



## RADIATION FROM DIAGNOSTIC IMAGING CAN CAUSE CELLULAR DAMAGE



Early detection of health problems is very important in diagnosing or sometimes eliminating disease at its onset. Over the last decades, various imaging techniques such as X-rays, ultrasounds, MRI (Magnetic Resonance Imaging) and CT or CAT scans (Computerized Assisted Tomography) have been developed and applied for diagnostic as well as therapeutic medical care. However, in recent years many doctors, and especially radiologists, became concerned with overuse of certain diagnostic techniques -, in particular those that expose patients to radiation.

Although infrequent use of X-ray or CT scans will not have adverse effects on a patient, the multiple exposures to radiation even over a short period of time can cause serious damage to cells and increasing risks of cancer, cardiovascular disease as well as many other diseases. In 2007 alone, the U.S. National Cancer Institute predicted that 29,000 future cancer cases could be linked to the 72 million CT scans performed in the country just in that year. Despite such concerns and warnings, the use of diagnostic CT scans has skyrocketed over the past three decades from 3 million CT scans in the 1980s to 70 million in 2007 - this rate has doubled in just the last 5 years. More than 4-7 million children are getting CT scans and the number continues to increase by 10% every year! It is quite common that almost everyone complaining of upset stomach gets abdominal CT scan. The radiation from one such abdominal CT scan is approximately comparable to 200 chest X-rays or 1,500 dental X-rays.

Furthermore, the CT scans are increasingly being used for regular health checkups as well. This is specifically true for imaging for arterial blockages to detect atherosclerotic heart diseases at a six-month or yearly intervals. The rationale is that the radiation exposure for such a diagnostic CT scan is

extremely small compared to a regular CT scan. According to an estimate, a regular CT scan exposes patients to at least 150 times the amount of radiation from a single chest X-ray.

However, a recently published study\* alerts that even a small amount of radiation exposure through unnecessary imaging scans can pose long term harm surfacing even decades after exposure. According to this study, exposure to low doses from repeated CT scans results in a significantly increased risk of cardiovascular dysfunction resulting from damage of endothelial cells lining the coronary arteries. Researchers have long known that a high dose of radiation reduces levels of nitric oxide in the cells. Nitric oxide is a natural "relaxing factor" and helps in relaxation of blood vessels thereby maintaining healthy blood pressure levels. In this recent study it was noted for the first time that even a low dose of repeated radiation exposure can cause nitric oxide reduction, damaging cellular DNA and inducing premature cell ageing by increased free radical damage. Such alterations in cellular functioning can lead to serious implications for the cardiovascular and other organ systems.

While some scanning tests do provide useful information, and could be lifesaving in emergency cases, the overuse of unnecessary X-rays and scanning should be avoided. The guidelines are still blurry on who should or should not get CT scans, and what their exact indications and frequency should be. It is important for people to be aware of imminent and long-term effects of ionizing radiation and education is the only key for protection.

*\*Omid Azimzadeh, et al., International Journal of Radiation Biology, July 2017*

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The ground-breaking nature of this research poses a threat to the multi-billion dollar pharmaceutical "business with disease". It is no surprise that over the years the drug lobby has attacked Dr. Rath and his research team in an attempt to silence this message. To no avail. During this battle, Dr. Rath has become an internationally renowned advocate for natural health. Says he: "Never in the history of medicine have researchers been so ferociously attacked for their discoveries. It reminds us that health is not given to us voluntarily, but we need to fight for it."

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