Alarm about computed tomography scans is unjustified

Carl M Blecher

To the Editor: Alarm about the dangers of computed tomography (CT) scans is unjustified. The only hard facts about bio-harm from ionising radiation come from the 1945 atomic bomb explosions, which emitted very large amounts of radiation. Bio-harm from low-dose medical radiation has never been confirmed; the claim is based on backward extrapolation of data on radiation doses from the Japanese atomic bombs, which were orders of magnitude greater than doses in diagnostic radiation.

The resultant linear no-threshold theory, which postulates that there is no safe radiation dose, remains unproven. Radiation protection authorities use this model because it is expedient, if unverified and overly conservative. Those who treat it as dogma forget that it remains a theory, and any derived calculations are subject to large uncertainties. Radiation scientists question its validity, and many regard the estimated risks as grossly exaggerated or negligible. The Health Physics Society has stated that the risks to health from radiation doses below 100 mSv are either too small to be observed or non-existent.

The theory is also challenged by evidence that low-dose radiation is actually beneficial and protects against the effects of large-dose radiation by inducing DNA repair enzymes. A study of 407,000 nuclear shipyard workers and another of 7800 Russians exposed to low-level radiation from the 1957 Mayak nuclear facility accident showed that the exposed groups developed significantly less cancer than their unexposed controls. The lifespan of British radiologists over the past century has exceeded that of any other control group.

Figures quoted in the media for cancer attributable to medical radiation are theoretical calculations and have never actually been observed. They are as “real” as estimated cancer rates due to mobile phones and power lines. Newspaper claims such as “More than 400 new cases of cancer a year in Australia are attributable to diagnostic radiology” are alarmist and misleading — they disguise the fact that their figures derive from an unproven theory, not from observations.
Ironically, concern about the dangers of CT is rising even as the actual radiation doses involved are falling. A 2010 CT scanner emits 1/20th the radiation of its 5-year-old predecessor. CT coronary angiography can be accomplished today with a dose of less than 1 mSv — equivalent to six chest x-rays or 6 months of background radiation. Patients for whom a CT scan is medically indicated should not be denied one of modern medicine’s greatest benefits because of unfounded fears. The risks of delayed or missed diagnosis or wrong treatment far outweigh the theoretical risk of harm from a CT scan.

Carl M Blecher, Radiologist and Director of CT Epworth Hospital, Melbourne, VIC.
carl.blecher@gmail.com