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Relations between gestational diabetes and postpartum depressive disorders and symptoms

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Summary

Aims: To assess a relation between gestational diabetes and depression during pregnancy and postpartum period.

Material and Methods: 35 pregnant women with gestational diabetes and no mental disorders according to the structured Mini International Neuropsychiatric Interview (MINI) were included in the study group (age 24–39 years; M=31.7; SD =3.88) and 35 pregnant women without gestational diabetes were included in the control group (age 21–35 years; M = 27.6; SD =2.94).

Results: The mean levels of anxiety and depression on the Hospital Anxiety and Depression Scale (HADS) do not statistically differ between pregnant women with gestational diabetes and pregnant women without gestational diabetes during pregnancy and during the 6 weeks' postpartum period. However, 3 women from the group with gestational diabetes (none from the control group) met the criteria of major depression approximately 6 months postpartum.

Discussion: The paper is a pilot study that deals with an under-investigated topic. The results suggest that women with gestational diabetes are at increased risk of a depression episode during the 6-month period after childbirth. For this reason monitoring depression within this group may help with an early identification of women with subclinical depression who, in the several weeks after childbirth, may suffer from a major depressive episode. However, those findings need confirmation in a more comprehensive study.

diabetes mellitus / gestational diabetes / postpartum depression

INTRODUCTION

There are many studies on the relationship between type 2 diabetes and depression. A meta-analysis indicated that people with diabetes have a 24% increased risk of developing depression than controls without diabetes [1]. Mechanisms of these connections have not been definitely identified yet. Possible depressive patomechanisms which can influence regular glucose levels and insulin level homeostasis include [2]:

- increased sympathetic nervous system (SNS) activity or hypothalamic–pituitary–adrenal function
- SNS-related decreased heart rate variability

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- dysregulation of inflammatory and immune functioning
- increased platelet/endothelial aggregation
- poor treatment compliance and/or unhealthy lifestyle
- cardiotoxic effects of antidepressant medication.

Gestational diabetes is most frequently diagnosed in the second trimester of pregnancy; it occurs in almost 10% of pregnancies [3]. Changes in carbohydrate metabolism which occur for the first time in pregnancy can lead to numerous fetus complications, e.g. infant macrosomia, greater proportion of cesarean deliveries [4], neonatal hypoglycemia and respiratory distress [5]. An appropriate management of diabetes may prevent those complications. However, self-management with gestational diabetes is dependent on the emotional state of the pregnant woman. Surprisingly, there are few clinical studies on the relationship between gestational diabetes and depression, including the relatively frequent postpartum depression. In the study by Katon et al. [6], Gestational diabetes mellitus (GDM) was not associated with increased risk of antenatal depression. However, in a study of 11,024 women [7], pre-pregnancy or gestational diabetes was associated with perinatal depression, including postpartum depression.

The aim of this clinical research was to verify two hypotheses:

- Gestational diabetes is associated with a higher risk of depression and anxiety syndromes during pregnancy and in early postpartum stage.
- Postpartum depression occurs more often in women with gestational diabetes.

METHOD

35 women with gestational diabetes aged between 24 and 39 years (M=31.7; SD =3.88) and 35 pregnant women without gestational diabetes aged between 21 and 35 years (M = 27.6; SD =2.94) took part in the study. 77.1% of the sample were women with university education, 10% had secondary education, 10% vocational education and 2.9% elementary education. Further, 88.7% of the women were married and 2.9% were divorced; 81.4% declared that pregnancy was planned.

The following measures were used in the study:

- Mini International Neuropsychiatric Interview (MINI) [8] – developed on the basis of *International Statistical Classification of Diseases and Related Health Problems* (ICD-10) diagnostic criteria. The interview is divided into 27 modules and includes screening questions for mental disorders.
- Hospital Anxiety and Depression Scale (HADS) [9] consists of 14 close-ended questions of 7 items each, measuring depression and anxiety based on the patient's emotional state over the past week.

The inclusion criterion was a lack of mental disorders according to the MINI. The first survey was carried out during the period between the fifth and eight month of pregnancy. Two women from the group with gestational diabetes and one from the control group were excluded due to diagnosed depression, with onset before pregnancy. Symptoms of depression and anxiety were assessed with HADS at three time points:

1. between the fifth and eight month of pregnancy during regular check-ups
2. in the second week after the birth during a telephone interview
3. in the sixth week after the birth during a telephone interview.

At six to seven months after the birth an additional telephone interview was conducted, covering the depressive items of the MINI, aiming at preliminary diagnosis of depression.

RESULTS

There were no statistically significant differences between mean scores in a *t*-test between the study groups on both HADS anxiety and depression scales at any assessment (see Table 1).

Table 1. The comparison of mean scores in depression and anxiety scales of Hospital Anxiety and Depression Scale (HADS) among pregnant women with and without gestational diabetes.

Assessment	Women with gestational diabetes (n = 35)	Women without gestational diabetes (n = 35)	t	p-value
During pregnancy				
HADS total	M=10.28 SD=6.23	M=11.54 SD=7.40	–0.77	0.528
Depression scale	M=3.94 SD=3.09	M=3.94 SD=3.28	0.00	1.000
Anxiety scale	M=6.34 SD=3.69	M=7.60 SD=4.54	–1.27	0.199
2 weeks after childbirth				
HADS total	M=9.48 SD=6.77	M=8.66 SD=6.65	0.51	0.894
Depression scale	M=3.82 SD=3.84	M=3.40 SD=3.23	0.50	0.512
Anxiety scale	M=5.66 SD=3.75	M=5.26 SD=3.97	0.43	0.575
6 weeks after childbirth				
HADS total	M=8.63 SD=6.07	M=8.20 SD=7.04	0.27	0.621
Depression scale	M=3.34 SD=3.17	M=3.11 SD=3.48	0.29	0.481
Anxiety scale	M=5.28 SD=3.85	M=5.08 SD=4.22	0.21	0.712

A telephone survey with MINI depression items after 6 to 7 months postpartum revealed that 3 out of 35 women with gestational diabetes (8.57%) and none from the group without diabetes met the criteria of major depression. It is noteworthy that all of the depressed women had subclinical symptoms of depression since childbirth that gradually developed into a major depressive episode. Only one of them had begun therapy, and the other two were considering it at the time of the interview.

DISCUSSION

The paper deals with an under-investigated topic, but the pilot study has limited value, not only due to the small study sample. Telephone assessment is less reliable than face-to-face interview, however, it was difficult to arrange a clinical interview with mothers caring for newborns. A telephone interview was accepted by all participants and completed by all of them at 2 and 6 weeks after the childbirth.

The results indicate that a mean level of depression and anxiety does not statistically differ among the pregnant women with gestational diabetes and women without diabetes during the pregnancy and during the first 6 weeks postpartum. The results also suggest that women with gestational diabetes have an increased risk of a depressive episode during the first 6 months postpartum. Monitoring depression in this group may be helpful in early identification of those with subclinical depression (within the first several weeks after childbirth), as they seem to be at higher risk of a major depressive episode within that time period. However, those findings need confirmation in a more comprehensive study.

REFERENCES

1. Nouwen A, Winkley K, Twisk J, Lloyd CE, Peyrot M, Ismail K, et al. Type 2 diabetes mellitus as a risk factor for the onset of depression: a systematic review and meta-analysis. Diabetologia. 2010; 53(12): 2480–2486.
2. Fenton WS, Stover ES. Mood disorders: cardiovascular and diabetes comorbidity. Curr Opin Psychiatry. 2006; 19(4): 421–427.
3. DeSisto CL, Kim SY, Sharma AJ. Prevalence estimates of gestational diabetes mellitus in the United States, Pregnancy Risk Assessment Monitoring System (PRAMS), 2007–2010. Prev Chronic Dis. 2014; 11: 130415.
4. Boghossian NS, Yeung E, Albert PS, et al. Changes in diabetes status between pregnancies and impact on subsequent newborn outcomes. Am J Obstet Gynecol. 2014; 210: 431.e1–14.
5. HAPO Study Cooperative Research Group, Metzger BE, Lowe LP, et al. Hyperglycemia and adverse pregnancy outcomes. N Engl J Med. 2008; 358(19): 1991–2002.
6. Katon JG, Russo J, Gavin AR, Melville JL, Katon WJ. Diabetes and depression in pregnancy: is there an association? J Womens Health. 2011; 20(7): 983–989.
7. Kozhimannil KB, Pereira MA, Harlow BL. association between diabetes and perinatal depression among low-income mothers. JAMA. 2009; 301(8): 842–847.
8. Sheehan DV, Lecrubier Y, Harnett Sheehan K, Janavas J, Weiller E, Bonara L, et al. Reliability and validity of the mini international neuropsychiatric interview (MINI): according to the SCID. Eur Psychiatry. 1997; 12: 232–241.
9. Snaith RP, Zigmound AS. The Hospital Anxiety and Depression Scale. Acta Psychiatr Scand. 1983; 67(6): 361–370.