



CONCERNED ABOUT CANCERS INDUCED BY CT RADIATION?

By Fred S. Vernacchia, MD
Medical Director, San Luis Diagnostic Center

Let me start this commentary by stating that despite recent headlines in the news regarding cancers caused by diagnostic imaging, there is not a single piece of scientific evidence to support the conclusions reached by these various studies. The conclusions reached by these studies are inherently flawed because they rely entirely on atomic bomb survivor data and unproven assumptions of risk. The basic assumption in the calculations used by the biostatistical scientists is that cumulative small amounts of radiation delivered to the human body over a lifetime is equivalent to that same amount of radiation administered as a single high dose in a very, very short period of time. There is virtually no scientific study to prove that assumption is correct.

These recent studies use phrases such as “known risks of radiation” and that “large doses of radiation from CT scans will translate statistically into additional cancers” and that what we are doing is creating a “public health time bomb.” Such statements are intended to create fear and are not substantiated by science—they are nothing more than presumptions. It is a simple fact that a connection between radiation for medical imaging and cancer has never ever been established. Quite to the contrary, while the numbers of medical imaging procedures are clearly on the rise, including a tripling of CT scans since 1992, as stated in their articles, the mortality rates from cancer are dramatically dropping. If medical imaging were causing cancers, then we should be seeing more and more patient’s dying from cancers. This simply is not happening.

While I have just addressed topics that relate to the global issues of radiation exposure, I think it is important to discuss what we at San Luis Diagnostic Center have done and do to keep radiation dose to our patients to a minimum. Since we purchased our multidetector CT scanner in 2004, we addressed dose minimization by purchasing the scanner that used the lowest possible dose. Our 16 slice CT scanner has the same dose as older, single detector scanners. Interestingly, patient radiation dose is not directly related to number of detectors. In fact, although radiation is higher in an 8-detector scanner than a single detector scanner, a 16 detector scanner is lower than an 8 detector scanner and equivalent to a single detector scanner. Beyond 16 detectors, there is a direct correlation with radiation dose: the greater the number of detector, the higher the radiation dose. In other words, a 32 detector scanner is higher than an 8 and 16 detector and a 64 detector is higher than a 32 detector. The “sweet spot” for radiation dose relative to diagnostic capability is a main reason why we chose a 16-detector and have continued to use a 16-detector machine. A 16-detector machine can perform almost all diagnostic tests that the 32 and 64-slice machines can perform, but at a lower dose for almost all exams.

A well-known fact that has been acknowledged since the advent of multidetector CT scanners is that scanning in America has always been done with a higher dose than scanning in Europe. In the United States we are hooked on “pretty pictures” where as in Europe, under a more government controlled environment, they are much more interested in getting diagnostic images

at the lowest possible dose. Since 2004, we at San Luis Diagnostic Center have chosen to follow the European model. Despite the fact that at times our images may appear more “grainy” to a referring physician, they remain as diagnostic as the more attractive, higher dose images and are safer for our patients.

Several recommendations have been made by various organizations, including the authors of the recent articles regarding high doses from CT, to effectively lower dose. These include standardizing protocols, reducing image series within each exam, implementing dose reduction strategies and participating in accreditation programs such as that by the American College of Radiology (ACR). San Luis Diagnostic Center has more accreditations than any other facility in the County. In 2006, we had the first ACR accredited CT scanner in the county. As a part of that accreditation, we showed that we produce high quality images at the lowest possible dose. In addition, we have standardized all of our protocols for imaging and those standards include utilizing the lowest possible dose. We worked to continually decreasing the dose based upon patient’s body size until we are able to see degradation in diagnostic quality. In addition, we perform very few multiphasic studies, and when we do, we limit the multiple phases to the portion of the anatomy that requires more than one set of diagnostic images.

In addition to dose reduction efforts that we have made with our CT program, our digital mammography program also is the lowest dose possible. Of all digital systems that are currently available, our GE mammography system has the lowest dose per image of any digital mammography system available today.

We at San Luis Diagnostic Center are very conscious about potential risks from radiation and have done and will continue to do all that is scientifically possible to produce diagnostic images at the lowest possible radiation dose.