In the first one, the eposure was made with a PHO/GAMMA H.P. scintilation camera on the 35mm photofilm over several "marrow areas". Nine to fifteen portions were recognized and selected in the scintigrams and their radioactivities were measured by densitometric technique in the unit corresponding to a circle unit of 3.2cm diamter.

In the second method, the data were collected in a 1,600 channel analyzer in order to carry out the procedure in the element unit of 1600 channel matric (0.67×0.67cm) within one camera area. With the aid of computer procession, the' active marrow' elements were discriminated from the 'back ground' ones according to Tc-99m activity level. The net I-131 activity of those selected marrow elements were calculated by subtraction of average I-131 value in the back-ground elements and rendered to comparison with Tc-99m activity. As the quantitative index, the correlation coefficient and regression coefficient of I-131 to Tc-99m were calculated.

In two controls, the correlation coefficient by the first method was 0.977 and 0.872 with the regression coefficient of 0.856 and 0.577 respectively. Out of 29 studied cases, the r value was over 0.9 in 12 cases, between 0.8 and 0.9 in 9 and below 0.8 in 8 cases. In the second method ther value in the posterior pelvic area was 0.779 and 0.782 in the two controls, between 0.7 and 0.9 in 7 cases and below 0.7 in 7 cases. In one case with primary myelofibrosis, the r value in the pelvis was 0.512, 0.545 in the sternum and 0.140 in the knee area, while it was 0.728 in the myelometaplastic spleen.

The first method deals with relationship among several distant marrow postions and has the microscopic character for general survey, while the second one with rather microscopic nature deals with those within a single camera area and is considered to be suitable for detecting the dissociation more sensitively. These two method of quantification for comparison should therefore be evaluted to be supplementative to each other.

Lymphoscintigraphy

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1) Tc-99m-sulfur-colloid,

Lymphoscintigraphy using Tc-99m -sulfur-colloid has been reported in order to avoid the radiation injury at the site of injection in stead of using Au-198 colloid. Two-3 mCi of Tc-99m-sulfur-colloid was subcutanecusly injected on the back of the feet for the lymphoscintigraphy of inguinal-retroperitoneal lymphnodes groups, and 1—2 mCi for axillary nodes groups and 1—2 mCi for cervical nodes groups.

Tc-99m -sulfur-colloid accumulated into the normal lymphnodes about 1 hour after injection but did not accumulate into the involved lymphnodes. It took 2—3 hours for scintigraphy after injection, but muscle movements shortend the period from injection to scintigraphy.

Involved lymphnodes and groups showed images of absence or · interruption, marked

asymmetry, enlargement, and bizzar shape, according to the extent of the malignant tissues. Lymphoscintigraphy was well corelated to lymphangiography. It was, however, very difficult for interpretation whether an absence of radio-activity might show the involved lymphnodes groups or absence of lymphnodes for normal variation.

2) Ga-67 citrate.

Ga-67 citrate has been reported to be one of the best tumor scanning agents, especially for lymphoma and lung cancer. Lymph nodes or lymphnodes groups involved with tumor cells of lymphomas accumulated Ga-67, but showed lower accumulation once any treatment began, and interpretations of their scintigram became very difficult.

Utilizing these two nuclides for lymphoscintigraphy, it became much easier for interpretation of lymphoscintigrams in the case of lymphomas.

Lymphoscintigraphy utilizing Tc-99m-sulfur-colloid and Ga-67 citrate is very useful in order to decide clinical diagnosis, staging, planning of treatment and its effectiveness and to observe the clinical course.

A Simplified Method of Spleen Imaging with ^{51}Cr and Whole-Body Loss Rate of ^{51}Cr

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The binding of ^{51}Cr to the red cells was tested under various experimental conditions such as temperature and time of incubation. The previously used procedure took 60 minutes keeping cells at 49.5°C, however it was largely simplified by the present procedure as follows; deplete 20 ml of venous blood into the syringe with 4 ml of ACD and 300 uCi of ^{51}Cr, then heat the mixture upto 56°C in water bath for 10 minutes. The labeling efficiency was 90% and does not need washing before returning the cells.

The spleen image is obtained 2 hours after the injection of the labeled cells.

The radioactivity over the spleen after spleen imaging showed two components having 2 and 5 day half time, and the whole-body loss curve showed 6 and 15 day half time respectively.

The image quality, internal radiation to the patient and external radiation to the technician, and procedure were compared between the two methods using ^{51}Cr and ^{99m}Tc-Sn as well.