Journal of Multidisciplinary Healthcare

Dovepress
open access to scientific and medical research

Open Access Full Text Article

RESPONSE TO LETTER

Thoughtful Response on "The Variants in ADIPOQ are Associated with Maternal Circulating Adipokine Profile in Gestational Diabetes Mellitus" [Response to Letter]

Watip Tangjittipokin[1,2], Tassanee Narkdontri[1–3], Nipaporn Teerawattanapong[1–3], Benyapa Thanatummatis[4], Fauchil Wardati[4], Prasert Sunsaneevithayakul[5], Dittakarn Boriboonhirunsarn[5]

[1]Department of Immunology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, 10700, Thailand; [2]Siriraj Center of Research Excellence for Diabetes and Obesity, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, 10700, Thailand; [3]Research Division, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, 10700, Thailand; [4]Graduate Program in Immunology, Department of Immunology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, 10700, Thailand; [5]Department of Obstetrics and Gynaecology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, 10700, Thailand

Correspondence: Watip Tangjittipokin, Department of Immunology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, 10700, Thailand, Tel +66 2-419-6635, Fax +66 2-418-1636, Email watip.tan@mahidol.edu

Dear editor

We are pleased to receive a letter from readers regarding our publication entitled "The Variants in ADIPOQ are Associated with Maternal Circulating Adipokine Profile in Gestational Diabetes Mellitus" (ID: 396238). The purpose of this study was to investigate the association between maternal circulating adipokine levels including adiponectin, adipsin/factor D, lipocalin, and total PAI-1, and resistin and *ADIPOQ* gene polymorphisms (rs266729, rs2241766, and rs1501299) among pregnant women subjects with gestational diabetes mellitus (GDM) and normal glucose tolerance (NGT).

Due to the implications for future research, genome-wide association studies (GWAS) were examined to understand the association between gene polymorphisms and GDM diagnosis/prediction. The genetic determination of GDM that are specific to the Asian population. A significantly elevated future risk of type 2 diabetes is linked to GDM.[1] The meta-analysis demonstrates the role of *ADIPOQ* polymorphism and the risk of GDM among Asian populations.[2] Our study detected polymorphisms that showed the association between *ADIPOQ* +45T/G (rs2241766) and the risk of GDM in Thai pregnant women. However, we did not find an important role for risk factors (age, gestational age, BMI, and blood pressure) in *ADIPOQ* gene polymorphisms. Moreover, a total of 12 gene polymorphisms at ADIPOQ, adipsin, lipocalin-2, PAI-1, resistin, IL-1β, IL-4, IL-17A, TGF-β, IL-10, IL-6, and TNF-α were more investigated.[3] The results of this study highlight the need for genetic testing to predict/prevent GDM and the importance of evaluating adipokine/adipocytokine levels in GDM women.

The current study measured five adipokines levels in pregnant women with GDM and NGT. Serum adiponectin levels were significantly lower in the GDM group than in the NGT group. As suggested, various types of adipokines are related to diabetes mellitus pathogenesis. Asprosin is a type of circulating adipokine that is linked to diabetes mellitus and obesity.[4] Previous studies demonstrated a significant relationship between maternal and fetal plasma asprosin levels, both of which increased in normal-weight and obese women with GDM.[5] Therefore, in future studies, the investigation of asprosin levels will be the candidate for measurement in pregnant women with GDM.

The predictive factors of clinical characteristics (maternal age, pre-pregnancy BMI, and increasing body weight) with gestational diabetes mellitus were not found in our study. However, the predictive genetic polymorphisms of *ADIPOQ* +45T/G (rs2241766) are associated with an increased risk of GDM in Thai pregnant women. Raffael Ott et al show that

Received: 9 February 2023
Accepted: 16 February 2023
Published: 20 February 2023

gestational diabetes and neonatal outcome are correlated with reduced adiponectin gene expression and DNA methylation in adipose tissues and blood cells.[6]

Much evidence shows the study of adiponectin in humans, mice, rats, and zebrafish. For example, the previous study showed that adiponectin deficiency was correlated with glucose intolerance, hyperlipidemia, and fetal overgrowth in pregnant mice with GDM (adiponectin gene knockout, Adipoq$^{-/-}$).[7] It would be more interesting to study *ADIPOQ* gene polymorphisms in *Macaca fascicularis* model.

Disclosure

All authors report no conflicts of interest in this communication.

References

1. Diaz-Santana MV, O'Brien KM, Park Y-M-M, Sandler DP, Weinberg CR. Persistence of risk for type 2 diabetes after gestational diabetes mellitus. *Diabetes Care*. 2022;45(4):864–870. doi:10.2337/dc21-1430
2. Huang LT, Wu SL, Liao X, Ma SJ, Tan HZ. Adiponectin gene polymorphisms and risk of gestational diabetes mellitus: a meta-analysis. *World J Clin Cases*. 2019;7(5):572–584. doi:10.12998/wjcc.v7.i5.572
3. Tangjittipokin W, Thanatummatis B, Wardati F, Narkdontri T, Teerawattanapong N, Boriboonhirunsarn D. The genetic polymorphisms and levels of adipokines and adipocytokines that influence the risk of developing gestational diabetes mellitus in Thai pregnant women. *Gene*. 2023;860:147228. doi:10.1016/j.gene.2023.147228
4. Cheng JX, Yu K. New discovered adipokines associated with the pathogenesis of obesity and type 2 diabetes. *Diabetes Metab Syndr Obes*. 2022;15:2381–2389. doi:10.2147/DMSO.S376163
5. Hoffmann T, Morcos YAT, Janoschek R, et al. Correlation of metabolic characteristics with maternal, fetal and placental asprosin in human pregnancy. *Endocr Connect*. 2022;11(3). doi:10.1530/EC-22-0069
6. Ott R, Stupin JH, Melchior K, et al. Alterations of adiponectin gene expression and DNA methylation in adipose tissues and blood cells are associated with gestational diabetes and neonatal outcome. *Clin Epigenetics*. 2018;10(1):131. doi:10.1186/s13148-018-0567-z
7. Qiao L, Wattez J-S, Lee S, et al. Adiponectin deficiency impairs maternal metabolic adaptation to pregnancy in mice. *Diabetes*. 2017;66(5):1126–1135. doi:10.2337/db16-1096

https://doi.org/10.2147/JMDH.S407901