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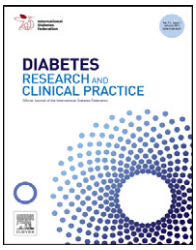

Review

Effectiveness of gestational diabetes treatment: A systematic review with quality of evidence assessment

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ABSTRACT

Aims: To evaluate the effectiveness of gestational diabetes (GDM) treatment compared to usual antenatal care, in the prevention of adverse pregnancy outcomes. Additionally, to assess the quality of the evidence to support GDM treatment according to GRADE guidelines.
Methods: Fourteen electronic databases and reference lists of relevant literature were searched for articles published from inception to February, 2012. Controlled clinical trials comparing GDM treatment to usual antenatal care were included. Independent extraction of articles was done by two authors using predefined data fields.
Results: Seven trials involving 3157 women were included. We found high quality evidence that treatment of GDM reduces macrosomia (RR = 0.47; 95% CI, 0.34–0.65; NNT = 11.4) and large for gestational age birth (RR = 0.57; 95% CI, 0.47–0.71; NNT = 12.2); moderate quality evidence that treatment reduces preeclampsia (RR = 0.61; 95% CI, 0.46–0.81; NNT = 21.0) and hypertensive disorders in pregnancy (RR = 0.64; 95% CI, 0.51–0.81; NNT = 18.1); and low quality evidence that treatment reduces shoulder dystocia (RR = 0.41; 95% CI, 0.22–0.76; NNT = 48.8). No statistically significant reduction was seen for caesarean section. No increase in small for gestational age or preterm birth was found.
Conclusions: Treatment of GDM is effective in reducing macrosomia (high quality evidence), preeclampsia and shoulder dystocia.

Contents

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1. Introduction

Gestational diabetes mellitus (GDM) has been defined as glucose intolerance of variable severity with onset or first recognition during pregnancy [1]. The incidence of GDM has increased markedly in recent years in large part due to the obesity epidemic [2] and will increase further with the adoption of the diagnostic criteria proposed by the International Association of Diabetes in Pregnancy Study Groups (IADPSG) [3], recently adopted by the American Diabetes Association [4].

GDM is generally asymptomatic, usually being detected through systematic screening after the 24th week of pregnancy. Evidence to support screening for GDM is indirect and strongly based on the potential adverse effects of hyperglycemia on pregnancy outcomes [5–8], and on the effectiveness of GDM treatment in preventing these outcomes [9,10]. Two systematic reviews have summarized the evidence available for the effectiveness of GDM treatment [11,12]. The first, performed by Alwan et al., was conducted prior to the publication of the Landon et al. study, a large and well-designed randomized trial [10]. The second, conducted by Horvath et al., did not analyze preeclampsia, a common and clinically important complication of pregnancy, found to be reduced by in recent GDM trials [9,10].

The WHO will soon issue a report on the diagnosis of GDM. To contribute to the evidence-based recommendations of this report, we performed a comprehensive and updated systematic review for the effectiveness of GDM treatment, when compared to usual antenatal care, in the prevention of adverse pregnancy outcomes, including preeclampsia. Additionally, given the importance of documented treatment benefit in the decision to recommend screening, we assessed the quality of the evidence for GDM treatment according to the Grading of Recommendations Assessment, Development and Evaluation (GRADE) Working Group guidelines [13].

2. Methods

We performed this review according to Cochrane Handbook for Systematic Reviews of Intervention [14] and report data following PRISMA statement recommendations [15]. Level of evidence was assessed for each outcome according to GRADE [13]. This review is part of the support material prepared for the WHO Consultation on the Diagnosis and Screening of Gestational Diabetes Mellitus held in Geneva on November 29 to December 1, 2010.

2.1. Eligibility criteria

We included controlled clinical trials comparing GDM treatment to usual antenatal care for pregnant women with a diagnosis of GDM according to the individual study definitions. No restrictions were made regarding language, or publication date or status.

In accordance with the Cochrane Handbook for Systematic Reviews of Interventions [14], we included studies with random allocation or systematic quasi-random allocation, such as alternation. We excluded experimental studies using non-systematic treatment allocation methods such as clinician judgment, subject preference or availability of the intervention.

2.2. Outcomes of interest

Outcomes were extracted according to the study author's definitions, which varied for most outcomes.

Perinatal outcomes were perinatal mortality, macrosomia, large for gestational age (LGA) and small for gestational age (SGA) birth, neonatal intensive care unit (ICU) admission, congenital abnormalities, preterm birth, birth trauma (defined as bone fracture or brachial plexus palsy), shoulder dystocia, neonatal hypoglycemia, hyperbilirubinemia and respiratory distress syndrome.

Maternal outcomes were maternal mortality, preeclampsia and hypertensive disorders in pregnancy, caesarean section and diabetes later in life.

2.3. Literature search and study selection

The search strategy used the following general terms, adapted to each database: ''gestational diabetes'', ''random*'', ''controlled clinical trial'', ''diabet*'' and ''pregnan*''. Terms used for the electronic search are detailed in Supplementary Table 1.

We searched 14 electronic databases (African index medicus; CENTRAL; http://ClinicalTrials.gov register; EMBASE; IMEMR; IMSEAR; IndMED; ISI Web of Knowledge; KoreaMed; LILACS; Panteleimon; PubMed; http://WHO.int trial search; and WPRIM) for articles published from inception up to February 2012.