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MEASUREMENT OF FINGER EXPOSURE DOSE AND ANALYSIS OF THEIR FACTORS. M. Koakutsu, F. Kinoshita, N. Yui and I. Itoh. Chiba Cancer Center Hospital, Chiba.

Finger exposure doses were measured using ring monitor by Nagase Landauer and their factors were analysed. Records of examinations and administrations of the radionuclides and radium therapy treatments were referred. LiF TLD were sealed in a plastic rings and put on the right second fingers, which were exchanged by two weeks intervals. Main works of physicians were injection of radiopharmaceuticals to patients and sometimes radium therapy, and those of technicians were preparation of radiopharmaceuticals and dividing into the syringes which were generally covered by exclusively designed lead shields. Tc-99m amounted to 90% of the total utilized radionuclides in the past four years. Main factors of increasing the exposure dose for the technicians were considered to be caused by increasing the utilization of Tc-99m generators, while the main factor for the physicians was given by the exposure during radium implantation, and those were changed by presence of patients who were treated by radium therapy. More simple preparing ways of Tc-99m compounds are desired to be developed for reduction of exposure dose.

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THE RADIATION PROTECTION AND SYSTEM ADMINISTRATION OF THE CYCLOTRON-PET UNIT IN RESEARCH INSTITUTE FOR BRAIN AND BLOOD VESSELS-AKITA. T.Hachiya, Y.Aizawa, Y.Shoji, E.Hagami, K.Uemura. Research Institute for Brain and Blood Vessels-Akita, Akita.

One and a half years have elapsed after the opening of the cyclotron-PET unit in Research Institute for Brain and Blood Vessels-AKITA. Gaseous radiotracers ($C^{15}O_2$, $C^{15}O$ and $^{15}O_2$) are supplied through transporter-tubes which are shields by lead blocks of 5 cm thick. All of expired gas from a subject and wasted gas from chemical process are collected to the reservoir tanks in the cyclotron room which has concrete walls of 1.3-1.5 m for thick. Whole volume of wasted water-tank for liquid radioisotopes is 20 tons and ventilation volume is 20550 m³/hour.

With our experiences, for protection of radiation-hazard from cyclotron-PET unit, it should be taken care in the following problems: 1) Radiation leakage from a cyclotron room contains high energy γ ray due to (n- γ) reaction. 2) A reservoir tank collecting expired radioactive gas from subjects should have sufficient volume. 3) It is recommended that whole space is as large as maintaining sufficient ventilation volume and air dampers of waste-air ducts must be air-tight type. 4) Waste-water tank of double tank system is profitable for detection of accidental monitoring.

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THE EFFECT OF THE NIHONKAI-CHUBU EARTHQUAKE TO THE CYCLOTRON-PET UNIT. T.Hachiya, Y.Aizawa, Y.Shoji, E.Hagami, K.Uemura. Research Institute for Brain and Blood Vessels-Akita, Akita.

In May 26, 1983, a severe earthquake, named "Nihonkai-Chubu Earthquake" caused extensive damage for the sea-side district of Akita prefecture. In this paper, we reported our experiences, about the damage of the radioisotope laboratory due to the earthquake and the counter measures for it. After the earthquake, we immediately stopped the use of radioactive substances and the operation of a cyclotron, and checked strictly leakage of radioisotopes, all the equipments and radiation-safety systems in the laboratory. The check list were: 1) leakage of the transportation lines of gaseous radiotracers, 2) leakage of the drainage pipes and the waste-water reservoir.

Following the check described above, damage of septic tank was recognized but the after problems could not be verified by ourselves.

From this unusual accident we experienced following matters: 1) First of all, security of humans and radiation protection must be taken just after the earthquake, and report the condition of the damage to Science and Technology Agency. 2) It is difficult to check the drainage system due to restricted water supply and checking equipments. 3) Disorder to telephone lines causes difficulty for communication.

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SIGNIFICANCE OF RADIONUCLIDE STUDIES FOR CRITICAL CARE MEDICINE. A.Okuyama, K.Ito, N.Tajima, H.Tajima, R.Saito, T.Kumazaki, Y.Yamagishi and K.Ebata. Nippon Medical School, Tokyo.

It is obvious that several kinds of diagnostic technique with imaging have been progressed rapidly for emergencies. Considering nuclear medicine, pulmonary perfusion and ventilation scintigraphy are well known as easy and safety examinations for early diagnostics of pulmonary thromboembolism. Furthermore, the techniques are also clinically evaluated in diagnosing traumatic lesions, dissecting aneurysm, intratracheal foreign body and so on.

The present study is a summarization under 6 years experience excluding cardiac diseases. In some cases underwent emergency operation after injury, scintigraphic examination was seldom performed. Therefore, this method was usually carried out at our department for the estimation of post-operative conditions including transplantation and abscess formation.

The acute non-traumatic lesions could also be examined by radionuclide with ease for the determination of surgical approach.