Heath Effects of Radiofrequency Radiation

Premalatha Das MBBS, MPH, MFOM

There is a general concern about the possible health effects of radiofrequency radiation. A large and growing body of published scientific studies suggests that EMF radiation is not innocuous. It is generally argued that mobile phones and base stations are safe as they comply with the current safety guidelines set by the International Commission for Non-Ionising Radiation Protection (ICNIRP). These limits are purely thermally based – it is believed that any health effect would arise from the heating effect of the radiation. It is argued that EMF has insufficient energy to break chemical bonds (thus not producing charged ions). We prohibit the use of cellular phones in airplanes, hospitals on the grounds that the emissions would interfere with the operation of sensitive electronic equipment. So, non-thermal electromagnetic compatibility with electronic equipment is accepted. The human body is in itself an electronic instrument. We also talk about its deleterious effects on personal devices such as pace makers, defibrillators and insulin pumps. This is not because of the heating effect of the radiation; hence it is the non-thermal effect that is responsible. So there are non-thermal effects that can affect biologic systems. Radiofrequency electromagnetic radiation (RFR) can increase permeability of substances across the blood brain barrier. This can happen at low intensities. This effect is more prominent with pulsed RFR. RFR has been reported to produce morphological changes in Central nervous system. Changes in morphology, especially cell death, could have an implication on health as injury –induced cell proliferation has been hypothesized as a cause of cancer. Other changes reported include DNA strand breaks, chromosomal aberrations, altered brain activity, altered blood pressure and reduced melatonin secretion. There have also been reported increased incidences of some cancers among people living around base stations.

Public health surveys of people living in the vicinity of cell site base stations should be carried out now, and continue progressively over the next two decades. Surveys should look at a very wide range health effects. In carrying out health surveys, researchers must be mindful of the actual and realistic radiation patterns from cell sites and not to make the mistake of assuming a simple, uniform radial pattern. Register of workers exposed to RFR should be established. For the present a precautionary approach should be taken with regards to siting of base stations and the public should be informed of the current information.