

## Early pregnancy trace metal exposure may affect the red blood cells concentrations

Mohsen Vigehe<sup>1,2</sup>, Kazuhito Yokoyama<sup>2</sup>, Takehisa Matsukawa<sup>2</sup>, Atsuko Shinohara<sup>3</sup> and Katsumi Ohtani<sup>1</sup>

<sup>1</sup>Hazard assessment and Epidemiology Research Group, National Institute of Occupational Safety and Health, Japan

<sup>2</sup>Department of Epidemiology and Environmental Health, Juntendo University Faculty of Medicine, Japan

<sup>3</sup>Research Institute for Cultural Studies, Seisen University, Japan

**Introduction:** Human body needs some of essential metal for synthesis and functioning of red blood cells (RBC). However, RBC is the main target for many toxic metals which may lead to anemia. After sharply decreasing in many toxic metal exposures during the past decades, it is essential to study these elements effect, at low-levels, on pregnancy outcomes.

**Methods:** To investigate the concentration of metals in pregnant women, we have conducted a longitudinal study from early pregnancy to the delivery. Pregnant women (n=364) who referred to hospitals for prenatal care at the first trimester of pregnancy were asked to participate in the survey. Maternal whole blood samples, one for each pregnancy trimesters (i.e., 3 times), and the umbilical cord blood samples, at the time of delivery, were collected and subjected to ICP-MS analysis for measurement of metal concentrations.

**Results:** The first trimester blood concentration of arsenic was significantly correlated with RBC counts in the first, second, and third trimesters of pregnancy ( $r=0.312, 0.424, \text{ and } 0.183$ , respectively;  $p<0.05$ ). Inversely, maternal blood level of molybdenum in the first trimester of pregnancy was significantly correlated with decrease in RBC counts in the first, second, and third trimesters ( $r=-0.182, -0.149, \text{ and } -0.193$ , respectively;  $p<0.05$ ). The study failed to find significant correlation between blood lead and anemia in all trimesters at mean level of  $<5\mu\text{g/dL}$ .

**Conclusions:** The results of present study show that the first trimester of pregnancy blood arsenic may reduce and molybdenum may induce the risk of anemia.

### Biography

Mohsen Vigehe obtained Ph.D. degree in Social Medicine, the University of Tokyo, Japan, and completed medical doctorate course in Faculty of Medicine, Tehran University, Iran. He had been working for Tehran University of Medical Sciences for several years and currently is scientific staff of the National Institute of Occupational Safety and Health, Japan. He has collaboration with several local and overseas universities/institute and dose peer review of some journals. Dr. Vigehe's research interest is 'reproductive toxicology' and 'urban air pollution'.

mohsen1346@yahoo.com