Radiation Interactions and PET images of Pre and Post Diagnosis and Therapeutic Procedures in Cancer Treatment

By Dr. B. Vasundhra[1], C. Srujankumar[2], P. Hemalatha[3]

1. Asst. Professor, Department of Electronics & Physics, GIT, GITAM Deemed to be University, Visakhapatnam (Andhra Pradesh), India-530047
2. Nuclear Medicine Physicist & Radiation Safety Officer, Guntur Institute of oncology, Omega Hospital, Guntur (Andhra Pradesh) India
3. Chief Technologist, Dept. of Nuclear Medicine/ PET-CT, Omega Hospitals, Hyderabad (TS) 500034

Keywords: Positron Emission Tomography, Radioisotopes, Radiotracers, Fluorodeoxy-glucose, and CT Scanners.

Positron emission tomography is a type of nuclear medicine imaging deals with the physiological function using radioisotopes. With the most PET (Positron Emission Tomography) scanners in integration with the CT scanners of late, this technology has registered a phenomenal growth. Radiotracers are linked to a small amount of radioactive material, which can be detected on the PET scan. Radiotracers accumulate in tumours or inflammatory areas that can also bind to specific proteins in the body. F-18 fluorodeoxyglucose, or F (Fluoro-2-deoxyglucose) FDG is the most commonly used radiotracer to detect and stage various types of malignancies. Earlier this was popular in the research of neurological and cardiac applications. This was initially used as research tool and in cardiac and neurological applications. Future use of PET is going to originate from tracers other than FDG non-oncology applications. In the present study, reduction of dose using hardware integration of CT (Computed Tomography) Scanners with PET scanner in the Cancer treatment has been studied and results are presented for improving image contrast and minimisation of radiation dose.

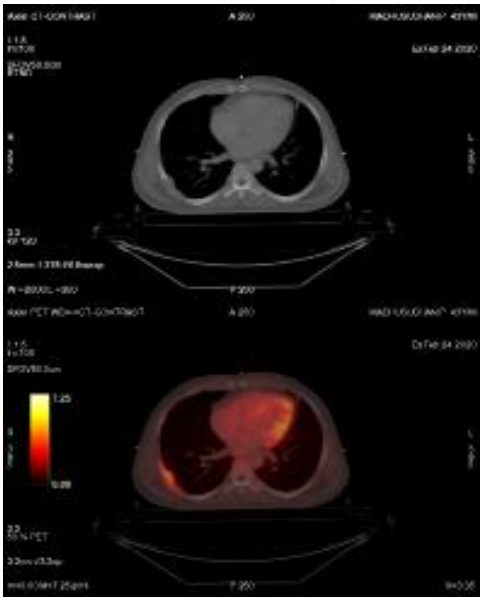

Fig 1: PET-CT scan with a RT plan mould for Radio Therapy toward targeted cancer cells.

Acknowledgments
This work was done with the financial support under Major Research Project sanctioned by the University Grants Commission (UGC) Delhi, India during 2015-18.

중성자·동위원소응용연구부/2020-11-11 15:05