

The Relationship between Serum Iron Uptake Rate and Reticulocyte Counts in the Peripheral Blood

H. SAITO

Department of Radiology, Nagoya University School of Medicine.

D. HAYASHI

Radioisotope Laboratory, Nagoya University Hospital.

Radioiron uptake by the reticulocytes was observed by incubating peripheral blood with serum transferrin bound ^{59}Fe to investigate the radioassay method of reticulocyte counting instead of microscopic method.

The packed cell volume was obtained from hematocrit value. TIBC and UIBC were determined by Saito's radioassay method. The reticulocytes were counted microscopically. After a series of basic investigation, the method as follows was used; a half ml of packed cells was incubated at 37°C for 60 minutes with 0.1 ml of pooled normal human serum.

The cells were washed with saline 3 times before and after incubation. When a minute amount of labeled transferrin was used without serum, the adhesion of transferrin to the glass tube was observed. When the amount of unsaturated transferrin (UIBC) and serum volume was increased, the rate of radioiron uptake was decreased.

The results of 50 cases including 18 normals showed a good correlation between radioiron

uptake rate and reticulocyte counts with the correlation coefficient $r=0.88$ ($y=0.40x-1.48$). The correlation was better above 4% of reticulocyte counts, and the data were scattered in the normal reticulocyte range. The relative radioiron uptake rate was high in iron deficiency anemia, and low in iron overload. The absolute radioiron uptake rate was high in hemolytic anemias, and low in most of normals. The radioiron uptake rate was above the regression line in iron deficiency anemia and polycythemia vera. The data of aplastic anemia and hemolytic anemia were located along the regression line. To clarify the reason of the difference in radioiron uptake in normal reticulocyte range, further studies are needed. As one of factors influencing radioiron uptake, the content of non-heme iron in the reticulocyte is considerable. The present radioassay method may be available when reticulocyte counts are higher than normal range, and many blood samples are to be determined.