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The Postnatal Management of Gestational Diabetes

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Abstract

- Diabetes mellitus is growing substantially in our nation. Between its natural progression and effects on other body systems, this epidemic is costing us billions of dollars a year.
- Although gestational diabetes typically resolves after pregnancy, women who have had gestational diabetes in the past have a largely increased risk for the development of diabetes mellitus in the future.
- Several things contribute to the development of GDM and DM: decline in β -cell function, lower adiponectin levels and HgbA1C levels in the third trimester.
- Intervening during the critical time after delivery in women with gestational diabetes, will theoretically help prevent the further progression into diabetes mellitus.
- We can do this by directing prevention practices such as a well-balanced diet, exercise, smoking cessation and the encouragement of breastfeeding.
- Current recommendations for the management of these women appears to be too lenient. With a more concentrated strategy by practitioners and the involvement of educators and dietitians, ideally we can ultimately lessen this costly epidemic.

Keywords: gestational diabetes, diagnosis, complications, risk factors, etiology, pathophysiology, diabetes mellitus, economic burden

Introduction

- As of 2012, 29 million Americans or 9.3% of the US population were diagnosed with diabetes and it has continued to rise.
- Up to 14% of all pregnant women in the US develop gestational diabetes.
- The risk of diabetes mellitus in women with a previous history of gestational diabetes can be as high as 70% within 10 years after delivery.

Statement of the Problem

There are several different theories as to how a woman with gestational diabetes should be managed after delivery. Currently, The American Diabetes Association recommends type two diabetes testing initially following delivery and every three years after. Universally the goal is to prevent the progression of gestational diabetes to diabetes mellitus. In women with gestational diabetes, compared to current recommendations, is a more intense recommendation of postnatal management more effective in the prevention of diabetes mellitus in the future?

Research Question

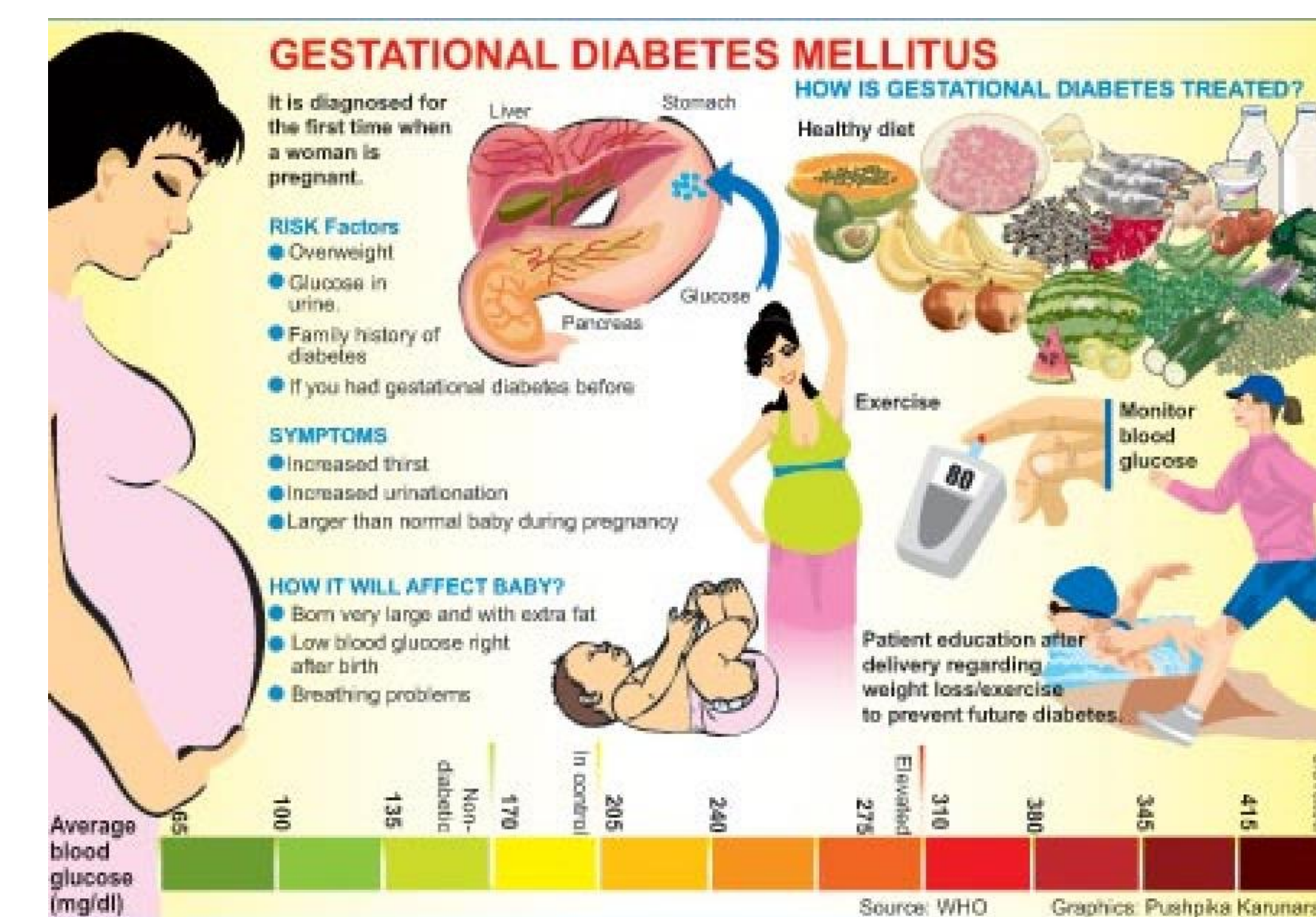
- **Which women are at higher risk for the development of gestational diabetes and how should they be screened?**
- **How should we manage gestational diabetes?**
- **In women with gestational diabetes, is a more intense recommendation compared to current recommendations of postnatal management more effective in the prevention of diabetes mellitus in the future?**

Literature Review

- Examination of several different databases was conducted. Full articles from databases such as: Cochrane, PubMed, ClinicalKey and CINAHL.
- Retnakaran (2010) studied the decline in β -cell function and noted an increasing relationship between an increase in waist line and digression through the groups normal to GDM ($p=0.0337$).
- Research performed by Lacroix (2013) studied the correlation of lower adiponectin levels and the development of GDM (OR 1.14 [95% CI 1.04-1.25] per 1 $\mu\text{g/mL}$ decrease in adiponectin levels).
- HgbA1C levels and their relation to the future progression to DM was studied by Claesson (2016) the optimal cut off point was a level of 36 mmol/mol (5.4%) with the curve (AUC = 0.720, 95% CI: 0.634-0.806, $p < 0.0001$).
- Intervention is beneficial to these women; Koivusalo (2016) studied the correlation between lifestyle modification to lessen weight gain and subsequently halt DM. He found a lesser weight gain in the intervention group (2.5 kg [95% CI 2.1-3.0]) and the control group (3.1 kg [95% CI 2.7-3.5]) for a mean difference of -0.5 kg ([95% CI -1.1 to 0.05] $p = 0.072$, unadjusted; $p = 0.039$).
- Gunderson (2015) researched breastfeeding and studied its benefits to the future health of these women. Women who developed DM who exclusively breastfed ranged from 3.95 per 1,000 person-months (CI, 2.07-5.83) to 8.79 per 1,000 person-months (CI, 5.47 to 12.11) for those who formula fed at 6-9 weeks after delivery. This is almost a 45% increase.
- These sources have been published in the last ten years and include cohort studies, randomized control intervention studies, observational studies, retrospective studies and systematic review and meta-analysis.
- Through thoughtful research and examination, I analyzed the etiology of gestational diabetes/diabetes mellitus, complications of gestational diabetes and commonly used screening processes for the recognition and prevention of diabetes mellitus in the future.

Discussion

- Causes of DM are multifactorial and include both genetic and environmental components.
- Through research we have found that certain components such as obesity, family history of GDM or DM and history of macrosomia place people at greater risk for the development of GDM and subsequently DM.
- Women who are at higher risk can potentially prevent the development of DM with a well balanced diet and at least 150 minutes/week of moderate-intensity exercise.
- The increase in fatty tissue in pregnancy leads to an increase in insulin resistance and a decrease in insulin sensitivity. If β -cells are unable to keep up with these changes, GDM ensues.
- The continual decline in β -cell function after delivery contributes to the future development of DM in the future; often it correlates with weight gain.
- A hgbA1c level of ≥ 36 mmol/mol measured at about the 28th week of pregnancy is linked to a five-fold increased risk of the development of DM in the future, more likely within five years following delivery.
- It is found that lactation improves glucose and lipid metabolism as well as increases insulin sensitivity. This aids in the prevention of DM in the future.
- The timeframe of progression from GDM and DM has been routinely studied. This study concluded that the risk is greatest within the first five years of delivery and subsequently lessens with time.
- Patient education is important to prevent the development of DM for women with a history of GDM. Emphasis is placed on early recognition and intervention as well as continual life-long management. Multiple interventions may be necessary to fully help these patients.



Applicability to Clinical Practice

- There is no hard evidence that one way of screening, managing and following a patient with GDM is better than another.
- Current recommendations to screen for diabetes every three years in women with a history of GDM seems to be inadequate as DM is still on the rise.
- The postpartum period is one of the more critical periods that require management. The goal is to intervene and prevent the development of future DM in these women during this time.
- Early and more frequent screening should be completed.
- Programs aiding in the prevention of diabetes that target blood pressure, weight and blood glucose levels should be implemented as well.
- Encouragement of a healthy diet, moderate-intensity of physical activity, breastfeeding and cessation of smoking if necessary is provided.
- In addition to diabetes screening 6-12 weeks post-delivery I propose screening on an annual basis for the first five years and additional screening if symptoms of diabetes occur before then.

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