

L) Endocrine Organs and Metabolism (Excluding Thyroid Organ)

Growth Hormone Secretion from the Pituitary of Diabetics and Hyperthyroidism Observed after Tolbutamide Injection

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Insulin induced hypoglycemia is known to be one of the best methods to secrete growth hormone from the pituitary. Since tolbutamide stimulates the pancreas to secrete insulin and in turn to decrease blood sugar level, the tolbutamide should stimulate the growth hormone secretion from the pituitary. In the present study, 1 g tolbutamide was injected intravenously to normal subjects, diabetes mellitus and hyperthyroidism to know whether or not the growth hormone secretion was stimulated by the similar manner. Maximum increase of serum growth hormone in the normal subject was observed at 60 min after the tolbutamide injection and 120 to 180 min later, it declined to that observed at the fasting time. In the hyperthyroidism, the

maximum response of growth hormone to tolbutamide was observed also at 45–60 min later but even after 180 min the level of growth hormone was more than 5 ng/ml. In contrast, the response of growth hormone produced by tolbutamide injection was markedly retarded in the diabetes mellitus in which approximately 5 ng/ml of growth hormone was obtained at 60 min after the drug administration. This increased growth hormone level in the diabetics was less than 1/3rd in the normal subject and hyperthyroidism. The tolbutamide test was also useful in the diagnosis of hypopituitarism in which no response of growth hormone secretion was observed by the drug injection.

Clinical Significance of Measurement of the Serum IRI for Long-Term Follow-Up of Diabetes Mellitus

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This clinical retrospective study was designed to clear practical and clinical significance of the measurement of the immunoreactive insulin (IRI) in the serum of the diabetics for a long-term follow-up.

Our clinical materials were 15 normal persons and 104 cases of diabetes mellitus. The serum

IRI was checked during the initial 100 g glucose tolerance test (GTT). The IRI was assayed by the two-antibody-method with the use of the Dainabot-Insulin-Kit.

The therapeutic control of abnormal glucose metabolism of the diabetics at the out-patient clinic was carried out with the use of a newly

systematized parameter of "postprandial blood sugar on visit (BS on Visit)" at least for 6 months.

The serum IRI response during the GTT was characterized and defined as the following patterns; NORMAL: with a peak either 30 or 60 minutes after the glucose ingestion, DELAY: with a peak later than 120 minutes, HYPER: with a peak higher than 100 mU/ml, and LOW: with a peak lower than 30 mU/ml. These typing of the IRI patterns in the diabetics were correlated to the various clinical factors including age of onset, familial disposition, variety and range of complications, the glucose level during

the GTT, the insulinogenic index, variety and amount of medications, and stability of therapeutic control during the follow-up.

The results were summarized as follows.

1) For the long-term follow-up of the diabetics, a recognition of the pattern of the serum IRI response during the GTT in such a way as NORMAL, HYPER, DELAY, and LOW is highly significant and helpful to evaluate clinical severity of diabetes correctly. 2) The order of the IRI pattern as NORMAL, DELAY, and LOW closely represents a progress of severity of diabetes both in the obese and non-obese groups.

Diagnosis of Adrenal Disease By Visualization of Human Adrenal Glands with ^{131}I -19-Iodocholesterol

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Radioisotopic visualization of adrenal glands of eleven patients was performed by the use of ^{131}I -19-iodocholesterol. They included 7 patients of primary aldosteronism, two with Cushing's syndrome and two with normally functioning adrenal tissue. Doses of 1.0 mCi per 50 kg of body weight were dissolved in absolute alcohol and then diluted to a 10 per cent solution with physiologic saline and 0.2 per cent polysorbate 80 for intravenous administration. Five to 9 days after the administration, the patient's adrenal glands were imaged with scintiscanner with dual NaI (TI) crystals 5" in diameter.

Scintillation scanning gave clear visual evidence of concentration of radioactivity at the site of adrenal adenoma of 3 patients with primary aldosteronism. The gland contralateral to the tumor was also visual with the scintillation scanning. The other three patients with primary aldosteronism exhibited diffuse adrenal uptake

of radioactivity without an area of concentration, and at surgery disclosed small adrenal adenomas measured below 10 mm in diameter. A left adenoma in a patient with Cushing's syndrome was measured 35 by 30 mm on scan, with no uptake in the opposite gland. There was no indication of radioactive concentration in the region of the contralateral adrenal gland compatible with functional suppression of that gland with adrenal adenoma. The position of the tumors was confirmed surgically. A patient with Cushing's syndrome due to ACTH excess showed adrenal glands approximately equal in size and radioactivity concentration. In primary aldosteronism, special preoperative studies disclosed that the uptake of radioactivity was completely inhibited with dexamethasone in the contralateral gland, while uptake was brightly visible on the tumor side.

It is concluded that the administration of