Research & Reviews: Journal of Reports in Cancer and Treatment

The Impact of Radiology on the Human Body

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Short Communication

Received: 04-Mar-2023, Manuscript No. RCT-23-92756; **Editor assigned:** 06- Mar -2023, PreQC No. RCT -23-92756 (PQ); **Reviewed:** 20-Mar-2023, QC No. RCT -23-92756; **Revised:** 27-Mar-2023, Manuscript No. RCT -23-92756 (R); **Published:** 31-Mar -2023, DOI: 10.4172/RepcancerTreat.7.1.005.

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Citation: Hyodo Y. The Impact of Radiology on the Human Body. 2023; 7: 005.

DESCRIPTION

Radiology is a branch of medicine that is concerned with the use of various forms of imaging techniques to diagnose and treat diseases. These imaging techniques include X-rays, CT scans, MRI scans, ultrasound, nuclear medicine, and PET scans. Radiology has proven to be an invaluable tool for the diagnosis and treatment of various diseases. However, medical radiation exposure from radiology procedures and imaging tests has raised concerns regarding its potential effects on the human body.

Radiology exposure and health effects the human body to expose towards radiation from various sources, including natural sources such as cosmic radiation, radon gas, and radioactive materials in the soil [1]. Man-made sources of radiation include radiation used in medical imaging and radioactive materials used in nuclear power plants. Medical imaging tests that involve ionizing radiation, such as X-rays and CT scans, deliver high doses of radiation to the body, increasing the risk of developing long-term health effects such as cancer, genetic mutations, and other diseases [2]. Radiation exposure can also affect the thyroid gland, immune system, and other organs. The effects of radiation exposure on the human body depend on several factors such as the radiation dose, frequency, and duration of exposure, age, and health status of the person exposed. Children and pregnant women are at increased risk due to their developing bodies' sensitivity to radiation exposure. The International Commission on Radiological Protection (ICRP) promotes radiation protection practices and suggests limiting radiation exposure to 1 milliSievert (mSv) per year from environmental and occupational sources. Medical Imaging Risk and Benefits Radiology procedures provide diagnostic benefits for various medical conditions such as cancer, cardiovascular disease, stroke, traumatic injury, and other diseases. Imaging technologies can provide detailed images of body structures and organs, allowing healthcare providers to diagnose diseases and injuries accurately [3].

The use of medical imaging procedures has increased over the decades, with estimates suggesting that the average person receives around 2.4 mSv per year from medical imaging procedures. Although medical imaging procedures pose risks to patients in terms of radiation exposure, the benefits of early diagnosis and effective treatment of diseases outweigh these risks. Strategies to Minimize Radiation Exposure from Radiology some strategies can reduce radiation exposure from medical imaging procedures. The ALARA principle (As Low as Reasonably Achievable) can be undertaken to minimize radiation exposure, by using appropriate imaging protocols, shielding, and limiting the number of imaging procedures [4].

Using imaging techniques that do not involve ionizing radiation, such as ultrasound, magnetic resonance imaging (MRI), and nuclear medicine procedures that use radioisotopes with short half-life can help reduce radiation exposure. Whenever possible, patients should ensure their healthcare providers know their medical history, especially regarding previous imaging procedures. By doing so, healthcare providers can better assess the need for further imaging procedures while minimizing unnecessary radiation exposure [5].

Radiology imaging techniques have significantly improved the diagnosis and treatment of diseases. However, radiation exposure from imaging procedures and tests can pose health risks to patients, highlighting the importance of balancing benefits against the risks of the procedures hence the need for appropriate radiation safety guidelines. As technology advances, new imaging procedures with lower radiation doses may become available, further reducing the health risks associated with radiology imaging.

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