

## 714 G: Blood, Bone Marrow, Spleen and Reticuloendothelial System

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Imaging of inflammatory lesions with In-111 oxine leukocytes and Ga-67 citrate. K.Uno, G.Uchiyama, H.Akiba, K.Imazeki, T.Miyoshi and N.Arimizu. Department of Radiology, Chiba University School of Medicine. Chiba.

The tissue distribution of simultaneously injected In-111 oxine leukocytes and Ga-67 citrate were studied using 3 rabbits with turpentine induced abscesses in their legs. Rabbits were sacrificed at 72 hours after the administration of radiopharmaceuticals and the radioactivity of each tissue was counted by a germanium semiconductor detector. In-111 oxine leukocytes showed the same abscess-to-muscle ratio of Ga-67 citrate. Thirty four patients suspected of having inflammatory foci were studied with In-111 oxine labeled autologous leukocytes. Of them, focal accumulations were observed in 9 patients and they were proved as abscesses by surgeries or other diagnostic procedures. Of 15 patients studied with both methods of Ga-67 citrate and In-111 oxine leukocytes, 8 were proved of having abscesses. Two of 8 confirmed abscesses were not detectable by In-111 oxine leukocytes. They were both gravitation abscesses. In the remaining 6 patients, positive accumulation of radioactivity in the abscesses was evident. The In-111 oxine leukocytes seem to be useful for the detection of focal inflammatory lesions particularly in the abdominal and intrapelvic areas as well as in soft tissues.

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In Vivo Assay of In-111-CI and Tc-99m-S Distribution in the Bone Marrow. Y.Takahashi, K.Akasaka, K.Sato and C.Uyama. Tenri Hospital and Kyoto University.

Tc-99m-S colloid and In-111-CI are now used for bone marrow scintigraphy. Similarity or dissimilarity between these two kinds of marrow images has been discussed. The purpose of this report is to examine in vivo the marrow distribution of these radiopharmaceuticals, which have different affinity between reticuloendothelial and erythroid marrow elements. 1.6 mCi of In-111-CI and 10 mCi of Tc-99m-S colloid were administered to a subject. Two scintigrams were taken in the same visual field by the dual channels of each  $\gamma$  ray in a 1600 channel analyzer. After smoothing images, the active marrow and background areas were determined according to the radioactivity level. For improving a scintigraphic image, the optimum filter was adopted. Background was then subtracted. Indium count was subtracted from "Tc" image contaminated with  $\gamma$  ray of In-111 in Tc- $\gamma$ -ray level. Then, a pair of images of In-111, as hematopoietic marrow, and Tc-99m, as reticuloendothelial marrow, was obtained. Similarity or dissimilarity of these marrow images was represented by a correlation coefficient of both activities in the marrow area. The discrepancy was disclosed in the knee and pelvis of multiple myeloma with marrow fibrosis. Uptake of In in the cortex of the bone was more than uptake of Tc and conversely in the medulla in cases having low "active marrow".

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### CORRELATION BETWEEN BONE MARROW SCINTIGRAPHY WITH <sup>111</sup>IN-CHLORIDE AND HEMATOLOGICAL DATA.

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Bone marrow scintigraphy with <sup>111</sup>In-chloride has been used to have the information of activity and localization of erythropoietic marrow. In this report, we examined the correlation between bone marrow scintigraphy with <sup>111</sup>In-chloride and hematological data in the case of 23 patients. Imaging was performed at 48 hours after the injection of 2 mCi of <sup>111</sup>InCl<sub>3</sub>. Each count ratio of sternal parts and lumbar parts, liver and lumbar parts, spleen and lumbar parts and shoulder parts and sternal parts were made by clinical analyzer. Then, we investigated the correlation between those count ratio and hematological data. It was found that the count ratio of liver and lumbar part was correlated well with UIBC, TIBC and Transferrin. But, there were no correlation between peripheral blood data (RBC, Ht, Hb, WBC and Platelet) and serum iron, and those count ratio. Therefore, it was suggested that the accumulation of radioactivity in the liver in bone marrow scintigraphy increased with increasing amount of serum transferrin in vivo.

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COMPUTER ASSAY OF RED CELL SURVIVAL USING Cr-51. H.Saito, K.Ohara, K.Shibamiya\* and M.Saito\*\* \*:Department of Radiology and \*\*: Department of Internal Medicine, Nagoya University School of Medicine. Nagoya.

By using a computer, curve of best fit to the actually measured survival data was selected out of the theoretically constructed Cr-51 red cell survival curves. From the selected curve, indices of mean red cell life span (MRCLS), exponential disappearance rate (EDR) and effective survival (ES) were obtained.

Normal MRCLS was 125+4 days and EDR was 1.47+0.27 %/day. Random red cell destruction of 0.4 %/day was found in C-14-cyanate red cell survival curve of normal subjects. Some of clinical findings are as follows: the red cell mass seems to increase in polycythemia vera not only by hyperproduction, but also by hypodestruction. On the other hand, the red cell mass seems to decrease in aplastic anemia not only by hypoproduction, but also by hyperdestruction. Splenic random destruction was marked in hereditary spherocytosis. Severe random destruction, but normal MRCLS were observed in autoimmune hemolytic anemia.

A very good correlation was observed between half survival (T1/2) and ES.

The computer assay is useful for the analysis of erythrokinetics.