Reviewer's report

Title: A preliminary study of mercury exposure and blood pressure in the Brazilian Amazon

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Reviewer: Erling B B Pedersen

Reviewer's report:

General
The purpose of the study was to analyse the relationship between blood pressure and mercury content in the body of people living in the Brazilian Amazon along the Tapajós River. The study demonstrated an association between blood pressure and mercury content in the body evaluated by measurement of mercury in hair. The paper is an interesting contribution to the ongoing scientific discussion about the cardiovascular toxicity of mercury.

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

1. The results are not based on a random sample of the population studied. A “convenience” sample has been used, and recruitment into the study was carried out using house-to-house surveys and at village meetings. Inclusion and exclusion criteria are not given. Thus, the sample of the study subjects might not be representative, and the risk of bias is considerable. This is a limitation of the study and should be mentioned clearly in the discussion.

2. Blood pressure level is estimated by a casual blood pressure measurement. However, the reliability of a single measurement is rather low. Several measurements are demanded to clarify the blood pressure level, and 24 hour ambulatory blood pressure measurement is far the best method to obtain reliable determination of a person's blood pressure. The circumstances of blood pressure measurements should be more clearly presented and the limitation of casual blood pressure measurement should be clearly indicated in the discussion.

3. Sodium intake is an important factor in the evaluation of blood pressure level. Some populations in South America have a low intake of sodium, a high intake of potassium and their blood pressure level is lower than in people from Europe and USA and Canada due to a difference lifestyle regarding diet. A measurement of 24 hour urinary sodium output would have given information about the sodium balance. The study would be improved if these data are available and can be included in the analysis. If these data are not available, it is another limitation which should be mentioned in the discussion.

4. The authors have used a limit of systolic hypertension at 130 mmHg, and they use this level in their analysis. However, the usual limit for casual blood pressure is 140 mmHg, which the authors also use for discussion. The analysis of the present results should be done with the international recommended level for casual blood pressure which is 140 mmHg systolic.

5. The conclusion of the abstract is out of focus. Only the first sentence “The findings of this preliminary study add further support for Hg cardiovascular toxicity” is relevant.

6. The introduction is rather long and could be shortened. Focus of the paper is mercury and blood pressure. It is the authors’ hypothesis that the people around Tapajós River consume fish with a high content of mercury due to pollution. However, no relationship was demonstrated between fish intake
and blood pressure, and no information is given about mercury content in the fish from the Tapajós River. Consequently the introduction and discussion regarding the influence of the consumed fish on blood pressure and mercury content in the blood is speculative and not supported by data given in the paper.

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

1 Table 2. Both SD and range are used for description of the peripheral tendency in the study sample. One of the parameters is sufficient.

2 Table 3 can be omitted. The three data set could be given in the text.

Discretionary Revisions (which the author can choose to ignore)

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

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