

an electromagnetic oscillograph, a scintillation detector (5cm in diameter), a nitrogen-meter and a spirometer.

The patient was seated in a chair and inhaled the radioactive gas and held his breath for 10 seconds. The counting rate of radioactive gas was observed by the electromagnetic oscillograph. To examine the heart function the counting detector was placed on 2 F. B. laterally from the left sternal margin at the fourth intercostal space and when the examine was carried out to lung the detector was located on the upper and

lower back on the scapular line on each side, totally 4 position were used.

The curves on the electromagnetic oscillograph were rearranged to a semilogarithmic graph after the correction for background. By using the technic we demonstrated graph obtained from normal healthy persons and that of the patient with severe degree of A.S.D.

We intend to continue the study about the patient with cardiac failure and poor respiratory function. The report of clinical data will be presented in other occasion.

### Some Notes on the Determination of the Circulation Plasma Volume

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In the recent years it has attracted us strongly that the change of the circulating plasma volume after meal is the one of the most considerable factors producing Dumping syndrome.

In order to survey the circulating plasma volume, radioactive chromic chloride was used in our examination. 30 minutes before the test meal, 40  $\mu$ c of  $^{51}\text{Cr}$  in the form of chloride solution were injected intravenously and the blood enough for 1 ml of plasma was collected from the patient 3 times before and after test meal respectively to measure its radioactivity of the  $^{51}\text{Cr}$ . By these procedures we could find easily the disturbance of the circulating plasma volume provoked by the test meal and discuss the relationship between plasma volume changes and Dumping syndrome. The conclusion from the examination was contented.

Another discussion was argued to determine the actual circulating plasma volume by

single collection of the plasma from the patient prepared with  $^{51}\text{Cr}$  injection. 40  $\mu$ c of the radioactive chromic chloride was injected intravenously, and 1 ml of the plasma were collected 10, 20 and 30 minutes after injection respectively. Now the circulating plasma volume can be determined correctly by the exploration from those 3 points. Then the authors found this correct value of the circulating plasma volume has such relationship with the value of explored from the radioactivity of 20 minutes as shown by the next formula:-

$$P_0 = \frac{1}{0.924} P_2$$

$P_0$  = Exploration point by three kinds of plasma.

$P_2$  = Radioactivity of 20 minutes after injection of  $^{51}\text{CrCl}$ .

Analysis of variance showed also high significance of the exploration point by  $P_2$ .