

was once plentiful with regard to water is scarcely managing it today. The sons and daughters of those forefathers who lived a life of self-sufficiency, sustainability and serenity are today struggling to meet their ends. Well, on top of that, a region that was relatively healthy has all of a sudden become enormously sick with a wave of baffling kidney disease taking its toll. It has already mystified the medical community, and has also gained international attention.

Still very little is known about this 'new disease'. Dr. Thilak Abeysekera, consultant physician, Teaching Hospital Kandy has been treating the disease in the NCP since 2003, when he served at the Anuradhapura Hospital. His enduring, keen interest in the well-being of the people of the NCP did not thwart him from continuing the good work even after his transfer to Kandy. Even today, Dr. Abeysekera conducts clinics for the kidney patients in various parts of Anuradhapura and Polonnaruwa districts on a regular basis, commuting from Kandy.

According to Dr. Abeysekera, "there are over 6,000 patients with chronic kidney disease, identified since 2003. In the early years most of the patients were presented late into the disease in the chronic renal failure stage. However, now because of the enhanced awareness and public education people come forward for treatment early in the disease, in microscopic proteinuria stage", commented Dr. Abeysekera.

The simple test for detection of protein in urine has become the mainstay in the early diagnosis of the disease, which is even being done in the field clinics. Once 'proteinuria' is detected more tests such as serum creatinine, haemoglobin, ultrasonography and even renal biopsy are being done. Once the final diagnosis of chronic kidney disease is established then dialysis becomes the main mode of treatment for most of these patients. However, dialysis is expensive and only limited facilities are available, and that too in the Anuradhapura Teaching Hospital only.

According to Dr. Sarath Weerabandara, Director, Teaching Hospital Anuradhapura, at present only four haemo-dialysis units are available in the hospital, which hardly serve the requirements of the growing number of patients who seek this treatment. However, the good news is that a new renal unit has been constructed in the hospital, and it is hoped this would ease the demand when it starts functioning in the near future.

The available data shows that Padaviya, Sripura, Medawachchiya, Kebathigollawe, Mahawillachchiya, Thanthirimale and Eppawela in Anuradhapura district, Medirigiriya,

Welikanda and Aralaganwila in Polonnaruwa district, Welioya in Trincomalee and Giradurukotte in Ampara districts are the worst affected areas. According to Dr. Abeysekera in some of these areas "some 8-10% of the adult population is affected by this disease". This in no uncertain terms speaks volumes for the public health catastrophe that has come to stay in these areas.

Although, the pioneering work by Dr. Abeysekera et al has thrown light on the pathology of the disease, still the causation or the aetiology remains largely obscure. Many factors, such as the presence of fluoride and cadmium in water, consumption of thilapia fish (contaminated with cadmium), pesticides, use of aluminium pots and consumption of illicit brew have all been adduced by various researchers, but still none of these has been proved. (Article by Prof. Oliver Ileperuma, "Kidney disease in the North-Central Province: Some possible causes, appeared in "The Island" 13-14 February, which gives a good account of some of these factors, with special emphasis on the possible role of fluoride in the drinking water in disease causation).

While more stones untouched than upturned seems to be the case that surrounds the mystery of the new disease, without a holistic approach that will take into consideration the complexities and the evolutionary processes of Raja Rata, the final analysis will fall far short of the target that all concerned are trying to arrive at – finding the truth. Ecological viewpoint in the web of causation of the disease is not to be taken lightly. As Udula Bandara Ausadahami, the eminent environmentalist and son of the soil says, the present wave of kidney disease in the NCP is mainly man-made or a result of unplanned, improper development.

"Since bringing the Mahaweli development project to the NCP, an eco-system that was dominated by the 'wew' for thousands of years for the supply of water was replaced overnight by a system dominated by the 'canals' or 'ela', where the water was flowing at high-speed. Along these canals the water was taken for long distances", asserted Ausadahami. Although there had been instances of transportation of water through channels in the ancient irrigation system, this always happened at a slow pace. The tortuous course of these channels further slowed down the process, which in turn helped sedimentation of silt and heavy metals in the water. In addition, the water plants such as the *olu*, *manel*, *kumudu* and *keketiya* that grew on the banks and the surface of the water channels too absorbed some of the toxic compounds that could have been there in the water. "So it was a thorough process of filtration that ensued at the end" opined Ausadahami.

"Further, they went on straightening the pre-existing canals, cementing their banks, all to speed up the flow of water through these. What they did to the Yoda-Ela is a tragedy. It was made into an 'express highway' by straightening its convoluted course and cementing the banks", said Ausadahami. With disgust he went on to say, "Mahaweli development project did not give any consideration to our ancient hydrological system and wisdom. In the Mahaeli H zone alone over 200 tanks were bulldozed".

Another point Ausadahami emphasises is that "there were people living in these areas for thousands of years in the '*purana*' (ancient) villages. Also since the 1930s colonization schemes were introduced in a big way. We didn't hear of such a problem before. If this kidney disease was due to an 'internal' factor, then it would have affected the people for a long time. But the novelty of this problem proves that this is due to an 'external' factor or something that was introduced lately, especially within the last couple of decades".

According to Ausadahami the other important 'development' of the project was that the water from Kothmale reservoir, which is hundreds of miles away, was brought to the NCP diverted through the Polgolla dam via Bowatenna. "This was never the water management practice of Raja Rata. It always harvested and used its own water for the reasons best known to the ancient man who lived on this land".

Traditionally, the Raja Rata collected, retained and used its own (regional) water. It did not have a habit of 'importing water' (for example, vis-à-vis Polonnaruwa region, where even during the times of ancient Sinhala kings, water was brought along the Amban Ganga with diversion in Elahera). Kala-oya basin, which covered a catchment of 1000 sq. km. was the main watershed area of the Nuwara-kala-viya region (with the exception of Padaviya wewa). Within this Kalawewa covered 1/3 of the area. Major tanks with their cascades of small tanks were the main source of agricultural as well as drinking water to the region. Conversely, these tank systems lavishly fed the ground water table. At the same time, the environs of the tank which included the thickets, paddy fields, other agricultural lands and the villages were all a closely knit unique eco-system. In short, this was the rich heritage and culture of the ancient Raja Rata tank system which came under the ruthless backhoe-arms and the bulldozer tyres of the Mahaweli development project.

As Ausadahami puts it, "destruction of Raja Rata by the Accelerated Mahaweli Project was mainly two fold. On one hand, it destroyed the closely knit eco-system of the tank-village-and

shrubs that surround the village, and brought the land under large scale cultivation schemes". On the other, it replaced the "wew" by "ela" as the main source of water, thus bringing water from hundreds of miles away, at high speed, which again according to Ausadahami was contrary to the ancient thinking and practice. In the ancient Raja Rata irrigation system, the "ela" or the water-ways typically had tortuous course with slow flow of water, thus permitting silt, sediments and various heavy metals in water to settle down in the bed.

Destruction of eco-systems, while contributing to soil erosion and seepage of various potentially toxic compounds in soil to drinking water, was also responsible for depleting the groundwater table as well. Scarcity of water thus resulted forcing people to resort to hand-pump tube wells for the supply of their water needs. These were made of iron tubes, and contributed to contamination of water by metallic compounds through many ways - for example, rusting of the iron tube and seepage from soldered joints. Further, combination of ions (in water and soil) also led to the 'production' of compounds that are potentially injurious to human health.

A careful inquiry into the geographical distribution of the prevalence of kidney disease in the region and the main sources of water of the disease would give further clues useful in solving this jigsaw puzzle. For example, in Padaviya region where the incidence is among the worst, while the people who live close to the Padaviya tank seem to be spared from the disease, those who live some distance away and use ground water are known to be the worst affected. Interestingly, Padaviya tank is not fed by the Mahaweli waters.

Also, even within the NCP the spread of the disease is not homogeneous as some areas are worse off than the others. Although many hypotheses on the causation of the disease have come up, definite scientific proof as to the causation itself is yet to be established. Further, considering the complexities that surround the developmental paradox the region has gone through, especially within the past two to three decades, whether finding a sound scientific explanation will ever be possible is again doubtful. Within such a multifaceted scenario, a logical sequencing of events unfolded in the 'development' process in the region together with a careful inquiry into the ecological aspects (with an attempt at addressing possible backlashes) will guide us in a rational direction towards finding a solution to the public health catastrophe.

(The writer is The Island's Health Editor)