

LETTERS

EARLY LIFE ORIGINS OF ADULT DISEASE AND MATERNAL SMOKING DURING PREGNANCY

Johnson and Schoeni examined the relation between low birth weight (LBW) and childhood family socioeconomic disadvantage and disease onset in adulthood.¹ They report that LBW independently predicted asthma, hypertension, diabetes, and cardiovascular diseases by age 50 years. Disease prevalence was influenced also by childhood socioeconomic (SES) status. They conclude that these findings are consistent with the fetal origins hypothesis, which posits that adverse in utero influences increases the risk of disease later in life. We would like to stress the likely mediating effect of maternal smoking during pregnancy. In the study by Johnson and Schoeni, the smoking variable, parental smoking, increased disease risk in adulthood in univariate but not in multivariate analyses probably because it lacks specification (i.e., it did not distinguish which parent was a smoker and whether the mother smoked or not during her pregnancy).

Maternal smoking during pregnancy is known to be associated with negative prenatal and birth consequences and LBW.^{2,3} Maternal smoking during pregnancy is an independent

risk factor for obesity,⁴⁻⁶ type 2 diabetes mellitus,⁴ high blood pressure,⁷ and smoking,² all known risk factors for cardiovascular disorders. Intrauterine exposure to maternal smoking is also associated with asthma even in offspring of nonsmoking mothers but who themselves were exposed in utero to maternal smoking,⁸ suggesting that smoking may induce genotoxicity. Moreover, maternal smoking during pregnancy dose-dependently increases the likelihood of psychiatric disorders and all cause mortality up to age 20 years.⁹ In addition, smoking, and in particular smoking during pregnancy, is known to be associated with low SES.¹⁰

Maternal smoking during pregnancy is the most important modifiable adverse fetal exposure risk.³ It is likely to mediate a significant part of the relation between LBW and disease onset in adulthood that was reported by Johnson and Schoeni.¹ Full eradication of smoking among pregnant women may reduce the onset of several diseases in the next generation. ■

Henri-Jean Aubin, MD, PhD

Ivan Berlin, MD, PhD

Michel Reynaud, MD, PhD

2. Agrawal A, Scherrer JF, Grant JD, et al. The effects of maternal smoking during pregnancy on offspring outcomes. *Prev Med*. 2010;50(1-2):13-18.
3. U.S.-Department-of-Health-and-Human-Services. *Women and Smoking: A Report of the Surgeon General*. Washington, DC: Public Health Service, Centers for Disease Control and Prevention; 2001.
4. Montgomery SM, Ekblom A. Smoking during pregnancy and diabetes mellitus in a British longitudinal birth cohort. *BMJ*. 2002;324(7328):26-27.
5. Ino T, Shibuya T, Saito K, Ohtani T. Effects of maternal smoking during pregnancy on body composition in offspring. *Pediatr Int*. 2011;53(6):851-857.
6. Oken E, Levitan EB, Gillman MW. Maternal smoking during pregnancy and child overweight: systematic review and meta-analysis. *Int J Obes (Lond)*. 2008;32(2):201-210.
7. Lawlor DA, Najman JM, Sterne J, Williams GM, Ebrahim S, Davey Smith G. Associations of parental, birth, and early life characteristics with systolic blood pressure at 5 years of age: findings from the Mater-University study of pregnancy and its outcomes. *Circulation*. 2004;110(16):2417-2423.
8. Li YF, Langholz B, Salam MT, Gilliland FD. Maternal and grandmaternal smoking patterns are associated with early childhood asthma. *Chest*. 2005;127(4):1232-1241.
9. Ekblad M, Gissler M, Lehtonen L, Korkeila J. Prenatal smoking exposure and the risk of psychiatric morbidity into young adulthood. *Arch Gen Psychiatry*. 2010;67(8):841-849.
10. Barbeau EM, Krieger N, Soobader MJ. Working class matters: socioeconomic disadvantage, race/ethnicity, gender, and smoking in NHIS 2000. *Am J Public Health*. 2004;94(2):269-278.

Letters to the editor referring to a recent Journal article are encouraged up to 3 months after the article's appearance. By submitting a letter to the editor, the author gives permission for its publication in the Journal. Letters should not duplicate material being published or submitted elsewhere. The editors reserve the right to edit and abridge letters and to publish responses.

Text is limited to 400 words and 10 references. Submit online at www.editorialmanager.com/ajph for immediate Web posting, or at ajph.edmgr.com for later print publication. Online responses are automatically considered for print publication. Queries should be addressed to the Editor-in-Chief, Mary E. Northridge, PhD, MPH, at men6@nyu.edu.

About the Authors

Henri-Jean Aubin and Michel Reynaud are with Hôpital Paul Brousse, Univ Paris-Sud, INSERM U669, Villejuif, France. Ivan Berlin is with Hôpital Pitié-Salpêtrière, Univ PMC, Paris, France.

Correspondence should be sent to Henri-Jean Aubin, Centre d'Enseignement, de Recherche et de Traitement des Addictions, Hôpital Paul Brousse, 12 Avenue PV Couturier, 94804 Villejuif, France (e-mail: henri-jean.aubin@pbr.aphp.fr). Reprints can be ordered at <http://www.ajph.org> by clicking the "Reprints" link.

This letter was accepted January 6, 2012.
doi:10.2105/AJPH.2012.300650

Contributors

All authors discussed content and contributed to the writing of the letter.

References

1. Johnson RC, Schoeni RF. Early-life origins of adult disease: national longitudinal population-based study of the United States. *Am J Public Health*. 2011;101(12):2317-2324.