EVALUATION OF REGULATION OF PERIPHERAL CIRCULATION BY Xe-133 CLEARANCE METHOD. Y. Mori, N. Katayama, K. Kawakami, T. Shimada, Department of Clinical Pathology, Department of Internal Medicine, Jikei University School of Medicine, Tokyo.

The purpose of this communication is to study the regulation of peripheral circulation in diabetic patients. We measured the peripheral circulation on 9 normal subjects and 23 diabetic patients by a Xe-133 clearance method and an admittance plethysmography. Effective flow in the skin and muscle was separately measured by Xe-133 clearance method. Total flow in the muscle and skin, which contain effective blood flow and noneffective sweat flow, measured by the admittance plethysmography. Shunt flow at rest was much higher in diabetic patients than in controls. In thermal stress, the change of sweat flow was less in diabetic patients. This result suggests that disturbance of regulation of the peripheral circulation may be caused by the diabetic microangiography.

EVALUATION OF BLOOD VOLUME WITH INCREASING AGE. M. Suzuki, M. Sudo, Department of Clinical Pathology, Department of Internal Medicine, Kairitsu Amagasaki Hospital, Amagasaki.

We report the evaluation of blood volume (BV) with increasing age. The results in this study were used except for the patients with varied BV and those in serious state. These patients consisted of 177 males and 179 females, aged 15 to 79, and these were divided into the age-groups of every ten ages. BV was obtained by dilution technique using 131I-human serum albumin (740-1110 kBu (20-30 μCi)) (BV). BV was predicted from height (BL) and body weight (BW) (pBV); it was calculated from the following formula:

- male: pBV (BL, BW) = 17.3BL + 14.6BW - 254
- female: pBV (BL, BW) = 28.7BL + 21.5BW - 1897

The data were evaluated statistically by analysis of variance. The mBV showed significant difference among the age-groups (p<0.01-0.05) but the pBV/BV (BL, BW) and the mBV/pBV (BL, BW) showed no difference and small deviation among the age-groups. It was indicated that BV should be evaluated or the basis of pBV.


The detected counts of the radioactivity in left ventricle in RAO projection with first pass method are attenuated by the right ventricular blood pool. Quantity of attenuation is in proportion to the thickness of the right ventricle including blood pool. The thickness of the right ventricle can be supported from the right ventricular counts. Measured counts of the right ventricular (Da) is calculated as follows.

\[ Da = \frac{fa}{Ta} \]

where \( fa \) is counts/cm and takes various values by the activity of the radiotracer and by the efficiency of gamma camera. The left ventricular counts after attenuation correction (S) is expressed as \( S = E \cdot Da \cdot \frac{fa}{Da + fa} \). Ejection fractions are calculated using several value of \( fa \) and the calculated ejection fractions have a peak value at the limited value of \( fa \). Corrected ejection fractions were 10% higher than those with correction in 10 normal cases. Corrected ejection fractions by the present method had almost same value to those by equilibrium method. The present attenuation correction method was useful for clinical studies.