

Editorial

Acceptable Level of Blood Lead Induces Pregnancy Hypertension

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Pregnancy is a unique period of woman's life with highly sensitivity to toxic substances, such as heavy metals. Pregnancy Induced Hypertension (PIH) is one of the common and important gestational complications that pose a critical risk of morbidity and mortality for mother and fetus. Although we have not fully understood the etiology(s) of PIH, environmental factors may play a significant role of disease occurrence. One of the suspected environmental factors is lead, a well-known toxic metal.

The Industrial Revolution increased women exposure to lead, which has induced the risk of many adverse health outcomes, such as pregnancy hypertension. Although the prevalence of high-level of lead exposure has continued to decline in the recent decades, chronically exposure to the low-level remains a public health issue. In addition to occupational and environmental exposure to lead, pregnant woman can expose to lead via an internal (endogenous) source, because accumulated lead in pregnant women's bones releases quickly to blood stream and causes a higher concentrations of blood lead during gestation, which can elevate the risk of toxicities in mother and fetus.

Our understandings of lead toxicities have substantially advanced over the past decades. Contemporary, many of clinical adverse effect of high-level lead exposure become rare. Instead, we have found many

adverse effects at subclinical levels that induced by the relatively lower concentrations of blood lead. Recently, the acceptable levels of blood lead for pregnant women decreased from <10 to <5 µg/dL. However, we are not sure if these levels of blood lead can be safe for pregnant women or not. Our previous studies showed lead, at lower than the currently acceptable levels, inducing pregnancy blood pressure and increasing the risk of PIH. Thus, a critical question is "to how extend we can believe safety of 'acceptable' level of blood lead for pregnancy women?"

Although, low blood leads increase the risk of PIH, we do not know the magnitude and mechanisms of induction. Therefore, consideration of the following items seems to be necessary. First, since no level of blood lead has been proven safe for PIH yet, we need more epidemiological studies to find 'safe level' for pregnant women. Second, due to the subclinical effect of lead on blood pressure may add up to other risk factors to develop clinical symptoms (i.e., PIH), we should shift the future studies to reveal subclinical symptoms (i.e., increasing of systolic and/or diastolic blood pressure vs. hypertension). Third, until finding the 'safe' level of blood lead with reappraisal of the accepted blood lead levels, we should warn female of childbearing age to avoid lead exposure, even at relatively low concentrations. Finally, we should consider about many of female workers encounter to high levels of lead in the related industries, both in developed and developing countries.

In short, PIH is one of the common types of hypertension that involves relatively younger people compare to the other type of hypertension. In addition, pregnancy is a sensitive period of human life with a higher sensitivity to toxic substances, such as lead. It means a safe concentration of blood lead for general population could induce harm in pregnant. Thus, it is a 'hot topic' for epidemiological studies to find a safe level of blood lead for pregnant women.