

were compared with the method using  $^{203}\text{Hg}$  labelled BMHP,  $^{51}\text{Cr}$  labelled red cells treated with stable BMHP and  $^{51}\text{Cr}$  labelled heat treated red cells.

This material has good binding capacity to the red cells up to 92%, and the binding could be kept firmly after serial washing by saline. Marked sequestration of labelled red cells into the spleen was achieved in high percentage at a concentration of 1—2.5 mg/ml of red cells.

This method has more advantages of the

simplicity of its procedure, good reproducibility and reliability than the previous  $^{51}\text{Cr}$  labelled heat-treated red cell method.

Authors believe this material should be used routinely for the diagnosis of location and morphology of the spleen and differential diagnosis of a left upper quadrant abdominal mass and so on.

We are now working further on the more quantitative diagnosis of splenic function using several other labelled materials besides  $^{197}\text{Hg}$  MHP.

## The Functional Test and Radioisotope Scanning of the Spleen by Chromium-51 ( $^{51}\text{Cr}$ )

I. TATSUNO

*Department of Radiology, National Kanazawa Hospital*

There has been no special reports of splenic examinations up to the present. The biopsy for the splenomegaly was not used so often because of its danger.

Recently, it has become possible to make clear the function of the spleen by radioisotope studies. The technique is based on the function of the spleen to phagocyte damaged red blood cells from the circulation. Red blood cells are labelled with chromium-51 ( $^{51}\text{Cr}$ ), damaged by heating at a temperature of  $50^\circ\text{C}$  for one hour, and reinjected into the patient from whom the blood had been withdrawn.

$^{51}\text{Cr}$  labelled damaged red blood cells will be removed by the spleen from the circulation.

The clearance rate of the damaged blood cells is obtained in each case. The half time clearance is the time (min) to correspond with 50% of clearance rate. The half time clearance in normal subjects is in a certain limited range. The mean value of half time clearance was 12.5 min. It has been possible

to evaluate the function of the spleen by the value of the half time in each case. Hyperfunctional spleen removes the damaged red blood cells more rapidly and hypofunctional spleen more slowly.

The features of this method are based on;

1. The half time clearance gives no significant deviation for the repeated procedures.

2. The liver in case of normal spleen absorbs a few amount of damaged red blood cells, but almost no uptake of the liver in case of splenomegaly.

Owing to this method, the scanning image of the spleen can be easily demonstrated. The splenic scanning will be useful for the detection of shape and extent of the spleen and space-occupying lesion in it and for the differential diagnosis of the upper abdominal masses to ascertain how the masses are related with spleen. Furthermore various anomalies of the spleen will be found by this procedure.