Increased risk of pre-malignant cervical lesions & high grade HPV Infection among Women chronically exposed to high level of Arsenic through ground-water in West Bengal, India

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Objective: Inhabitants of several districts in West Bengal state of India are facing severe Arsenic contamination of groundwater. They are under the threat of Arsenic related diseases including cancers of Lung, Bladder, and Skin. Since cervical cancer is the most common cancer among female population of West Bengal and there were hospital reports of increased number of patients from arsenic districts, it was considered necessary to investigate the role of arsenic in increasing the risk of cervical cancer among chronically exposed women. Therefore, cervical screening was conducted among asymptomatic women living in high arsenic and arsenic-free villages in West Bengal state.

Method: The prevalence of cervical cancer, its pre-cancer lesions (CIN I-III) and high grade HPV infection was studied by conducting community based cervical screening among asymptomatic women (30-64 yrs) from High arsenic (100 - 300µg/l) and arsenic-free (below 25µg/l) villages using VIA and VILI followed by Colposcopic examination. A punch biopsy of suspected lesion was taken for histological evaluation. Presence of high grade HPV was determined using hybrid capture assay (HC-II) from screen positive cases followed by HPV genotyping

Results: Of the 1435 women screened from high arsenic villages, 148 were screened positive with 43 CINs (3.0%), 3 invasive carcinoma cervix (0.3%). Of the 1286 women from Arsenic free villages, 95 were screened positive with 21 CINs (1.6%) and 1 invasive cancer (0.13%). Prevalence of high grade HPV infection is 12.16% in High Arsenic area compared to 8.4% from arsenic-free area. 21.7% of early lesions from high arsenic area were CIN II/III whereas low arsenic area showed no high grade CIN II/III. Detailed results of the study indicating increased risk of pre-malignant cervical lesions and high grade HPV infections among women chronically exposed to high arsenic level will be presented.