnancy. Having GDM increases the risk of complications during the rest of the pregnancy for the mother and her baby. Women with GDM are more likely to develop pre-eclampsia (high blood pressure and protein in the urine) and require a caesarean section. For the baby, potential problems include the baby growing larger than it normally would, causing difficulties with birth. The baby can also have low blood sugar levels after birth. Although GDM usually resolves following birth, both mother and child are at risk of developing type II diabetes in the future. There is strong evidence that treating GDM is beneficial and improves health outcomes.

It may therefore help if pregnant women are screened to identify as many as possible of those who do have GDM before they have symptoms, such as excessive thirst or urination, or fatigue. The two main approaches to screening are 'universal' where all women undergo a screening test for GDM; and 'selective' where only those women at 'high risk' are screened. The main risk factors are maternal age, high body mass index, family history and cigarette smoking. The different screening strategies used around the world to identify women with GDM include identifying women based on their risk factors, a blood sugar test one hour after a 50 g glucose drink, and random blood sugar measurements. It is however unclear whether screening for GDM leads to better health outcomes and if so, which screening strategy is the most appropriate.

This review included four trials involving 3972 women and their babies, and found that there is little high-quality evidence on the effects of screening for GDM on health outcomes for mothers and their babies. One trial compared risk factor screening with universal screening, and three trials evaluated different methods of administering a 50 g glucose load (the glucose load is used during the screening test). In one trial, women who were in the universal screening group were more likely to be diagnosed with GDM compared with women in the high-risk screening group. However, this trial was not of high quality. Few other differences between groups were shown in any of the trials. Further research is required to see which recommendations for screening practices for GDM are most appropriate.