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Case Report

Facial nerve palsy associated with atomoxetine-induced hypertension

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Abstract

Background: Peripheral facial nerve palsy is characterized by unilateral facial paresis due to ipsilateral facial nerve dysfunction. Most cases are idiopathic; however, some have specific etiologies, such as herpesvirus infection, immunological disorders, and hypertension. Atomoxetine is a norepinephrine reuptake inhibitor that is used in the treatment of attention deficit hyperactivity disorder (ADHD). This drug is known to cause adverse effects, such as nausea, appetite loss, headache, insomnia, and hypertension.

Case description: We herein describe a case of sudden-onset right peripheral facial palsy in a 9-year-old Japanese boy. The patient's systolic blood pressure was as high as 200 mmHg, and he was therefore admitted to our hospital for investigation. Extensive surveillance including blood examination; endocrinological testing; imaging studies such as computed tomography, magnetic resonance imaging, and renography; and renal biopsy did not reveal any abnormalities. The patient had ADHD and was under treatment with atomoxetine. We discontinued treatment with atomoxetine; the patient showed gradual improvement. His hypertension and facial palsy resolved. We therefore diagnosed the patient with peripheral facial palsy associated with atomoxetine-induced hypertension.

Conclusion: Although peripheral facial nerve palsy is usually benign and self-limiting, blood pressure should be monitored in children under treatment with atomoxetine and the possibility of drug-induced hypertension should be considered in order to prevent palsy associated with hypertension.

Keywords: Facial nerve palsy; Atomoxetine; Hypertension

1. Introduction

Peripheral facial nerve palsy is characterized by hemifacial paresis due to ipsilateral facial nerve dysfunction [1]. Most cases of peripheral facial nerve palsy are idiopathic and of the benign Bell's palsy type; however, some cases have other etiologies, such as herpesvirus infection, immunological disorders, brain tumors, trauma, and hypertension [1].

Atomoxetine is a norepinephrine reuptake inhibitor and is used for treating attention deficit hyperactivity disorder (ADHD) [2]. Atomoxetine is commonly used worldwide, and its adverse effects include nausea, appetite loss, somnolence, fatigue, and hypertension [3,4].

We herein describe, for the first time, a case of right peripheral facial palsy caused by atomoxetine-induced hypertension in a 9-year-old Japanese boy.

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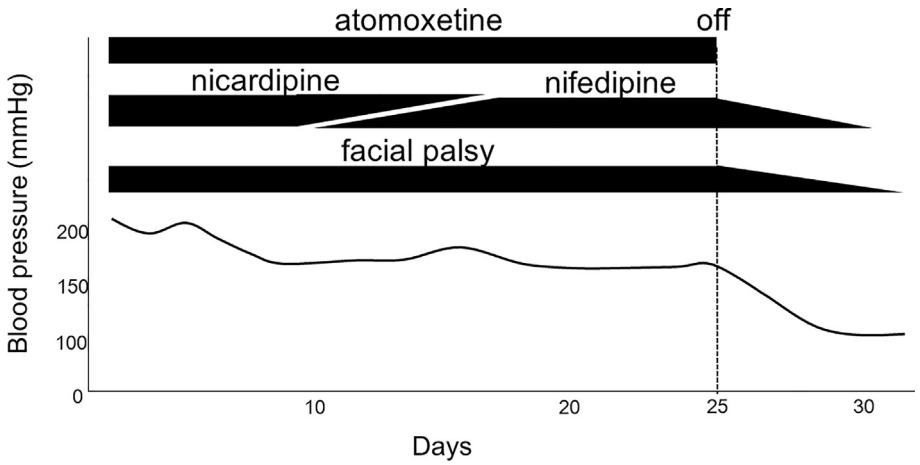

Fig. 1. Time course of facial palsy, blood pressure, and atomoxetine usage. After cessation of atomoxetine, facial palsy, and blood pressure gradually improved.

2. Case report

A Japanese boy weighing 2946 g was born at term after an uneventful pregnancy and delivery to non-consanguineous parents. He had no personal or family history of immunodeficiency or neurological disorders. His height and weight growth curves were within the median range, and his developmental milestones were normal. At 7 years of age, he was diagnosed with attention deficit hyperactivity syndrome (ADHD), and was prescribed atomoxetine at a dosage of 25 mg/day, which was equal to 1.1 mg/kg/day. After being treated with atomoxetine, his symptoms improved.

At 9 years of age, he suddenly exhibited right facial paresis, without any precedent infections or causative events. He was diagnosed with right peripheral facial palsy at another hospital. However, since he also exhibited high blood pressure (203/159 mmHg), he was admitted to our hospital for further investigation.

On admission, he was alert and conscious, but presented with right-sided peripheral facial palsy. He did not experience any headache and dizziness, or exhibit flushing or other forms of cranial paresis. There was no motor and sensory disturbance. He did not exhibit cerebellar ataxia or bowel dysfunction. Blood examinations, including tests for anti-ganglioside antibodies, revealed results within normal limits. Urinary analysis revealed no abnormalities; no proteinuria or occult blood were observed. Renography also revealed normal findings. Cerebrospinal fluid examination revealed normal cell count (1 cell/ μL) and protein levels (19 mg/dL). Brain magnetic resonance imaging (MRI) and echocardiography revealed normal results. We also performed a renal biopsy; no causative abnormalities were observed.

We initially administered nicardipine intravenously, but it was eventually tapered off and nifedipine was then administered orally. However, there was no efficient reduction in blood pressure. Finally, we discontinued atomoxetine treatment to test whether this could resolve the peripheral facial palsy. Thereafter, blood pressure gradually normalized to 116/60 mmHg, and right peripheral facial palsy resolved (Fig. 1). Therefore, the final diagnosis was peripheral facial nerve palsy due to atomoxetine-induced hypertension. The patient was discharged without any neurological complications. We got the informed consent from the parents about this report.

3. Discussion

We herein describe, for the first time, a case of peripheral facial palsy associated with atomoxetine-induced hypertension in a 9-year-old Japanese boy. Cessation of treatment with atomoxetine resulted in dramatic improvement in facial palsy and hypertension.

Hypertension-induced facial palsy is a rare complication in childhood. To the best of our knowledge, only 24 cases in children have been reported so far, although not well known, there is a greater risk of peripheral facial palalysis associated with hypertension in children than in adults [5,6]. In these cases, the etiology of hypertension was variable, and included renal diseases and cardiac disorders. Although one case was reported to have been caused by medication nonadherence [7], no previous cases of hypertension-induced facial palsy associated with atomoxetine have been reported.

How hypertension causes facial palsy remains to be elucidated. Hypertension may cause regional edema in the facial nerve canal [5,6]. Compression of the facial nerve is a key factor contributing to facial palsy. With adequate treatment, facial palsy is reversible, and further neurological complications can be avoided.

Atomoxetine is commonly used to treat ADHD worldwide. Adverse effects of atomoxetine mainly

include gastrointestinal manifestations such as nausea, vomiting, and appetite loss [3]. However, atomoxetine also affects the cardiovascular system, causing cardiac arrhythmia, cardiomyopathy, and hypertension; these adverse effects are observed in 1% of treated patients [4]. A systematic review and meta-analysis of the effects of methylphenidate, amphetamines, and atomoxetine in children and adolescents with ADHD revealed that statistically significant pre–post increases in diastolic and systolic blood pressure and heart rate were associated with amphetamine and atomoxetine treatment [8]. Since increased blood pressure and heart rate are considered risk factors for cardiovascular morbidity and mortality during adult life, these parameters should be monitored closely in pediatric patients on ADHD medication [8].

In summary, to our knowledge, this is the first report of peripheral nerve palsy associated with atomoxetine-induced hypertension. When prescribing atomoxetine to patients with ADHD, adverse cardiovascular effects such as hypertension should be considered and blood pressure should be monitored closely in order to prevent hypertension-associated palsy and other hypertension associated disorders in these patients.

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