

Bone Marrow Distribution of ^{99m}Tc -Sulfur Colloid in the Aged

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Studies on the bone marrow distribution of ^{99m}Tc -sulfur colloid using scintillation camera, combining hematological examinations were carried out on 14 aged subjects (5 male and 9 female), whose mean age was 74 years ranging from 68 to 84 years. Mean red blood cell counts was 4.18×10^6 to 4.80×10^6 . Mean hemoglobin level was 73.1% ranging from 64% to 80%. Mean leucocyte counts was 4823 ranging from 3930 to 7330. ^{59}Fe ferrokinetics was studied on 6 subjects (3 male and 3 female). Serum iron level was in normal range. Plasma iron disappearance time was prolonged in 3 cases and was in normal range in other 3 cases. ^{59}Fe utilization rate decreased in 2 cases and was in normal range in 4 cases. Successive body surface counting on the sacrum indicated low uptake of ^{59}Fe in 4 cases.

The bone marrow configurations with ^{99m}Tc -sulfur colloid were distinct in the pelvis, lumbar and thoracic vertebrae, and relatively distinct in the skull and proximal ends of both humeri and femora in the normal adults. Distinct pelvis figures which was usually ob-

served in the young adults, appeared in only one case of the aged, and did not appear in the others. Distinct or relatively distinct bone marrow figure was observed in 3 cases. But 4 cases showed no figures. The bone marrow of skull was figured in the aged as clearly as in the young adults. Three cases showed obscure figures in the femora and humeri. But the other cases did not show any figures in these bones. There was considerable individual variations on the extent of marrow distribution of ^{99m}Tc -sulfur colloid. But it could be said, generally the marrow distribution of ^{99m}Tc -sulfur colloid was reduced in all bones including pelvis, vertebrae and skull.

Hemopoietic functions was lightly suppressed and functionally phagocytic marrow distribution was correspondingly reduced in the aged, although the discrepancy of the distribution of erythropoietic marrow and functionally phagocytic marrow in various hematological disorders were already reported by D. van Dyke et al. in 1967.

Evaluation of the Bone Marrow and Spleen Scintiscanning in Their Application to Follow-up-study of Hematological Diseases

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The bone marrow and spleen scintiscanning was applied to following up the disease stage and to determining the effect of treatment and their evaluation was done in reference to

the results of routine ferrokinetics, life span study of erythrocytes and spleen function study as well as to the clinical and hematological pictures.

Visualization of active bone marrow to determine its distribution pattern was carried out using ^{99m}Tc sulfur colloids with gammascintillation camera at appropriate but constant preset counts for each scan field simultaneously measuring respective radioactivity relative to the administration dose. Spleen scintiscanning was performed using ^{51}Cr labeled heat- or NEM- treated erythrocytes with ordinary scanner having 3 inch NaI crystal and 10 cm focusing collimator at 30% cut off level in order to measure spleen size. Clearance rate of thus treated cells was also measured to examine the splenic sequestration function. Ferrokinetics and life span study were done with routine procedures. In 50 bone marrow scan studies in 17 cases and 53 spleen studies in 17 cases, the results of representative cases were exhibited.

In contrast to the results of ferro-erythrokinetics studies which reflected well the reducing effect on hyperplastic erythropoiesis brought about by busulfan in polycythemia vera or by splenectomy in hemolytic anemias, the results of bone marrow scanning disclosed minimum change in distribution pattern of expansive hyperplasia noticed in these cases for several weeks, and gradual change afterward approaching normal in activity but with the expansive pattern still remaining for months. This expansive hyperplasia pattern faded in three months with the treatment with glucocorticoids in acquired autoimmune

hemolytic anemia with simultaneous reduction in spleen size as well as in clearance rate and extraction ratio of the denaturated cells.

In chronic granulocytic leukemia busulfan or mitomycin induced remission decided by such changes as reduction in the spleen volume and increase in both its blood flow rate per unit volume and extraction ratio of the denaturated cells, and exacerbation, by the changes vice versa. On the other hand, bone marrow scanning developed still the expansive pattern of hyperplasia even in the remission stage. Qualitative change in the distribution pattern of active marrow was observed in one case at blastic crisis in which its activity diminished in the central portion such as ribs, sternum and pelvis, while it survived in peripheral portion such as distal end of humerus and femur and proximal end of ulna, radius and tibia.

From the results presented above, we could reach the following conclusion. Results of spleen scanning with examination of its size and function reflected well the disease stage and effect of the treatment.

On the other hand, distribution pattern of reticuloendothelial active marrow appeared to need some time delay for its alteration, absorbing the transient changes occurred in the clinical course, in other word, it may be considered to reflect the disease entity, the feature as was observed in polycythemia vera and chronic granulocytic leukemia.

Differential Diagnosis of the Tumor in the Left Hypochondrium by ^{203}MHP (Mercuri-hydroxypropane)

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We experienced 2 cases who had tumor in the left hypochondrium. The first case is 47-year-old man who has complained of general fatigue and discomfort in the epigastrium since about 2 months before the admission.

The tumor was palpable 7 finger-breadths below the left costal margin.

We had normal patterns in scintigram of the spleen 10 minutes after the injection of ^{203}MHP and scintigram of the kidney 24 hrs after the injection.

Namely, it revealed the tumor was no spleen and no kidney.

The patient has had the tumor (4×6 cm)