Association between First Trimester Pregnancy Associated Plasma Protein–A (PAPP-A) and Gestational Diabetes Mellitus Development

Aylin Sert  
*University of Massachusetts Medical School*

Katherine Leung  
*University of Massachusetts Medical School*

Molly E. Waring  
*University of Massachusetts Medical School*

*See next page for additional authors*

Follow this and additional works at: [http://escholarship.umassmed.edu/ssp](http://escholarship.umassmed.edu/ssp)

Part of the Clinical Epidemiology Commons, Endocrinology, Diabetes, and Metabolism Commons, Female Urogenital Diseases and Pregnancy Complications Commons, Maternal and Child Health Commons, Obstetrics and Gynecology Commons, and the Women's Health Commons

Repository Citation

Sert, Aylin; Leung, Katherine; Waring, Molly E.; Rojas-Rodriguez, Raziel; Corvera, Silvia; and Moore Simas, Tiffany A., "Association between First Trimester Pregnancy Associated Plasma Protein–A (PAPP-A) and Gestational Diabetes Mellitus Development" (2016). University of Massachusetts Medical School. Senior Scholars Program. Paper 235.

[http://escholarship.umassmed.edu/ssp/235](http://escholarship.umassmed.edu/ssp/235)
Association between First Trimester Pregnancy Associated Plasma Protein–A (PAPP-A) and Gestational Diabetes Mellitus Development

Authors
Aylin Sert, Katherine Leung, Molly E. Waring, Raziel Rojas-Rodriguez, Silvia Corvera, and Tiffany A. Moore Simas

Keywords
Pregnancy Associated Plasma Protein, PAPP-A, Gestional diabetes mellitus, IGFBP-5, IGF-1

Comments
Aylin Sert participated in this study as a medical student as part of the Senior Scholars research program at the University of Massachusetts Medical School. This poster was presented on Senior Scholars Program Poster Presentation Day at the University of Massachusetts Medical School, Worcester, MA, on April 27, 2016.

Work funded by the Worcester Foundation for Biomedical Research. Support for Dr. Waring provided by NIH grant KL2TR000160.

Rights and Permissions
Copyright is held by the author(s), with all rights reserved.

This poster is available at eScholarship@UMMS: http://escholarship.umassmed.edu/ssp/235
Association between First Trimester Pregnancy Associated Plasma Protein–A (PAPP-A) and Gestational Diabetes Mellitus Development

Aylin Sert, MEd, Katherine Leung, MPH, Molly E. Waring, PhD, Raziel Rojas-Rodriguez, Silvia Corvera, MD, Tiffany A. Moore Simas, MD MPH MEd

Background

◆ Affecting 5-6% of pregnancies, Gestational Diabetes (GDM) is a common pregnancy complication with significant cardiometabolic consequences for mothers and offspring.

◆ Previous research from our group suggests that adipose tissue IGFBP-5 and the metalloprotease PAPP-A (Pregnancy Associated Plasma Protein-A) may play a mechanistic role in GDM development by regulating functional IGF-1 levels and lipid storage and metabolism.

Methods

◆ Retrospective cohort from EMR data of 1,251 women delivering singleton gestations during the years 2009, 2010, 2014 and 2015

◆ PAPP-A was measured in the first trimester (11-14 weeks) as part of routine aneuploidy screen, and reported as quartiles of multiples of the mean (MoM) based on gestational age and adjusted for maternal weight and race/ethnicity.

◆ GDM diagnosis was based on a standard 2-step protocol (~24-28 weeks; failed 50g 1hr glucose screen followed by ≥2 abnormal values per Carpenter-Coustan criteria on 100g 3hr glucose tolerance test).

◆ Crude and multivariable-adjusted logistic regression models estimated the association between PAPP-A MoM quartiles and GDM.

Results

Figure. Incident gestational diabetes mellitus (GDM) in relation to first-trimester PAPP-A, pre-pregnancy BMI, and age, OR (95% CI)

◆ 7.6% (n=95) of women developed GDM.

◆ Median PAPP-A MoM levels were 0.7 (interquartile range [IQR]=0.5-1.0) among women with GDM & 0.9 [IQR=0.6-1.3] among women who did not develop GDM.

◆ Adjusting for pre-pregnancy BMI, nuchal transluency, crown rump length, smoking status, and parity, women with PAPP-A MoM in 2nd, 3rd, and 4th quartiles had 52% (OR=0.48, 95%CI=0.26-0.88), 45% (OR=0.55, 95%CI=0.30-0.99) and 73% (OR=0.27, 95%CI=0.13-0.53) lower odds of developing GDM vs women in the 1st quartile.

Objective

To examine the relationship between circulating PAPP-A levels and GDM development. We hypothesized that high first trimester PAPP-A levels would be associated with decreased GDM risk.

Conclusions

◆ Higher PAPP-A MoM levels were associated with lower GDM risk.

◆ Future studies should assess whether higher PAPP-A levels are associated with enhanced IGF-1 signaling and improved pregnancy metabolic homeostasis.

Acknowledgements

Work funded by the Worcester Foundation for Biomedical Research. Support for Dr. Waring provided by NIH grant KL2TR000160.