Reviewer's report

Title: Association between the plasma/whole blood lead ratio and history of spontaneous abortion: a nested cross-sectional study

Version: 1 Date: 18 April 2007
Reviewer: Ina Santos

Reviewer's report:

General
April 17, 2007
Dear Editor,

Thank you very much for the opportunity to collaborate with the respectful BMC Pregnancy and Childbirth journal through the revision of the paper entitled “Association between the plasma/whole blood lead ratio and history of spontaneous abortion: a nested cross-sectional study” submitted to publication.

The authors present the results of a cross-sectional study nested in two cohorts of pregnant women, conducted in Mexico City, aiming to assess the association between plasma/whole blood Pb ratio and risk of miscarriage. The research question posed by the authors is very interesting and addresses a new step for comprehension of the effect of lead toxicity over the results of human pregnancy. They conducted a careful and appropriate analysis of the data set and attended the relevant standards for reporting of scientific studies. They also addressed at the manuscript the limitations of the study and discussed their implications over the observed results.

There is, however, a severe limitation that jeopardizes the biological plausibility of the results. Since the conclusion of the analyses was that high plasma/whole blood Pb ratio was associated with increased risk of miscarriage in past pregnancies and considering that maternal exposure to Pb is cumulative over life, it is hard to understand how the current pregnancy was not affected by plasma lead concentration. It would be more methodologically sound if the study had included all the women who had had lead levels measured when enrolled in the cohorts (as a sub-sample of the main cohort), and if the outcome had been ascertained for the current pregnancy (incident abortions). It would have not only increased sample size from 207 to 312 pregnant women (since primigravidae would not be excluded), but also strengthened plausibility of the study. Trying to understand reasons that conducted the authors to the decision they made, it is possible that the number of cohort women who presented an abortion during the follow-up period was small, what would impair study power to detect an existing association. Even so, the cohort design would have had methodological advantages. Some of the criteria of causality, like temporality and prevention of information bias, could have been guaranteed. And most importantly, in terms of causality, lack of power would be more scientifically acceptable than lack of plausibility, turning it more reasonable to recommend the study publication in the cohort than in the cross-sectional design.

As a conclusion, in my opinion, although the study subject is highly relevant in terms of public health, especially regarding the health of exposed workers, and despite the appropriate description of the study and well-conducted analyses of the data set, the methodological limitation derived from the sample selection criterion above discussed unfortunately prevents the recommendation for manuscript publication.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

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Discretionary Revisions (which the author can choose to ignore)
What next?: Reject because scientifically unsound

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests.