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Lead and pregnancy

Dear Editor

We read Dr. Disha's article published in the January issue of the *Taiwanese Journal of Obstetrics and Gynecology* with interest [1]. The authors performed a cross sectional study to compare the blood lead level in women with and without preeclampsia and found the mean blood lead level of preeclamptic women was significantly higher than that of controls (3.42 ± 2.18 vs. 2.38 ± 2.43 $\mu\text{g/dl}$, $p = 0.0132$), suggesting that higher blood lead level is associated with an increased risk of preeclampsia and recommending that pregnant women need consultation for lifestyle modification to prevent complication [1]. We totally agree with the authors' conclusion and suggestion. However, some questions are raised and we hope to see the authors' response.

First, as shown by authors, many demographic variables may be significantly different between women with and without preeclampsia [1]. For example, passive smoking was significantly higher in the preeclamptic women (72.6% vs. 17.4%) [1]. In addition, vitamin intake may also be significantly different between two groups (32.4% vs. 69.5%) [1]. However, the authors did not calculate the statistical difference between two groups. Active and/or passive smoking (second-hand or involuntary smoking) was reported to have worse pregnancy outcomes, not only for mother but also for fetus or newborns [2]. Vitamin supplement use might influence the serum levels of some heavy metals and/or trace inorganic or essential elements in pregnant women, which might also affect pregnancy outcomes [3]. This difference might be import to become a confounding factor in their study. Multivariate analysis for all valuable variables might be needed to clarify the role of blood level of lead on the impact of preeclampsia.

Second, the relationship between lead and preeclampsia has been proposed by authors, including epidemiology (a causal relationship between lead exposure and hypertension), and pathophysiology (dysregulation of the renin-angiotensin-aldosterone system, and vasoconstriction by either direct or indirect effect, such as increased catecholamine, endothelin, thromboxane, increased reactive oxygen species and others) [1]. There is no doubt that endothelial cell dysfunction is strongly correlated with occurrence of preeclampsia [4]. As shown by authors, both exposure dosage and exposure duration was important to have detrimental effect on various organ systems. However, the current study only provide the exposure dosage.

Third, the range of serum lead levels might be too wide. As shown by authors, in controls, the range was between 0.16 and 10.12 $\mu\text{g/dl}$, but this ranged from 1.28 to 8.6 $\mu\text{g/dl}$ in the preeclamptic women. One study showed the mean blood lead level was 8.04 ± 3.4 $\mu\text{g/dl}$

and 6.24 ± 1.74 $\mu\text{g/dl}$ in women with and without preeclampsia, respectively [5]. It is interesting to raise the question-what is the normal range of pregnant women, although both studies showed the same conclusion to find that preeclamptic women had a higher serum level of lead than normal did. A recent meta-analysis recommended women with concentrations higher than 5 $\mu\text{g/dl}$ should be actively monitored for preeclampsia and be advised to take prophylactic calcium supplementation [6]. Could the authors kindly respond to the above-mentioned questions? Thank you.

Competing interests

The authors declare that they have no competing interests.

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