Chronic Kidney Disease and Agrochemicals

Since the year 2000, Chronic Kidney Disease of unknown etiology (CKDu) also called Chronic Renal Failure (CRF) has been reported to be on the increase in several areas of Sri Lanka, mostly in the North Central Province (NCP). A large number from Badulla and Kandy districts respectively and subsequently reported to be affected by CKDu. This disease is reported in 10 districts and it is estimated that around 40,000 people are affected.

The disease has a direct impact on the patients and their families. As it advances, patients become too ill to continue in gainful employment affecting the whole family. Assuming an average of 5 in a family of a CKDu patient, the total number of people affected financially socially and psychologically may be around 200,000. Medical expenses and transport to and from hospitals and treatment in hospitals, creates further strain on family budgets. Children of the affected families tend to drop out of school. All these families are facing economic ruin. There are some families in which both parents have died of CKDu and the children are helpless. The families of CKDu patients have become destitute as mostly the breadwinners of the families are affected. It is because of the gravity of the problem that the President appointed a task force to pull the country out of CKDu.

A cause of CKDu.

The exact cause of the disease is not known, and hence it is called CKDu of unknown etiology (CKDu). A number of seminars/symposia on CKDu have been held during the last few years. Results of studies carried out by a number of Sri Lankan scientists were presented at these seminars and CKDu was attributed to a toxic element/s or compound/s in drinking water. Among these are aluminium, arsenic, cadmium, fluoride, and toxins released by Blue Green Algae, pesticides, etc. However, there is no conclusive evidence on what causes CKDu. The Multinational Study Group, in collaboration with World Health Organization, carried out a multidisciplinary research study in several areas of Sri Lanka. The studies were conducted in an area in the north of Areca Nuga and costing nearly Rs. 100 million was set aside by 40 Sri Lankan scientists. There was no conclusive evidence from this study as to what causes CKDu. A recent review by the International Water Management Institute (IWMI) working paper 150 indicated that no specific substance/compounds has been proved to cause CKDu.

Some attribute CKDu to agrochemicals (pesticides and fertilizers). If so, it is not possible to explain why CKDu is not prevalent in other areas such as Kalutara, Kandy, Nuwara Eliya, Habanathota etc where fertilizers and pesticides are applied in large quantities. Even in to the occurrence of CKDu is considerably higher in some DS divisions than others. For example, in 2012, 25 cases were reported in Padaviya DS division, but only 55 cases in Rajangana DS division, although there are agricultural areas where fertilizers and pesticides are used widely. According to a recent study carried out in Mahiyangana area by Mr. Ranjith Mulleriya (Ref. Poor Quality Drinking Water Most Likely To Cause of CKDu: Compiling evidence from the field - Sunday Island 7th August 2016) even in the same paddy tract the number of CKDu affected persons are less, in some parts of the paddy tract.

However, even if CKDu is not caused by agrochemicals, the concentration of toxic elements in drinking water is a major cause. Chronic intake is toxic to the kidneys.

Pesticides are toxic compounds. Toxicity is indicated by what is called LD 50 values. Pesticides we are using in the countries and of high LD 50 values and are of less toxicity. Insecticides and mosquito coils which we use to control household pests also contain toxic compounds, and their LD 50 values are very high. Further the pesticides commonly used are not recalcitrant and hence are decomposed locally. Although FS and Ps were not used a few decades ago, the biotic environment, including the level of the fertility of soil in the area was the same as was in the past, resulting in the need to use these FS and Ps. New varieties of pests (Insects, fungi, bacteria etc.) keep on developing and unless these are effectively controlled, there could be food shortages. At present there may be a few plots cultivated without FS and Ps using only organic/different agronomic/spiritual methods. It is necessary to find out how effective these methods are. If they are effective, the researchers of the Dep. of Agriculture need to make recommendations based on their findings. It is also necessary that Integrated Pest Management (IPM) methods are developed and applied, so that we could give up the use of synthetic toxic chemicals to control pests. As Pesticides and biopesticides are controlled mostly using IPM, but not in Sri Lanka. Biological fertilizers and biopesticides (such as those made from neem) are good alternatives to fertilizers and toxic pesticides, respectively, but are not used in large quantities. The need here is to develop and promote the use of such biopesticides and biopesticides if we are to give up the use of agrochemicals.

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