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Increased blood Lead in early pregnancy may adversely affect child development

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Purpose: To investigate the effects of lead and other metals on the pregnancy outcomes and mental/motor development in children, we have conducted a longitudinal study in Tehran, Iran.

Methods: Apparently healthy pregnant women who referred to the research hospitals for prenatal care at first trimester of pregnancy (gestational age of 8-12 week) were asked to participate in the present survey. Mothers' blood (one for each pregnancy trimester, i.e., 3 times) and the umbilical cord blood samples were collected and subjected to ICP-MS analysis for measurement of metal concentrations. We invited the mothers and their children when the children were at 18 to 36 months of age. Early Child Development Inventory was used to assess the development of children. The developmental inventory included 60 questions cover seven different development areas.

Results: Mean lead levels for 1st, 2nd and 3rd trimesters in mother's blood and umbilical cord blood were 38.5, 34.5, 37.7, and 28.7μg/L, respectively. The sum of the developmental score was inversely related to the mother blood lead concentrations at first trimester ($r = -0.193$, $p < 0.05$). Less than 5% of the children had the mean developmental score lower than cutoff value; they did less well than children who were younger after adjusted for children's age and sex. Language comprehensive, gross motor, and self help score were at higher relationships with the mother blood lead levels ($r = -0.285$, -0.230, and -0.206, respectively, p value < 0.05).

Conclusions: Increased blood lead in early pregnancy period may adversely affect children's developmental capacity at levels that believed to be safe.

Biography

Dr. Mohsen Vigeh obtained PhD degree in Social Medicine, the University of Tokyo, Japan, and completed medical doctorate course in Faculty of Medicine, Tehran University, Iran. He had been worked 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 for some journals. Dr. Vigeh research interest is 'reproductive toxicology' and 'urban air pollution'.

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