

False alarm on CT scan risk

Study gets it wrong about the effects of low-level radiation and cancer



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Once again, the media (with considerable help of some in the medical community) are raising misleading and alarmist health fears.

Late last month, the New England Journal of Medicine (NEJM), published a review article, "Computed Tomography - An Increasing Source of Radiation Exposure," written by two scientists, David J. Brenner and Eric J. Hall, both of the Columbia University Medical Center in New York. Based on superficial readings of the article and superficial interviews with experts, news articles headlined:

"CT Scans Raise Cancer Risk" and "Unnecessary CT scans exposing patients to excessive radiation" metastasized all over the country.

Although the NEJM article concedes that "most diagnostic CT scans are associated with very favorable ratios of benefit to risk," the authors ignored very important benefits and inflated hypothetical risks. Disproven premises, compounded by inappropriate projections, underlie the authors' approach.

Let's start with the false underlying assumption "that any dose of radiation, no matter how small, and how it is delivered, is harmful" as pointed out by Jadwiga (Jodi) Strzelczyk, associate professor of radiological sciences at the University of Colorado.

This assumption, also known as the linear no-threshold hypothesis (LNT), is false, according to hundreds of scientific studies. For example, in a 2001 report, the National Council on Radiation Protection notes "that the rates of cancer in most populations exposed to low-level radiation have not been found to be detectably increased, and that in most cases the rates have ap-

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peared to be decreased."

In other words, the hypothetical assumption of cancer risk underlying the NEJM report is wrong. In fact, in most cases cancer risk rates appear "to be decreased." In other words, low levels of radiation are associated with less cancer, not more.

The French Academy of Medicine "denounces utilization of the linear no-threshold (LNT) relation to estimate the effect of low doses." Many other professional scientific groups agree, such as the American Nuclear Society and the Health Physics Society.

Too much of anything can kill, whether it be water, oxygen, radiation or aspirin. But a proper amount of these same things improves - or is essential to - health. For example, taken all at the same time, 100 aspirin tablets kill. But two tablets cure headaches. And one-fourth of a tablet taken regularly can help prevent heart attacks and stroke.

The American Nuclear Society, the Health Physics Society and many other professional radiation experts agree that radiation doses below 0.1 or 0.2 Gray (Gy) produce risks that are either too small to be observed or are nonexistent. (To minimize confusion, we're converting other radiation-dose units to Gray units.)

In contrast, the NEJM authors claim that doses as low as 0.01 Gray in adults provide a "most likely (though small) risk" of causing cancer. They speculate that 2 percent of future cancer in America might be caused by CT radiation.

More recently, Doug Boreham published an article, "Scientists find low-dose radiation a benefit," in The Hamilton Spectator. He writes, "Based on actual biological scientific evidence, and not calculated ex-

trapolation, an opposite conclusion about CT cancer risk is equally plausible. That is, cancer risk in North America may be reduced by 2 percent over the coming decades because of low-dose medical CT exposures."

The NEJM authors give greatest weight to studies of Japanese who were exposed to a different radiation mix (including neutrons) more than half a century ago and under very different circumstances. At the same time, the authors ignore the fact that these Japanese atomic-bomb survivors are living longer lives than other Japanese.

The linear no-threshold hypothesis is the basis for another discredited idea, the "collective risk" concept. If doses did build up over time, a collective-risk hypothesis might be worthy of further investigation. This notion would predict that 50 people each taking two aspirin is the equivalent of one person taking 100 aspirin all at once. If that were the case, there would be a lot more aspirin deaths than anyone claims.

The NEJM authors also ignore wider indications of human health and functioning, such as overall health and longevity.

As noted by Theodore Rockwell, Sc.D., vice president of Radiation, Science and Health Inc. and a retired nuclear engineer, these NEJM authors hold a "discredited position" about the effects of low-level radiation.

This unfortunate episode of false alarmism also demonstrates the difficulty, as well as the short-sightedness, of looking at just one hypothetical facet of medical care while ignoring other, more important factors and recent advances (such as beneficial effects of radiation on overall health and longevity).

CT examinations should be done to meet the patient's needs. Outdated and disproven ideas about radiation should not limit medical judgment.

At this point, you may well know more about low-level radiation than many doctors. If your doctor seems overly concerned about ionizing radiation from X-rays, CT or nuclear medical examinations, you might be doing him a favor by showing him this information.