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Case Report

Anxiety Disorder and Alternating Bilateral Ptosis as the First Symptoms of Diabetes: A Case Report

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ABSTRACT

Introduction: Long-term diabetes may cause oculomotor nerve palsy and anxiety disorder. Diabetic oculomotor nerve palsy is usually accompanied by diplopia, ptosis and eye movement disorders. The oculomotor nerve is often separated into superior and inferior divisions; diabetic third cranial nerve palsy may affect either division in isolation. However, anxiety disorder and alternating bilateral ptosis as the first symptoms of diabetes are extremely rare.

Case Presentation: This case report describes a 63-year-old female patient who was admitted to the hospital for anxiety disorder with bilateral alternating ptosis. The patient had no diplopia or other new focal neurological symptoms. A neurological examination revealed left upper eyelid ptosis; other findings were negative. Except for hyperglycemia (13.96 mmol/L) and glycated hemoglobin (7.9%), laboratory tests showed no other abnormalities. The patient eventually recovered in a short time after a comprehensive treatment, including effective blood glucose control, microcirculation improvement and anxiety management.

Conclusion: The upper eyelid droop caused by long-term diabetes may result in anxiety disorder. A comprehensive treatment may be considered for the patients admitted to the hospital for diabetes and its vascular neuropathy.

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Introduction

Diabetic neuropathy is one of the most common long-term complications of type 2 diabetes. The prevalence of diabetic neuropathy is related to hyperglycemia severity and duration. Approximately 50% of patients with type 1 or type 2 diabetes eventually develop neuropathy; some patients develop anxiety and depression disorders as well [1-4].

Oculomotor nerve palsy is the most prevalent form of diabetic mononeuropathy, it accounts for about 59.3% of all diabetic ophthalmoplegia [5]. It initially manifests as diplopia and can progress to complete ophthalmoplegia within a few days. The oculomotor nerve is often separated into superior and inferior divisions within the anterior

cavernous sinus or superior orbital fissure; the superior division innervates the superior rectus and levator palpebrae superioris muscles. However, isolated superior division oculomotor nerve palsy is rare [1, 2]. This report presents a rare case of type 2 diabetes wherein the patient developed alternating ptosis of the bilateral upper eyelids with an anxiety disorder.

Case Presentation

A 63-year-old female patient was admitted to the hospital with "alternating ptosis of bilateral upper eyelids, with upset and palpitation for about 3 months." The patient complained of ptosis of the left upper eyelid for 3 months prior to admission without an obvious cause or any diurnal changes, diplopia, blurred vision, orbital pain, headache, focal

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numbness, or fatigue. After the symptoms persisted for about 40 days, the patient began experiencing ptosis of the right upper eyelid while the symptoms on the left disappeared. After more than 1 month, ptosis of the left upper eyelid recurred, but the symptoms on the right improved. As such, alternating ptosis of the bilateral upper eyelids occurred in this patient; no other particular discomforts were noted. The patient also indicated no recent history of head trauma or precursor symptoms suggestive of viral disease. There was nothing special about her past medical history. She admitted that her mother had diabetes, but denied a family history of neuromalnutrition, and did not have a history of smoking, drinking, or drug use.

After the patient was admitted to the hospital, both craniocerebral enhanced computed tomography angiography (CTA) image and magnetic resonance imaging (MRI) showed no obvious craniocerebral lesions. No significant eye disease was found by fundus examination on admission. A nervous system examination revealed ptosis of the left upper eyelid only. Both pupils were the same size and had a normal response to light; also, both extraocular movement and eyeball alignment were normal. Other neurological examinations showed negative findings. An examination of emotional reactions showed that the patient had anxious expressions and was sometimes upset, nervous, restless, and not harmonious with the surrounding environment. She was often annoyed with small things and overly anxious or unnecessarily worried about things that did not happen; moreover, she had no emotional inversion or pathological passion. Except for fasting hyperglycemia (13.96 mmol/L) and glycated hemoglobin (HbA1c, 7.9%), other laboratory tests (such as infection, thyroid function, autoimmune diseases and myasthenia gravis) showed no obvious abnormalities.

According to the patient's clinical manifestations and auxiliary examination, potential diagnoses of myasthenia gravis, cavernous sinus lesion, intracranial infection and tumor, Lyme disease, cerebral aneurysm, or other related diseases were excluded. After the patient was admitted to the hospital, the main treatment program was designated as follows: 13 u insulin aspart 30R was subcutaneously injected 15 minutes before breakfast, 12 u insulin aspart 30R was subcutaneously injected 15 minutes before dinner, and acarbose (50 mg orally, 3 times daily) was added to control blood glucose. Sodium ferulate was administered with 300mg by intravenous drip once a day to improve microvascular lesions. Concurrently, a combination of clonazepam tablets (2 mg orally, once nightly) and mirtazapine tablets (15 mg orally, once daily) was administered to treat anxiety and improve sleep.

During hospitalization, the patient's blood glucose was almost maintained below 8 mmol/L. After more than 10 days of enhanced blood glucose control and anti-anxiety treatment, the patient's fasting blood glucose was 6.8 mmol/L before discharge and her hyperglycemia and anxiety disorder had improved significantly. The left upper eyelid droop had essentially recovered subjectively and objectively; also, the right eyelid no longer drooped. Ultimately, she was diagnosed with diabetic oculomotor nerve palsy and anxiety disorder. At present, the patient has been discharged from the hospital for more than two months, and no recurrence of ptosis has been found in the recent follow-up.

Discussion

Third cranial nerve (oculomotor nerve) palsy usually manifests as diplopia, ptosis, eye movement disorders, and pupil changes. Partial oculomotor nerve palsy may only induce mild ptosis; abnormal eye movements and pupil changes may be subtle. Diabetic third cranial nerve palsy, also known as ischemic third cranial nerve palsy, is the most common cause of third cranial nerve palsy in adults; its pathogenesis generally involves a microvascular injury [1, 6]. It has been reported that most patients with oculomotor nerve palsy have a long history of poor blood glucose control [5, 7].

The classic oculomotor nerve palsy manifestation in diabetes is an acute onset of diplopia with ptosis, but the pupillary function is usually spared. Diabetic third cranial nerve palsy may affect the superior and inferior separation of the oculomotor nerve, but diplopia usually exists [2, 3, 5, 8]. However, isolated palsy of either the superior or inferior division of the oculomotor nerve has rarely been reported. In diabetic third cranial nerve palsy cases, the infarction initially occurs in the smallest blood vessel that supplies the inside of the oculomotor nerve [1]. Importantly, the ischemic injury of the anterior cavernous sinus nerve can only selectively affect the nerve fibers that innervate the levator palpebrae superioris muscle [2]. Clinically, cases of simultaneous bilateral upper eyelid droop are rare in diabetes, and the cause of alternating bilateral ptosis in this case is unknown [7, 9]. It is possibly related to the microvascular damage and self-repair of diabetic neuropathy. However, this needs to be confirmed in future studies.

A previous study found that the incidence of anxiety and depression increased in older patients with a long history of diabetes with several complications and is more common in women [4]. Diabetic neuropathy is significantly associated with a decreased quality of life, sleep disorders, and symptoms of depression and anxiety; its effect on neural health is greater than neuropathic pain [10]. In this case, the patient denied the history of diabetes; alternating bilateral ptosis was the first symptom of type 2 diabetes, followed by symptoms such as anxiety and insomnia. The upper eyelid droop caused by long-term diabetes is a plausible reason for the anxiety disorder in this patient. Also, long-term diabetes itself can lead to an anxiety disorder. Notably, drug compliance is an effective regulator of the relationship among HbA1c, depression, anxiety, disease severity, and the quality of life; therefore, early identification and effective drug control are essential for a good prognosis for diabetes [10].

Previous studies have shown that the combination of drugs, exercise, and psychological therapy can significantly improve the physical activity level and quality of life of patients with diabetic neuropathy (painful diabetic neuropathy) [11]. In this case, the patient underwent a combined treatment of blood glucose control, improving microcirculation, anti-anxiety, and sleep improvement. The patient eventually recovered in a short time (about 10 days of standard treatment), which was similar to the previous report (unilateral ptosis as the only manifestation of diabetic superior division oculomotor nerve palsy, the ptosis recovered partially within 1 week after standard treatment), but our case is relatively complex [1].

This report presents a rare case of diabetes manifesting with alternating ptosis of the bilateral upper eyelids and anxiety disorder as the first symptoms. The ischemic injury of nerve fibers that innervate the levator palpebrae superioris may be an important cause of diabetic oculomotor nerve palsy. Accordingly, upon admitting a patient with diabetes and unilateral or bilateral upper eyelid droop to the hospital, diabetic vascular neuropathy with effective blood glucose control should be considered as the most basic treatment. If the patient has a concurrent anxiety disorder, a comprehensive treatment including anxiety management should be actively pursued.

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Author Contributions

Wang.S and Su.M.L contributed to the study design and paper writing; Zhang.M.H, Yin.Z.B. and Zou Z.H. contributed to the data collection. Wang.S. is the corresponding author. All the authors have made a significant contribution to this manuscript, have seen and approved the final manuscript, and have agreed to its submission to this journal.

Conflicts of Interest

None.

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Ethical Approval

This study was approved by the Ethics Committee of Chongqing Three Gorges Central Hospital.

Consent

Written and signed informed consent for publication of the patient's clinical details was obtained.

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