colloid were utilized for imaging of the liver and the lung. For transmission scanning liver scan was performed by use of 1.5 mCi of $^{99m}Tc_2S_7$ colloid with placement of 20 mCi of ^{99m}Tc pertechnetate solution behind the chest to delintate the lung by transmission technic.

Patients with suspected pleural effusion were examined in supine and sitting position, while supine position was used for delineation of ascites.

Scanning was performed 30 minutes after the injection of isotopes. 410 kev window setting was chosen since the energies of ^{131}I (364 kev) and ^{198}Au (411 kev) were sufficiently similar to be included in one spectrometer.

Results: Sixteen patients were studied including 8 normals, 4 ascites, and 4 pleural effusions. There was no separation of liver and lung in all normal patients, but there was definite decreased uptake or separation between the liver and the lung or between the liver and speen. Therefore, we have concluded that this technic is a useful adjunct in demonstration of pleural effusion and ascites.

Radiation Exposure from the Syringe Containing Radioisotope

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Using computer FACOM-230-60, mathematical approach was first made for calculation of absorbed dose in tissue of finger.

The solution of ^{99m}Tc, ^{131}I, ^{198}Au, ^{203}Hg and ^{59}Fe are made with concentration of 1 mCi/ml and 0.2 mCi/ml. Each of them was used to be a radiation source of 1 ml or 5 ml. The radiation source of 12 mmϕ×9 mm or 12mmϕ×45 mm was assumed to contact with water equivalent rectangular solid body of 30×20×100 mm in size. The dose was calculated with such that the radiation source consisted of 1000 or 5000 point sources of 1 mm^3 in size. The gamma ray from each point source attenuates with self-absorption of radiation source, with absorption of wall of syringe, and the skin tissue. Attenuation arises also with the inverse square law.

The total absorbed dose "D" in an arbitrary point in tissue follows with the formula

$$D = f \cdot \Gamma \iiint e^{-\mu d} / l^2 \, dx \, dy \, dz$$

where f is rad/R conversion factor, Γ is specific γ-ray constant, μ is absorption coefficient for water, d is the distance passing through the absorption material, and 1 is the distance between

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a point source and a point in tissue. The scatter radiation was neglected.

Result: Dose distributions were illustrated in cross section of finger under the radiation source. The absorbed dose at vicinity of syringe such as skin surface, stratum corneum (0.7 mm in depth), epidermis (1.5 mm in depth) and sweat gland (2 mm in depth) were calculated to be 19.1, 15.5, 12.5 and 11.0 m rad/min when solution of ^{99m}Tc was used. The absorbed dose for the other nuclides were calculated and presented.

Application of Coding System in Radioisotope Clinic with Special Reference to Educational Cases

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Japan Radiological Society Computor Committee, Computor Subcommittee for Nuclear Medicine Coding System

The computor committee is organized in the Japan Radiological Society in April, 1971, in order to make the coding system in radiology clinic, subdivided into X-ray diagnosis, radiotherapy, and nuclear medicine.

In the field of nuclear medicine, the coding system is applied at first in order to register the cases for teaching files, and then this is gradually applied to the daily clinical cases for registration and classification.

This coding system is consisted of 1) Hospital number(4), 2) patient number(7), 3) patient name(2), 4) sex(1), 5) birth date(4), 6) examination date(4), 7) doctor's registered number, 8) part examined(3), 9) examination method(2), 10) recording method(2), 11) apparatus used(2), 12) radionuclide applied(3), 13) R.I. dose(2), 14) given route(1), 15) pharmaceutical name(2), 16) other R.I. examination in the same organ(1), 17) X-ray examination in the same organ(1), 18) Final diagnosis (i) R.I. diagnosis(2)(ii) accuracy(1) (iii) pathohistological diagnosis(4) (iv) ICDA(4).

This coding system is clearified the various problems such as 1) the kind of R.I. examination 2) the organs examined 3) the kind of radionuclides used 4) the apparatus used for examination and the other information obtained from these examinations.

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