Operable Hypertensions*

KAORU YOSHINAGA

We have been interested in surgically treatable hypertensions and have some experiences on this subject. Here we would like to discuss the diagnosis and treatment of these hypertensions.

1. Pheochromocytoma
Most characteristic clinical features of this hypertension are fluctuation of blood pressure, sweating, weight loss, glycosuria, and hypermetabolism. For the pharmacological diagnosis Regitine test or histamine test is available. Estimation of catecholamines in urine or blood determines the diagnosis. The disease is treated by surgical removal of the tumor. Often, the surgery is accompanied by dangerous shock, against which excessive blood transfusion or pretreatment with α- and β-blockers are effective, and, therefore, recommended.

2. Renovascular Hypertension
In Japan, this type of hypertension is most frequently caused by aortitis syndrome (TAKAYASU disease), followed by fibromuscular hyperplasia, atherosclerotic plaque, and others. Renovascular hypertension is suspected when systolic murmur is heard on upper abdominal wall in the renal region.

Diagnosis is established by renogram, HOWARD test, estimation of renin activity, pyelography, and arteriography. Treatment is surgical, either by nephrectomy or reconstruction of renal artery. When the aortitis syndrome is the cause, the surgery is often difficult or impossible, because the stenosis is apt to be bilateral and the abdominal aorta is diseased together.

3. Juxtaglomerular Cell Tumor
In this disease excessive renin is liberated from the tumor. Aldosterone secretion is also increased by elevated renin-angiotensin activity. The hypertension of this kind shares many signs and symptoms with that of primary aldosteronism or malignant hypertension. Juxtaglomerular cell tumor may be diagnosed preoperatively by the following data: elevation of both aldosterone secretion rate and plasma renin activity (Primary aldosteronism ruled out), fairly preserved renal functions (malignant hypertension ruled out), and angiography (accumulation of contrast medium in this angiomma-like tumor). The tumor may be safely removed by operation.

4. Cushing Syndrome
Hypertension accompanying Cushing syndrome is easily diagnosed by the characteristic clinical symptoms: moon face, buffalo hump, obese trunk as contrasted with thin extremities, striae cutis, acne, hirsutism, etc. Estimation of cortisol or its metabolites is confirmatory.

The syndrome caused by adrenal adenoma is treated by surgical extirpation of the tumor. The pituitary type is treated by irradiation of the hypophysis or total adrenalectomy. In order to perform the operation for Cushing syndrome safely, enough care should be taken against shock.

5. Primary Aldosteronism
The hypertension of primary aldosteronism is diagnosed by associated hypokalemia or symptoms due to potassium depletion, for instance, periodic paralysis, tetany, polyuria with polydypsia, nycturia, and distinct U wave in electrocardiogram. Final diagnosis is made by augmented aldosterone and suppressed renin activity. These criteria are applicable for normokalemic type of this syndrome as well. Treatment is surgical.

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6. 17-α-Hydroxylase Deficiency

This hypertension closely resemble primary aldosteronism, and satisfies the diagnostic criteria mentioned above. But the diagnosis may be made by the following endocrinological characteristics: elevated pregnanediol with suppressed pregnane-

triol, low-normal cortisol, elevated mineralocorticoids, elevated ACTH, and no response on Metopyrone test. Medical treatment with glucocorticoid is always successful in this hypertension. This also serves as diagnosis ex juvantibus.