

Current Status in Nuclear Oncology

Hironobu Ochi, M.D., Ph.D.

Osaka City University Medical School, Japan

The largest number of examinations in clinical nuclear medicine in our hospital is bone scan, followed by tumor imaging with Ga-67-citrate and Tl-201-chloride. Radionuclide imaging plays an important role in providing the location and extent of a tumor. Because of the often disseminated distribution of cancer, radionuclide imaging methods, capable of including large regions of the body in the field of view, are advantageous compared to other modalities such as ultrasound and X-CT. Therefore, it is useful in detecting the location of the biopsy sites before surgery in the staging of the cancers and in detecting recurrent or metastatic disease after initial treatment.

With the introduction of SPECT in clinical nuclear medicine, there will be a significant improvement in the sensitivity, accuracy, and quantitative ability to detect abnormal lesions.

I will show and explain very useful cases and the limitations of Ga scan and Tl scan of tumors.

In 1993, a cyclotron and a PET were installed in our hospital, and about 800 patients have been examined with PET. More than half of examinations were of tumor imaging with F-18-fluorodeoxyglucose(FDG). FDG-PET produces images reflecting the rate and distribution of biochemical and physiological processes in tissue in vivo. Most of the initial development and application with PET has been directed towards applications in the heart and brain. PET studies of cancer are emerging as a major focus of the technology, both from a research and investigational perspective. Recently, FDG-PET is being widely used as a clinical PET. I will show our FDG-PET data of head and neck, chest and abdominal tumors and discuss its advantages and limitations.