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ORIGINAL ARTICLE

Neonatal outcomes according to different therapies for gestational diabetes mellitus^{☆,☆☆}

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KEYWORDS

Gestational diabetes mellitus;
Therapeutics;
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Abstract

Objectives: To compare different neonatal outcomes according to the different types of treatments used in the management of gestational diabetes mellitus (GDM).

Methods: This was a retrospective cohort study. The study population comprised pregnant women with GDM treated at a public maternity hospital from July 2010 to August 2014. The study included women aged at least 18 years, with a singleton pregnancy, who met the criteria for GDM. Blood glucose levels, fetal abdominal circumference, body mass index and gestational age were considered for treatment decision-making. The evaluated neonatal outcomes were: type of delivery, prematurity, weight in relation to gestational age, Apgar at 1 and 5 min, and need for intensive care unit (ICU) admission.

Results: The sample consisted of 705 pregnant women. The neonatal outcomes were analyzed based on the treatment received for DMG. Women treated with metformin were less likely to have children who were small for gestational age (95% CI: 0.09–0.66) and more likely to have a newborn adequate for gestational age (95% CI: 1.12–3.94). Those women treated with insulin had a lower chance of having a preterm child (95% CI: 0.02–0.78). The combined treatment with insulin and metformin resulted in higher chance for a neonate to be born large for gestational age (95% CI: 1.14–11.15) and lower chance to be born preterm (95% CI: 0.01–0.71). The type of treatment did not affect the mode of delivery, Apgar score, and ICU admission.

Conclusions: The pediatrician in the delivery room can expect different outcomes for diabetic mothers based on the treatment received.

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^{☆☆} Study carried out at Maternidade Darcy Vargas, Joinville, SC, Brazil.

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PALAVRAS-CHAVE

Diabetes mellitus
gestacional;
Tratamento;
Desfechos

Desfechos neonatais de acordo com diferentes terapêuticas do diabetes mellitus gestacional**Resumo**

Objetivo: Comparar diferentes desfechos neonatais de acordo com as diferentes modalidades de tratamentos do diabetes mellitus gestacional (DMG).

Métodos: Trata-se de uma coorte retrospectiva. A população do estudo foi composta por gestantes com DMG atendidas em uma maternidade pública desde Julho de 2010 a Agosto de 2014. Foram incluídas mulheres com idade mínima de 18 anos, gestação única e com critérios para DMG. Para decisão terapêutica foram considerados glicemias, circunferência abdominal fetal, índice de massa corporal e idade gestacional. Os desfechos neonatais avaliados foram: via de parto, prematuridade, relação do peso com idade gestacional, Apgar no 1º e 5º minuto e necessidade de internação em UTI.

Resultados: A amostra foi composta por 705 gestantes. Os desfechos neonatais foram analisados com base na terapêutica do DMG recebida. Mulheres tratadas com metformina tiveram menor chance de terem filhos pequenos para a idade gestacional (IC 95%: 0,09-0,66) e maior chance de terem um filho adequado para a idade gestacional (IC 95%: 1,12-3,94). A gestante tratada com insulina teve menor chance de ter um filho prematuro (IC 95%: 0,02-0,78). O tratamento feito com a associação de insulina e metformina resultou em maior chance de um recém-nascido grande para a idade gestacional (IC 95%: 1,14-11,15) e menor chance de prematuridade (IC 95%: 0,01-0,71). A modalidade de tratamento não interferiu na via de parto, Apgar e internação em UTI.

Conclusões: O pediatra na sala de parto pode esperar diferentes desfechos para o filho de mãe diabética, com base no tratamento recebido.

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Introduction

According to a Latin American multicentric study, gestational diabetes mellitus (GDM) is the most prevalent metabolic disorder during pregnancy.¹ It occurs in women whose pancreatic function is insufficient to overcome the insulin resistance due to the secretion of diabetogenic hormones by the placenta.² In Brazil, the estimated prevalence of GDM varies from 2.4% to 7.2%.³

Both the mother and baby are affected by GDM, as both have a risk of developing undesirable outcomes.⁴ GDM affects the newborn as it increases the chance of macrosomia, fetal distress, metabolic disorders, hyperbilirubinemia, growth imbalance, and other complications.⁵ In order to minimize the consequences, it is necessary that the disease is diagnosed and treated early, because the outcomes are also related to the onset and duration of glucose intolerance, as well as the severity of GDM.⁵

Insulin has been used as the standard treatment for GDM for a long time. However, researchers have demonstrated the safety of oral hypoglycemic agents, such as metformin, in the initial treatment when diet alone is not enough to achieve the desired glucose levels.^{6,7}

Studies that compared the use of metformin and insulin in the management of GDM demonstrated benefits with the use of oral hypoglycemic agents, such as fewer premature births and cesarean deliveries, reduction in maternal weight gain, and fewer adverse neonatal outcomes, such as macrosomia,^{6,8} hypoglycemia, jaundice, and admission to special neonatal care services.⁹

Thus, the study aimed to compare different neonatal outcomes according to the different treatment modalities used in the management of GDM.

Methods

This was a retrospective cohort study based on the analysis of medical records, carried out from July 2010 to August 2014. The study sample was chosen by convenience; the population comprised pregnant women with GDM treated at a high-risk pregnancy outpatient clinic of a public maternity hospital. The project was approved by the Research Ethics Committee of Hospital Regional Hans Dieter Schmidt, Joinville, SC, Brazil.

The study included all women aged ≥ 18 years with a singleton pregnancy and who met the criteria for GDM.¹⁰ The diagnosis of GDM was made based on the oral glucose tolerance test. The presence of at least one of the three following criteria confirmed the diagnosis: fasting glucose ≥ 92 mg/dL, blood glucose within the first hour ≥ 180 mg/dL, and glucose levels in the second hour ≥ 153 mg/dL.¹¹ Women whose babies had no malformations, who were followed-up at the outpatient clinic, and whose delivered occurred at the hospital were included.

Cases of intrauterine death ($n=3$) were excluded. Of these, two were part of the group treated with a combination of metformin and insulin and one had been treated with diet alone.

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