

in the active bone marrow in proportion to erythroid cell counts and according to distribution of hemopoietic tissue. It was characteristic that in the cases of severe hypoplastic erythropoiesis, the bone marrow activity was markedly decreased, and renal activity was remarkably increased.

Localized hypoplasia due to tumour cell replacement was also detected. But in the slightly hypoplastic cases the evaluation of scan images was frequently difficult.

As a consequence, further investigation of metabolism are needed for clinical application.

### **In-Chloride; As Bone Marrow Imaging and Tumor—Localizing Agents**

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Indium-111-chloride ( $^{111}\text{InCl}_3$ ) was used as bone marrow and tumorlocalizing agents in 38 patients (46 scintigrams), who were suspected or diagnosed having malignant disease clinically, and who were irradiated to malignant disease.

The regions, where clinically suspected malignant disease, where abnormally accumulated on scintigrams, and where irradiated, were excluded to estimate the normal distribution of  $^{111}\text{InCl}_3$ .

The scintigrams were taken 24–72 hrs after injection of  $^{111}\text{InCl}_3$  1–3 mCi.

The percentage and score distribution of  $^{111}\text{InCl}_3$  were appreciated on scintigram 48 hrs after injection in 23 regions.

As the liver showed the highest accumulation of  $^{111}\text{In}$  on all scintigrams, the liver appreciated as 2+. Comparing with the radioactivity in the liver, other regions showed similar (2+), moderately decreased (+), severely decreased (–) accumulation on scintigrams.

The score is given one for 2+, 0.5 for +, 0 for –.

The score and percentage distribution are followings; liver 100 (100%), lumbar vertebra 58.5

(100%), mediastinum 55 (100%), nasopharynx 50 (100%), testis 47.5 (95%), heart 44.5 (89%), pelvis 43.5 (78%).

High accumulation in the lumbar vertebra and the pelvis show that  $^{111}\text{InCl}_3$  would be effective as bone marrow imaging agent.

Irradiated bone marrow showed markedly decreased accumulation of  $^{111}\text{In}$ . In a patient of seminoma with irradiation of 3200 rads to the pelvic area and 4800 rads to the para-aortic area 4.5 years ago, there is no evidence of accumulation of  $^{111}\text{In}$  in these areas. This suggests that there would be no recovery of bone marrow activity after irradiation over 3200 rads.

Malignant disease in mediastinum, hilar region, and esophagus, is well visualized, when these areas are irradiated about 2000 rads or when malignant disease is recurred after irradiation, due to vertebral marrow suppression by irradiation and due to high tumor concentration of  $^{111}\text{In}$ .

We conclude that  $^{111}\text{InCl}_3$  would be effective as bone marrow imaging and tumor-localizing agents.

### **The Bone Marrow Uptake of $^{111}\text{In}$ -Chloride and Erythropoietic Activity**

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Indium-111 chloride was introduced as a bone marrow imaging agent in expectation of reflecting the hematopoietic, especially, erythropoietic ac-

tivity. But there have been reported some counter data in the animal experiments. The purpose of this report is to clarify to what extent the marrow