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NOTE

A Case Report of an Elderly Patient with Acromegaly

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Abstract. We encountered a 91-year-old patient with acromegalic features. The serum levels of growth hormone (GH) and insulin-like growth factor-I (IGF-I) were increased to 23.3 ng/ml and to 268 ng/ml, respectively. Both thyrotropin-releasing hormone and luteinizing hormone-releasing hormone tests demonstrated a 2–3 fold increase in the serum GH level. Magnetic resonance imaging disclosed a pituitary mass in the enlarged sella. The patient was diagnosed as having acromegaly due to overproduction of GH from a pituitary tumor. She manifested cardiac hypertrophy with severe aortic stenosis and mild hypertension, but without diabetes mellitus. After the administration of octreotide subcutaneously at a dose of 25 to 50 μg daily for 20 days, the serum GH level increased transiently but decreased rapidly to approximately half the initial level, and suppression of the GH level persisted thereafter for over 2.5 months. This patient seems to be the oldest patient with acromegaly among those reported in Japan.

Key words: Acromegaly, Advanced age, Octreotide

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ACROMEGALY is characterized by hypersecretion of growth hormone (GH) and a slowly progressive clinical course. GH excess causes organomegaly and excessive growth of soft tissues. The earliest clinical manifestation is changes in the facial features and extremities. We encountered a 91-year-old woman with acromegalic facial features and a high serum GH level. She had hypertension and cardiac hypertrophy with aortic stenosis, in contrast to the known characteristics in which acromegalic patients have a shortened life span mainly due to death as a result of cerebrovascular disease, heart disease and malignancy [1–5]. We describe here in this case of acromegaly in an elderly patient and discuss her long clinical course.

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Case Report

A 91-year-old woman visited our hospital because of fever, cough and sputum in April, 1995. She was admitted for treatment of acute bronchitis and congestive heart failure. She had undergone an operation for uterine myoma at the age of 55 years. At the age of 62, she had been diagnosed with uterine carcinoma and had received radiation therapy.

On this admission, her height and body weight were 142 cm and 50 kg, respectively. Her body temperature was 37.9 °C, and pulse rate 98/min with regular rhythm. Her blood pressure was 154/94 mmHg. She had a typically acromegalic face with a big nose, thick lips and soft tissue thickening. Piping rales were audible in both lungs. A systolic murmur was audible in the aortic area and along the left sternal border. Her abdominal findings were normal.

Laboratory data revealed that the erythrocyte

sedimentation rate was 50 mm/h and the C reactive protein concentration was 6.1 mg/dl. Fasting plasma glucose was 107 mg/dl and hemoglobin A1c was 5.5%. Endocrinological examination disclosed that serum GH and insulin-like growth factor-I (IGF-I) levels were elevated, to 23.3 ng/ml and to 268 ng/ml, respectively. Serum prolactin was 22.7 ng/ml. The serum LH and FSH were very low, being less than 0.5 mIU/ml and 0.5 mIU/ml, respectively (Table 1). Serum GH was increased in response to the TRH (500 μg, i.v.) and the LH-RH (100 μg, i.v.) tests. The serum LH and FSH did not respond to LH-RH (Fig. 1).

Magnetic resonance imaging (MRI) revealed a pituitary mass in the sella turcica which enlarged and extended ventrally (Fig. 2). Radiographs of both hands and feet disclosed bony tufting at the ends of the terminal phalanges. Heel pad thickness was increased to 26 mm. Chest X-ray disclosed cardiomegaly and pulmonary congestion. From these results, a diagnosis of acromegaly due to a GH-secreting pituitary adenoma was made.

On the echocardiogram the aortic valves were seen to be extremely thickened and their openings were constricted, based on which aortic stenosis was diagnosed. The left ventricular wall was massively thickened to 21 mm with concentric hypertrophy, and the left ventricular cavity was small. She was given an antibiotic and diuretic and digitalis treatment, resulting in improvement in the acute bronchitis and heart failure.

Table 1. Serum hormone levels on admission

GH	23.3 ng/ml	IGF-I	268 ng/ml
PRL	22.7 ng/ml	ACTH	60 pg/ml
TSH	0.84 μU/ml	LH	<0.5 mIU/ml
FSH	0.5 mIU/ml	ADH	6.6 pg/ml
FT4	1.1 ng/ml	FT3	2.2 pg/ml
cortisol	10.7 μg/dl	E2	<10 pg/ml
progesterone	0.2 ng/ml		

Since she had severe aortic stenosis and marked left ventricular hypertrophy, we selected octreotide as the pharmacologic therapy, rather than bromocriptine. A single 50 μg subcutaneous injection (s.c.) of octreotide was followed by a decrease in serum GH (Fig. 3). Octreotide was then started at a dose of 25 μg s.c. once each day. After receiving octreotide injections for 20 days, she was discharged from our hospital due to personal circumstances in August, 1995. Serum GH and IGF-I remained at approximately half of the initial

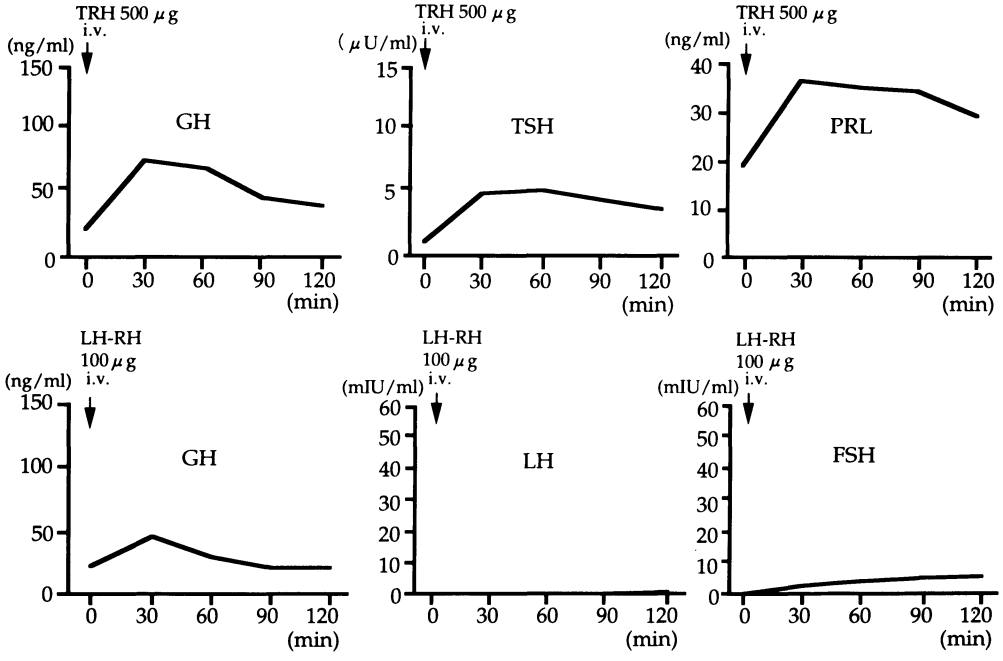

Fig. 1. Results of TRH test (upper panel) and LH-RH test (lower panel). The serum GH level was increased in response to TRH and LH-RH.

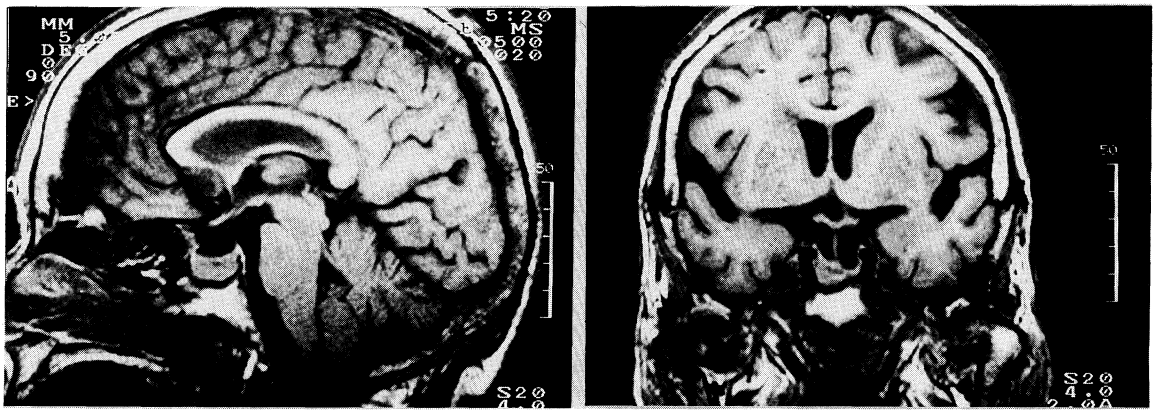

Fig. 2. Sagittal (left) and coronal (right) T1-weighted MR scans of the head. A pituitary mass is seen in the enlarged sella turcica.

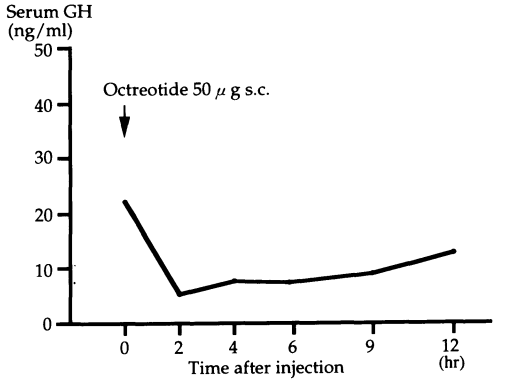

Fig. 3. Serum GH level changes in response to octreotide. The level of serum GH was decreased after subcutaneous injection of 50 μg of octreotide.

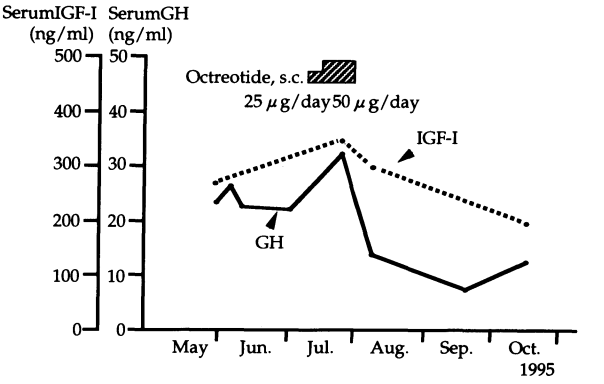

Fig. 4. Clinical course of the patient. The serum levels of GH and IGF-I were decreased after the administration of octreotide.

levels after discontinuing the octreotide therapy (Fig. 4). At present, we are observing her course without medication.

Discussion

A follow-up study of Japanese patients (n=979) with acromegaly that we performed in 1991 revealed that the mean age at the diagnosis of acromegaly was 44.5 years and that at death was 59.0 years [5]. Other papers [1–4] reported ages similar to those we found. The oldest acromegalic patient in Japan was reported to be 83 years old (unpublished data), although it is unknown whether this patient is still alive or not. Among Caucasians, the oldest patient with acromegaly was less than 85 years old at the time of death [2, 4] and no patient over 90 years of age has been reported until now [1–5]. The estimated mean duration until the diagnosis of acromegaly was found to range from approximately 7 to 10 years [1–5]. In this patient, the acromegaly might have started at the end of the patient's 8th decade or the beginning of the 9th, because her foot size had increased 1.5 cm in 10 years. In any event, she seems to be the oldest reported patient with acromegaly.

The main complications of acromegaly are diabetes and hypertension [1–5]. It has not been clarified whether these complications increase the death hazard of patients with acromegaly [1, 2, 4], but the mortality in acromegaly is higher than that of the general population [1–4]. Furthermore, the

major causes of death in acromegalic patients are cerebrovascular and heart diseases [1–5], and this patient presented with severe aortic stenosis and cardiac hypertrophy. She might have remained living for such a long time because of the late onset of her disease, the relatively slow growth of the tumor, and the small amount of GH produced, as well as the mild degree of hypertension uncomplicated by diabetes mellitus. The slightly increased GH level may be beneficial for elderly patients in terms of activity in daily life, although the amount of her daily exertion has been gradually reduced since she fractured a femur at the age of 84.

Surgical resection of the tumor should be chosen first when possible, but some patients need to receive only medication. We chose octreotide therapy in consideration of her age and cardiac hypertrophy. Patients with acromegaly are generally treated with a injection of 100–200 μg octreotide two or three times daily for at least 4 weeks. Octreotide can lower the level of GH to less than 10 ng/m*l* and that of IGF-I to the normal range in approximately half of acromegalic patients, being more effective than bromocriptine [6, 7]. In this case, the total dosage of octreotide was small, because the treatment was started at 25 μg octreotide once daily and administration lasted only for 20 days. Nevertheless, the treatment was effective in decreasing serum GH and IGF-I, suggesting that the tumor was sensitive to octreotide and might decline into partial necrosis. Unfortunately, we were not able to evaluate the change of the pituitary tumor by MRI after the treatment with octreotide. We previously reported two types of GH-secreting pituitary adenomas with different pathological findings and clinical courses [8, 9]. Her pituitary tumor may be a type 2 pituitary adenoma, in view of the slow clinical course and the satisfactory suppression of serum GH by octreotide, although we have had no opportunity to examine the pituitary tumor. In addition, the gonadotrophs seem to be suppressed by the GH-secreting adenoma, resulting in the low levels of serum LH and FSH. Since no side effect of octreotide was noticed during the treatment, we consider octreotide to be safe and effective even in elderly acromegalic patients.

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