Octreotide Improved Ventricular Arrhythmia in an Acromegalic Patient

KEIKO SUYAMA, DAIGAKU UCHIDA, TOMOAKI TANAKA, JUN SAITO, YOSHIMI NOGUCHI, SUSUMU NAKAMURA, ICHIRO TATSUNO, YASUSHI SAITO AND NAOKATSU SAEKI*

Second Department of Internal Medicine, Chiba University School of Medicine, 1-8-1 Inohana, Chuo-ku, Chiba 260-8670, Japan
*Department of Neurosurgery, Chiba University School of Medicine, 1-8-1 Inohana, Chuo-ku, Chiba 260-8670, Japan

Abstract. We saw a remarkable effect of octreotide, the long-acting somatostatin analogue, in reducing the number of ventricular premature complexes (VPCs) in a 59-year-old woman with acromegaly. Her basal GH and IGF-1 levels were up to 22.9 ng/ml and 934.9 ng/ml respectively. MRI revealed a 14 x 12 x 10 mm mass lesion in the pituitary gland. She had hypertension and echocardiography showed an increase in left ventricular wall thickness. Electric cardiography showed the presence of frequent VPCs and 24-h Holter monitoring revealed 24277 beats of multifocal VPCs/24 h. She was treated with 300 µg/day of octreotide for four weeks before transsphenoidal surgery. After octreotide treatment, GH and IGF-1 were suppressed to 1.8 ng/ml and 145.3 ng/ml respectively, and the tumor size was remarkably reduced. Furthermore, the number of VPCs was also dramatically reduced to 2062 VPCs/24-h (8.5% of pretreatment) with 24-h Holter monitoring. This case shows that VPCs of acromegalic patients can be controlled by suppressing GH and IGF-1 with octreotide, and this agent is useful for reducing both tumor size and frequency of VPCs prior to surgery.

Key words: Acromegaly, Octreotide, Ventricular arrhythmia, Acromegalic cardiomyopathy

(Endocrine Journal 47: S73-S75, 2000)

THE cardiovascular complications of acromegaly include hypertension and cardiomyopathy and it is a major cause of death in acromegalic patients [1]. The precise mechanism of acromegalic heart disease is still unclear; indeed the coexistence of hypertension and diabetes mellitus makes it difficult to determine whether the cardiac disease is secondary to these disorders or primarily related to GH hypersecretion. Ventricular dysrhythmias may also occur and sometimes they can lead to sudden death [2]. Octreotide, the long-acting somatostatin analogue has therefore generated great interest as a therapy for patients with acromegalic heart disease [3, 4]. Here we report that octreotide dramatically improved the frequent ventricular premature complexes (VPCs) in a patient who had an acromegalic heart disease.

Case Report

A 59-year-old woman who had acromegalic features such as excessive sweating, thickening of the lips and enlargement of nose, hands and feet, was admitted to our hospital for endocrinological examination. Basal GH and IGF-I levels were up to 22.9 ng/ml and 934.9 ng/ml respectively. The GH concentration was not suppressed after 75-g oral glucose administration. TRH paradoxically increased GH from 23.9 ng/ml to 101.4 ng/ml. Conventional skull x-ray showed ballooning and a double floor in the sella turcica. MRI revealed a 14 x 12 x 10 mm mass lesion of the pituitary gland.
Holter monitoring revealed 24277 beats of multifocal VPCs/24 h (Table 1). She was treated with 300 μg/day of octreotide for four weeks before the transsphenoidal surgery. After octreotide treatment, GH and IGF-1 were suppressed to 1.8 ng/ml and 145.3 ng/ml respectively, and the tumor size was remarkably reduced (Fig. 1-B). Furthermore, the number of VPCs was also dramatically reduced to 2062 VPCs/24-h (8.5% of pretreatment) with 24-h Holter monitoring (Table 1). The transsphenoidal surgery was successful and a typical GH-producing pituitary adenoma was dissected out.

**Discussion**

Patients with acromegaly have significant morbidity and mortality, associated with cardiovascular disease [1]. Acromegalic cardiomyopathy is characterized by myocardial hypertrophy, and as seen in this patient, acromegalic patients frequently have ventricular arrhythmias. Both the prevalence and severity of ventricular arrhythmia were significantly higher in patients with acromegaly than in controls [2].

Pretreatment with octreotide in acromegaly results in shrinkage of the pituitary adenoma and improvement of surgical outcome [5]. Furthermore, it has been reported that octreotide was effective for acromegalic cardiomyopathy; it effects hemodynamic and histological improvement in acromegalic cardiomyopathy [3, 4].

This case shows that suppressing GH and IGF-1 with octreotide can also reduce VPCs in acromegalic patients. To our knowledge, this is the first case report to show the beneficial effect of octreotide on the ventricular arrhythmias in acromegalic cardiomyopathy. Furthermore, this acute favorable effect of octreotide in ventricular arrhythmias may also indicate the existence of specific acromegalic cardiomyopathy. However, a direct effect of octreotide as anti-arrhythmia agent should also be considered because negative inotropic effect of somatostatin in isolated atria of the guinea-pig was reported [6] and octreotide might have some electrical or mechanical effect to the heart. Anyway this case indicated that octreotide should be beneficial for patients with acromegalic heart disease before surgery to control ventricular arrhythmias.

**Fig. 1.** Gadolinium enhanced MRI before (A) and after (B) octreotide treatment. The tumor size was reduced from 14 × 12 × 10 mm to 10 × 7 × 6 mm after octreotide treatment.

**Table 1.** Comparison of 24-h Holter monitoring before and after octreotide treatment.

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Heart Beats</td>
<td>116019</td>
<td>88563</td>
</tr>
<tr>
<td>SVPC</td>
<td>1631</td>
<td>1787</td>
</tr>
<tr>
<td>VPC</td>
<td>24277</td>
<td>2062</td>
</tr>
<tr>
<td>Pair</td>
<td>501</td>
<td>1</td>
</tr>
<tr>
<td>VT</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

The number of ventricular premature complexes (VPC) was remarkably reduced after octreotide treatment. SVPC: supraventricular premature complexes, Pair: a pair of VPC, VT: ventricular tachycardia.

(Fig. 1-A) and she was diagnosed as having acromegaly due to a GH-producing pituitary adenoma. She had slight hypertension, 150/90 mmHg at rest, and increased left ventricular wall thickness was demonstrated by echocardiography. Electric cardiography showed the presence of frequent VPCs and 24-h
References