
We measured lymphocyte transformation by PHA or Con A using H-3 thymidine. In 31 patients with lung cancer, 7 patients with malignant lymphoma, 5 benign esophagus, 7 patients with benign lymphoma, and 6 normal individuals. The mean value in only the patients with lung cancer (31.8 ± 31.7) by PHA and 4.2 ± 3.3 by Con A showed statistically significant from the normal values (52.5 ± 31.3) by PHA and 14.7 ± 6.2 by Con A.

Patients with lung cancer and esophagus cancer were studied before, during, and after the radiation therapy (6000 rad). The number of the peripheral lymphocytes in these patients decreased to approximately 40% of the initial value at 6000 rad of cumulative radiation dose. SI's by both PHA and Con A in these patients did not apparently change during the radiation. These results imply that immunological level in the patients with malignancy may be maintained at the low, and that radiation for these patients decreased the number of the lymphocytes without significantly altering immunological ability of each cell.

342 STUDIES ON T AND B LYMPHOCYTE KINETICS. S.Matsuda, T.Uchida, R.Kokubun, T.Yui and S.Kariyone. First Department of Internal Medicine, Fukushima Medical College, Fukushima.

Difference of T and B lymphocyte kinetics were studied by using In-111 oxine labeled autologous lymphocytes in 3 normal subjects, 2 patients with chronic lymphocytic leukemia (CLL), and an other case. The recovery of labeled cells in the blood was 19.7 ± 1.9% for T cell and 11.0 ± 5.1% for B cell in normal subjects. The half time of second component was 52.0 ± 5.5 hours for normal T cell and 31.6 ± 4.9 hours for normal B cell. In the observation on the organ distribution with scintillation camera, image of the lymph nodes were visualized at 18 hours after the infusion in T-CLL and at 68 hours in B-CLL but were not noticed in normal subjects in both T and B cells. In-111 oxine labeled T and B cells were injected under the skin of dorsal pedis. The image of inguinal and paraaortic lymph nodes were visualized at 3 hours after the injection for T cell and at 24 hours for B cell. The image of the spleen was noticed after 24 hours for T cell but was not noticed for B cell. It was discussed that there was difference of lymphocyte kinetics between T and B cells.


In vivo kinetics study was carried out simultaneously with In-111 oxine labeled autogeneus platelets(In-A-P) and Cr-51 labeled platelets from healthy donors(Cr-N-P) in thrombocytopenic patients. The dose ratio of 0.0005 to 0.0001 of Cr-51 permitted of both external monitoring of organs' radioactivity and measurement of platelet bound activity in blood samples for each isotope by virtue of different y-ray pulse-height and physical decay.

In congestive splenomegalies developing splenic hypersequestration and in ITP in partial remission, In-A-P and Cr-N-P showed almost identical kinetics pattern in their recovery and survival in the circulation. Discrepancy was revealed in a case of ITP having a history of multiple platelet transfusion in which Cr-N-P disappeared within two hours from the circulation while In-A-P survived for three days. It was also disclosed in a case of cyclic thrombocytopenia in the decreasing phase in her platelet count, in which Cr-N-P with normal apopulation considerably survived In-A-P with right-shifted age population.

Availability of this double tracing technique, although limited to those cases with platelete count over 10 × 10^3/μl, extends research field of pathogenesis, diagnosis and treatment of thrombocytopenic disorders.


In vitro studies on platelet labeling with In-111-tropolone were performed using human platelets by Dewanjee's method. Tropolone is soluble in isotonic saline, whereas oxine must be dissolved in ethanol. Effect of existence of plasma protein and effect of incubation time, temperature and platelet counts for the labeling efficiency were examined. The labeling efficiencies of 20 minutes incubation at room temperature in 1×10^11 platelets/ml without plasma protein in the medium were 82% by In-111-tropolone and 63% by In-oxine, respectively. No significant elution of In-111 from the labeled platelets in vitro at room temperature was not recognized for 24 hours in both methods. In platelet kinetic study on rat, platelet survival time and recovery of In-111-tropolone method was corresponded well to that of In-oxine method. In clinical study, left atrial thrombus in the patient with mitral stenosis and atrial thrombus in aortic aneurysm were clearly visualized with scintillation camera using In-111-tropolone labeled platelets. In-111-tropolone labeled platelets seemed to be useful for platelet kinetic study as well as In-111-oxine labeled platelets.