Clinical Significance of Calculation of High/Low Ratio of Adrenal Glands after Administration of ^{131}I-19-Chlesterol

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It is possible to delineate adrenal gland with a rectilinear scanner after administration of ^{131}I-19-Choliesterol. Optimal time for scanning was about 8 days after administration. In order to calculate high/low ratio of adrenal glands, the following system was used. During scanning, information was fed into 4096 channel memory unit and stored in a 64×64 matrix. After examination, memory content was punched out on a computer compatible pater tape. This paper tape was processed with a digital computer (Hitac-10: 8KW). The content of paper tape was displayed on an oscilloscope. The riewer chooses four "area of interest". Region 1 and 2 were selected to contain adrenal glands.

Background level around the right adrenal grand is usually higher than that around the left adrenal gland becuse slight radioactivity of the liver sometimes remains. Therefore two "area of interest" are selected as a background area. Region 3 is the area around the right adrenal gland and region 4 is the area around the left adrenal gland.

The computer decides maximu, minimum counts, total counts of the selected area and mean counts per unit area. After subtraction of background counts, high/low ratih of adrenal glands is calculated. In four patients with Cushing's syndrome due to bilateral adrenocortical hyperplasia, high/low ratio was 1.0–2.0. This means that each adrenal gland has the almost same radioactivity or twofold radioactivity. The scintigram shows the almost equal size of adrenal glands.

In two patinets with primary aldosteronism due to unilateral adrenal denoma, high/low was 4.0. The side of adrenal adenoma has higher radioactivity. In conclusion, it appears to be possible to differentiate bilateral adrenocortical hyperplasia from unilateral adrenocortical adenema more quantitatively with this method than with the conventional photoscintigram.

Analysis of Calcium Metabolism in Humans

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A computer program was developed for the fitting of experimental data to the equation which is expressed as the sum of the exponenial functions.

The program consists of two parts; the first part is concerned with the approximate estima-