

V. Blood, Spleen and RES.

Iron Deficiency in Normal Female

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Iron deficiency anemia is frequently found in the young female. This study was undertaken to observe the frequency of the existence of iron deficiency anemia in young female subjects.

Thirty normal male and female subjects at the age between 19 and 20 were studied. Serum iron (SI), unsaturated iron binding capacity of the serum (UIBC), percentage saturation (% Sat), red cell count (RBC), hemoglobin (Hb), and Colour index (CI) were examined.

	SI	UIBC	%Sat	RBC
male	104±24,	196±28	35.8±7.2	502±46
female	79±34	272±49	23.6±8.9	446±43

	Hb	CI
male	15.5±1.6	0.97±0.08
female	13.6±1.4	0.97±0.07

The tendency of iron deficiency was evidently shown by low SI, high UIBC and TIBC. Twenty eight % of female subjects had Hb less than 13 g/100 ml, 30% of them had saturation less than 15%, 27% of them had SI less than 50 µg/100 ml, 30% of them had NIBC less than 300 µg/100 ml.

Thus, young so called normal female stood between normal and iron deficiency. NIBC was the most demonstrable indices of iron deficiency anemia.

Function of Reticuloendothelial System Determined by ¹³¹I-AA in Patients with Blood Diseases

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This report deals with the relationship between hepatic and bone marrow reticuloendothelial (RE) function in pts. with hematologic diseases.

¹³¹I-AA was used to assess both phagocytic and catabolic function of RES simultaneously with ^{99m}Tc-Sulfer colloid (^{99m}Tc) to correlate

the bone marrow distribution (BMD) with entire RES function of the body. ¹³¹I-AA was rapidly cleared from the blood chiefly by hepatic RE cells. Free ¹³¹I was observed to begin to appear in the blood 15 minutes after injection as a result of catabolism of the phagocytized ¹³¹I-AA.

Normal values were 0.13 for K value; 5.4 for free ^{131}I /protein bound ^{131}I ; 0.20 for free ^{131}I at 60 minutes/total ^{131}I at 3 minutes.

Non-treated patients with hypoplastic anemia were shown to have impaired RE function and diminished BMD while the cases in remission, normal RE function and BMD. In some blood disorders showing increased RE function increased BMD was clearly observed. On the contrary impaired RE function was related to the diminished BMD.

In cases with acute leukemia the RE function was within or above normal limits and related to the total cell counts of aspirated

BM except one case who died terminally.

From the above examined results we can conclude:

- (1) Impaired RE function of the whole body is shown in patients with hypoplastic anemia which is a primary BM disease.
- (2) Hepatic RE function is correlative with the BM RE function.
- (3) In acute leukemia the RE function is related to the cellularity in BM until a certain stage of the disease, after which it declines.

Therefore the determination of RE function may be a useful aid to evaluate the activity or prognosis of the disease.

Analog Simulation of Radiosplenogram to Analyse the Spleen Hemodynamics and Its Extraction Function

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For the analysis of splenic hemodynamics in which both rapid and slow phase coexist, radioisotope tracers such as ^{131}I -HSA and ^{51}Cr RBC were injected successively at first into the antecubital vein and radioprecordiogram and radiosplenogram were obtained. The heart-lung system spleen transfer characteristics was determined with radioprecordiogram as input and radiosplenogram as output. Then the tracers were injected into the celiac (or splenic) artery through a femoral catheter and the radiosplenogram was analysed by subtracting the recirculation component that was determined as the output through the identical transfer characteristics with input of

the radioprecordiogram.

For these analysis analog computer was used. The analog circuits were composed the second order filter for heart-lung system, the first order one with time delay for systemic circulation and parallel three first order filters connected in series to time delay for splenic capillary and arteriovenous systems respectively.

This analysis device was useful to define the initial circulation component when initial and re-circulation components overlapped intensely due to slowing of the former component or to increase in the latter caused by enlarged extrasplenic distribution of the in-