

Possible link of Chronic arsenic toxicity with Chronic Kidney Disease of unknown etiology in Sri Lanka

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Abstract

In recent years a significant increase in number of patients of Chronic Kidney Disease of unknown etiology (CKDu) has been observed in some parts of Sri Lanka, especially in the North Central Province. A case control study has been performed with the intention of determining the prevalence of clinical features of Chronic Arsenic Toxicity (CAT) among CKDu patients in Padavi Sripura divisional secretarial area in Trincomalee District, Sri Lanka. Clinical assessment were done in diagnosed CKDu patients (n=125) and non-CKDu persons (n=180) as the control group. Hair and urine samples collected from both CKDu patients and controls were analyzed for presence of arsenic using Atomic Absorption Spectrometry equipped with Hydride generator (HG-AAS). The results revealed that 68% of CKDu patients and 28% of the controls had urine arsenic levels above 21 µg/g creatinine, which is considered the point of threshold for manifestation of early renal changes that can be developed in to chronic kidney disease. Among the CKDu patients, 48% and 17.4% of the subjects in the control group have fulfilled the criteria to be diagnosed CAT, indicating the potential link between CAT and CKDu. Agrochemicals could be the possible source for this contamination of arsenic since no reported work is available to indicate the presence of arsenic in the bedrocks of Sri Lanka.

Key words: Chronic kidney disease, arsenic, agrochemicals, Sri Lanka

01.Introduction

1.1 Chronic Kidney Disease of unknown etiology (CKDu)

During the last two decades, noteworthy numbers of patients with Chronic Kidney Disease were reported from Rajarata area of Sri Lanka. Rajarata was one of the three administrative divisions of ancient Sri Lanka and it was the epicentre of Sinhala Buddhist civilization where two ancient capitals, Anuradhapura and Polonnaruwa are located. Geographically, Rajarata area encompasses the present day North Central Province and parts of adjacent Provinces in Sri Lanka.(Fig 01)