Reviewer's report

Title: Effect of maternal manganese exposure on birth weight: a birth cohort study

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Reviewer: Sylvaine Cordier

Reviewer's report:

The authors present the analysis of the association between maternal and cord blood manganese (Mn) levels and birth weight in a sample of 331 births from the mother-child cohort (MOCEH) in Korea. They report associations of low and high Mn maternal levels with low birthweight, according to a U-shaped relationship. These results are in agreement with some previous studies.

The topic and the results of this study are interesting but the manuscript lacks details in several places and includes some inconsistencies.

Major compulsory revisions

Abstract
1- The definition of study subjects is not completely reported: only term liveborn singletons without « severe complications » were selected.

2- The wording of the conclusions should be softened: the « adverse effect » of Mn is not demonstrated, and does not « represent the essential role of Mn… ».

Introduction
3- 3rd § lines 5-7: The two previous publications reported as having limited value because « conducted in a population with a high level of environmental exposure… » report in fact mean blood levels very comparable to the present study: 19µg/L in Vigeh et al., 24µg/L in Zota et al. versus 22.5µg/L in the present study.

Methods
4- whereas the MOCEH cohort includes 953 mother-infant pairs, only 352 were included in the present analysis. The reasons for exclusion (and corresponding numbers) should be given and the representativity discussed.

5- birth weight has been chosen as marker of fetal growth whereas other studies have also studied birth length, ponderal index or intrauterine growth restriction. Inclusion of these outcomes in the present analysis would widen the evaluation of potential consequences of Mn exposure.

6- low birth weight is not defined

7- maternal diseases during pregnancy should be included among potential
confounders
8- it is not clear whether Mn analysis was performed on whole blood, plasma or serum.

Data Analysis:
9. the treatment of outliers is not detailed
10. mention a second degree polynomial rather than a quadratic term

Discussion
11- the first paragraph of the discussion looks more like an introduction
12- the 3 sentences of the second paragraph carry the same message
13- 3rd paragraph, line 8 : replace « dividing line » by « point of inflection »
14- except for the study in Shangai (that reports cord serum levels), the comparison studies have very similar levels of exposure (see comment about Introduction), contrary to what is stated.
15- Table 3 Distribution of blood manganese... should be Table 1
16- Figure 1: legend for vertical axis should be "odds ratio of LOW birth weight"

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, and I have assessed the statistics in my report.

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