Arsenic Contamination in Drinking Water Is Associated with Dyslipidemia in Pregnancy

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Abstract : Background and Aims: Arsenic in drinking water is a global environmental health problem, and the exposure may increase dyslipidemia and cerebrovascular diseases mortalities, most likely through causing atherosclerosis. However, the mechanism of lipid metabolism, atherosclerosis formation, arsenic exposure and impact in pregnancy is still unclear. Recent epidemiological evidences indicate close association between inorganic arsenic exposure via drinking water and Dyslipidemia. However, the exact mechanism of this arsenic-mediated increase in atherosclerosis risk factors remains enigmatic. We explore the association of the effect of arsenic on serum lipid profile in pregnant subjects. Methods: A total 200 pregnant mother screened in this study from arsenic exposed area. Our study group included 100 exposed subjects were cases and 100 Non exposed healthy pregnant were controls requited by a cross-sectional study. Clinical and anthropometric measurements were done by standard techniques. Lipidemic status was assessed by enzymatic endpoint method. Urinary As was measured by inductively coupled plasma-mass spectrometry and adjusted with specific gravity and Arsenic exposure was assessed by the level of urinary arsenic level > 100 μg/L was categorized as arsenic exposed and < 100 μg/L were categorized as non-exposed. Multivariate logistic regression and Student's t - test was used for statistical analysis. Results: Systolic and diastolic blood pressure both were significantly higher in the Arsenic exposed pregnant subjects compared to the Non-exposed group (p<0.001). Arsenic exposed subjects had 2 times higher chance of developing hypertensive pregnancy (Odds Ratio 2.2). In parallel to the findings in Ar exposed subjects showed significantly higher proportion of triglyceride and total cholesterol and low density of lipo protein when compare to non- arsenic exposed pregnant subjects. Significant correlation of urinary arsenic level was also found with SBP, DBP, TG, T chol and serum LDL-Cholesterol. On multivariate logistic regression showed urinary arsenic had a positive association with DBP, SBP, Triglyceride and LDL-c. Conclusion: In conclusion, arsenic exposure may induce dyslipidemia like atherosclerosis through modifying reverse cholesterol transport in cholesterol metabolism. For decreasing atherosclerosis related mortality associated with arsenic, preventing exposure from environmental sources in early life is an important element.
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