382

FUNDAMENTAL STUDIES OF LEUKEMIC CELL LABELING WITH IN-111-OXINE AND THEIR APPLICATIONS TO LEUKEMIC CELL KINETICS.
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The procedure of granulocyte and lymphocyte labeling with In-111-oxine had been reported several times by us in the meetings of this society. In this presentation, the conditions of leukemic cell labeling with In-111-oxine was examined.Leukemic cell kinetics was also observed using this In-111-oxine labeled leukemic cell. Labeling efficiency was affected with cell counts in the tube,incubation time and temperature during the preparation. The result of the examination revealed that cells more than $1x10^8$, incubation time for 20-30 minutes and temperature at 22-37°C were most appropriate, respectively. About 80% of labeling efficiency was obtained after two washes by saline. There was no significant elution of In during 48 hours from the cell which was suspended in plasma at 37°C. The cell viability detected by trypanblue was more than 90%.
Based on these results, leukemic cell kinetics was performed on five cases with acute myelocytic leukemia. Three or ten ml of peripheral blood was drawn at each time interval, and half time of disappearance, pool size and turnover rate of leukemic cells were calculated. On the other hand, using gamma camera, dynamic and static images were observed and organ distribution pattern was evaluated.

383

SPLEEN CONTRACTION MEASURED BY ECT IN PATIENTS WITH VARIOUS DISORDERS.
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Spleen volume was measured using ECT after injection of heat-treated red blood cells labeled with Tc-99m. Forty-two% of optimum cut-off level obtained from phantom experiment was used in the measurement. Excellent positive correlation (r=0.99) was found between spleen volumes measured with ECT and X-CT. Contraction of the spleen was induced by subcutaneous injection of epinephrine. Serial measurement of the spleen after the injection disclosed that the spleen volume initially decreased rapidly, then reached plateau at approximately 15 minutes. Spleen volumes of 28 patients were distributed from 36.5 to 1298ml. Contraction rates were from 4.4% to 45%, averaging 24.5%. Eleven patients with malignant lymphoma showed wide range of the contraction rates and 4 patients with splenic involvement found by X-CT and/or Ga-67 scintigraphy showed relatively low contraction rates. Remarkably low contraction rates (4.4 and 5.8%) were obtained in 2 patients with CLL and CML. Two patients with portal hypertension or Banti's syndrome showed relatively high contraction rates (40.0 and 28.6%) and large splenic volumes. These results indicate that the contraction becomes decreased by involvement of abnormal cells in the spleen.

384

THE EFFECT OF SERUM ON THE DISTRIBUTION OF RADIOCOLLOIDS IN RES.
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We have reported the distribution of radiocolloids in RES from the viewpoint of their physico-chemical properties. Here, the effects of serum on the uptake of Tc-99m S colloid(Tc-SC) and Tc-99m Sb colloid(Tc-SbC) by rat Kupffer cells were studied. The incubation time of radiocolloids and carbon particles with cells was 1 hr. Electronmicrographs showd that Tc-SbC was localized in lysosomes. The uptake (% dose/10^5 cells) in serum free-MEM was 0.82% with Tc-SC and 0.41% with Tc-SbC. In MEM containing 50% rat fresh serum, the uptake decreased to 0.23% with Tc-SC and 0.026% with Tc-SbC. These values were about 1/3 and 1/15 of those of serum free-MEM, respectively. Also, the uptake with 2 kinds of colloids slightly decreased by inactivating serum but the degree was higher with Tc-SC than with Tc-SbC. The particles of Tc-SbC were spherical and well dispersed, while those of Tc-SC appeared to aggregate by electron microscopic examination. However, serum did inhibit marked aggregation, being different from serum-free experiments. From these results it seems that the accumulation of radiocolloids in RES depends on not only physico-chemical properties of radiocolloids but changes caused by serum in vivo.