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Chronic arsenic toxicity among patients of Chronic Kidney Disease of unknown etiology (CKDu) in North Central Province, Sri Lanka

In recent years, a significant increase in patients of Chronic Kidney Disease of unknown etiology (CKDu) has been observed in some parts of Sri Lanka, especially in North Central Province. Uniqueness of this disease is that its victims do not share the same history as other kidney patients who have had it either due to diabetes, high blood pressure or glomerulonephritis. A reconnaissance survey was conducted in the 12 CKDu endemic villages, followed by a door-to-door visit for clinical assessment and biological sample collection of CKDu patients among the villagers (n=125). Control group (n=180) were selected from those individuals from the study area who had not been diagnosed to have CKDu and some of them were selected randomly from family members of CKDu patients. Hair and urine samples were collected from both CKDu patients and controls.

The clinical assessment of patients and some individuals from control group had shown dermal manifestations of chronic arsenic (As) poisoning (CAP). 44.8% and 39.2%of the CKDu patients and 18.8% and 14.4% of the control group had hyper pigmentation of palms and soles respectively. 23.2% of the CKDu patients and 10.5% of the controls have shown keratosis of palms. In soles it was 17.6% and 8.3% respectively. Hair and urine samples from CKDu patients have shown presence of high amounts of As which exceed the toxic level. Generalized body weakness, headache, burning of eyes, nausea, mild to moderate hepatomegaly, epigastric pain and parasthesia, the other clinical symptoms of CAP were also observed among a significant proportion of CKDu patients in the sample but to a lesser extent among the individuals of the control group.

Findings of the present study reveal that 52% of the CKDu patients and 14.4% of the subjects in the control group have shown symptoms required to be diagnosed CAP. Percentage CKDu patients who fulfill the requirements for CAP were greater than that among the control group. Observable CAP symptoms among individuals of the control group indicate that being inhabitants of the same area, consuming the same As-contaminated water, majority of the population has already bio-accumulated arsenic, nevertheless to a lesser extent than those who have been diagnosed as CKDu patients. This also implies that these individuals are of high risk in acquiring CKDu in the near future.