

CASE REPORT

Acupuncture Treatment of Diplopia Associated With Abducens Palsy: A Case Report

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Key Words

Abducens palsy, diplopia, acupuncture, ocular nerve palsy, sixth cranial nerve palsy

ABSTRACT

Abducens palsy (ie, sixth nerve palsy) is the most common single extraocular muscle palsy. The primary symptom is double vision. The treatment goal is to correct the underlying cause. If no cause is identified or the palsy is related to a well-managed chronic disease, treatment consists of patching one eye or applying a temporary prism. We report a patient whose abducens palsy resolved with four acupuncture treatments. The patient, a 58-year-old Vietnamese man with diabetes mellitus, presented to our institution's ophthalmology department with sudden onset of double vision. Ophthalmologic examination resulted in diagnosis of isolated left abducens palsy. The patient received a temporary prism for symptomatic relief. With no improvement after 2 months, he presented to our integrative medicine program inquiring about acupuncture. He received four acupuncture treatments over 11 weeks with complete resolution of his diplopia. This case is suggestive that acupuncture may be helpful treatment of patients with abducens palsy.

INTRODUCTION

Abducens palsy, also known as sixth nerve palsy, is a dysfunction of cranial nerve VI, which is responsible for contracting the lateral rectus muscle to abduct the eye. Patients with abducens palsy have horizontal diplopia that worsens with gaze toward the paretic lateral rectus muscle. The condition is commonly unilateral but can also occur bilaterally. Abducens palsy is the most common ocular motility palsy.¹ In a population-based study including all patients who had the onset of sixth nerve palsy between January 1, 1978, and December 31, 1992, the age- and sex-adjusted annual incidence of abducens palsy was reported to be 11.3 per 100 000 patients.² The causes and associated conditions were unknown (26%), hypertension (19%), combination of hypertension and diabetes (12%), trauma (12%), multiple sclerosis (7%), neoplasm (5%), diabetes (4%), cerebrovascular accident (4%), postneurosurgery (3%), aneurysm (2%), and "other" (8%).

Evaluation and management algorithms for abducens palsy have been devised. Isolated abducens palsy associated with medical conditions, such as diabetes mellitus and hypertension, may be monitored carefully without extensive workup.² Of patients with isolated abducens palsy due to vascular causes, 60% reportedly recover within 9 months.³ However, diplopia can impact the person's quality of life significantly, making simple everyday tasks, such as walking, reading, and driving, difficult to manage and dangerous.

Traditional Chinese medicine (TCM) offers treatment methods that may manage the distressing symptoms of palsy, in addition to conventional Western interventions. Therefore, integration of methods such as acupuncture may be worth investigating. In the present case report, we suggest that acupuncture may provide significant improvement of isolated abducens palsy through expediting the natural recovery of the palsy.

PRESENTING CONCERNS

The patient was a 58-year-old Vietnamese man with a 6-year history of diabetes mellitus (treated with glimepiride and metformin), hypertension (controlled with lisinopril/hydrochlorothiazide), and hyperlipidemia (treated with simvastatin). He presented to our institution's ophthalmology department in October 2012 with diplopia that developed suddenly the evening before his visit. He received a diagnosis of "isolated left sixth cranial nerve palsy" and was treated symptomatically with an eye patch and temporary prisms.

In December 2012 (45 days after the onset of double vision), the patient presented to our Complementary Integrative Medicine Program asking whether acupuncture may be beneficial for management of his ocular nerve palsy. He described symptoms including double vision that worsened with primary gaze, stabbing clusters of pain behind both eyes, suboccipital pain, and pain around his right knee. He reported no issues with stress, bowel movement, urinary retention, urinary incontinence, sleep disturbances, abnormal appetite, gastrointestinal discomfort, shortness of breath, abnormal body temperature, or low energy levels. He reported adequate sleep, exercise, and a balanced diet.

CLINICAL FINDINGS

When seen in December 2012, the patient had healthy vital signs and appeared alert, physically agile, and strong in voice. From an Eastern medicine perspective, his tongue and gums were slightly pale, with a thin glossy coat. His pulse was moderate and slightly slippery. The degree of diplopia was unchanged from his initial presentation to the ophthalmology department. The patient was wearing a 40-diopter base-out (BO) Fresnel prism over his left lens.

TIMELINE

The Figure outlines the clinical course of this patient with isolated abducens paralysis.

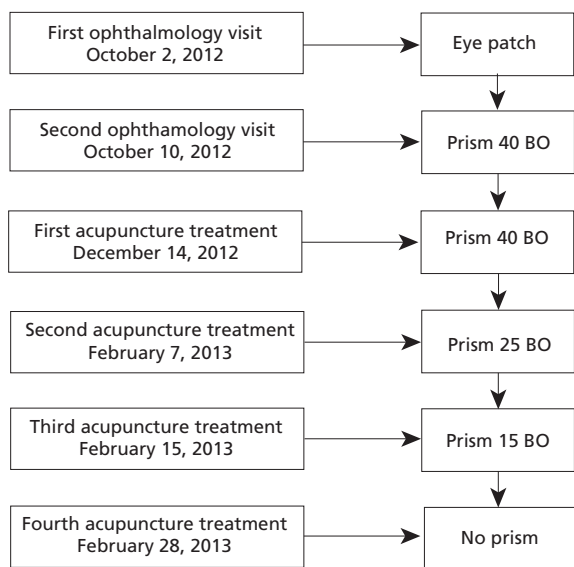


Figure Treatment timeline.

Abbreviation: BO, base-out.

DIAGNOSTIC FOCUS AND ASSESSMENT

Evaluation in the Department of Ophthalmology and the Division of Internal Medicine had ruled out an underlying intracranial lesion, and the diagnosis was made of a left, isolated abducens palsy associated with diabetes mellitus and hypertension. At presentation, the patient had well-controlled blood pressure (98/56 mm Hg) and diabetes mellitus (fasting blood glucose, 133 mg/dL; hemoglobin A_{1c}, 6.8%).

TCM Diagnosis

In TCM terms, the patient's liver blood was deficient and failed to nourish the tendons of the eye (the liver rules the tendons and opens into the eye). His suboccipital pain and lateral knee pain both were along the gallbladder channel, which is the superficial aspect of the liver.

Therapeutic Focus and Assessment

The aim of the acupuncture treatment was to tonify the liver blood to nourish the tendons of the eye. For the acupuncture, the patient was in supine position and the following acupuncture points were selected: LI4, LV3, Taiyang, SP6, ST36, GB32, and GB20. For each treatment, 0.2240-mm needles were used. The needles were inserted to a depth where deqi sensation (dull ache) was elicited. Points LI4, LV3, SP6, ST36, and GB32 were needled perpendicularly; GB20 was needled obliquely to the direction of the opposite eye. In the Taiyang point, needles were threaded horizontally and vertically with needle shafts avoiding each other. The needles were retained in place for 30 minutes, with elicitation at 15 minutes for each treatment.

Follow-up and Outcomes

The patient received four acupuncture treatments over 11 weeks (see Figure). The second treatment was conducted 8 weeks after the first treatment; the third, 1 week after the second; and the fourth, 2 weeks later.

The acupuncturist requested that the patient track his symptoms after each treatment. At the initial treatment, the patient presented with a 40-diopter BO Fresnel prism over his left lens. When he was seen for the second treatment, he reported that his double vision had merged by 25% (according to his measure) on the morning after his initial treatment. He also reported a high reduction in suboccipital pain and no lateral knee pain. The patient had returned to the ophthalmology department 1 week before the second acupuncture treatment and received a 25-diopter BO Fresnel prism. At the patient's third treatment, he reported a 50% improvement in continued merging of his double vision on the morning after his second treatment. Immediately before the third appointment, the patient's prism was changed to a 15-diopter BO Fresnel prism, which he wore for about one-half day. He reported 98% improvement the morning after his third treatment. At the fourth treatment, the patient reported that he stopped using his prism because he believed his sight had returned to normal. Two weeks later, he continued to have absence of diplopia.

DISCUSSION

The present case report describes the clinical course of a patient with unilateral abducens palsy that presumably was related to diabetes mellitus and hypertension. Initially, the patient was treated in accordance with Western medicine, which in this instance consisted of symptomatic relief with eye patches and correcting prisms.

The foundation of treatment in TCM is the principle of pattern differentiation, and the present case illustrates patterns that allow the patient to have a tailored treatment with or without knowing a conventional cause of the disease. Although abducens palsy may resolve spontaneously over time,⁴ the fact that notable improvement followed within 24 hours of the initial acupuncture treatment is suggestive that the acupuncture may have had a positive influence on the patient's isolated abducens palsy.

In reviewing the literature, we found a case report by Liu of a female patient who was treated successfully for abducens paralysis.⁵ Apparently, three other cases with abducens palsy were successfully treated by Liu; however, no details were given. In 2011, Xiang et al⁶ reported on 48 patients with abducent paralysis cured with electroacupuncture of mainly Jianming 3 and Shangming. Unfortunately, Xiang et al did not report a detailed case series. Instead, they described only one patient as an example—namely, a 46-year-old man who presented with a 1-month history of double vision who after two acupuncturist treatments (30 minutes each day for 10 days was considered one treatment) had

complete resolution of his symptoms.

Further, several reports in the literature have evaluated the effect of acupuncture on Bell palsy.⁷⁻⁹ Liang et al⁷ reported in 2006 that acupuncture and moxibustion exert a definite therapeutic effect on Bell palsy. In addition, Cumberworth et al,⁸ in a Best Evidence Topic, reviewed the effectiveness of acupuncture in Bell palsy and concluded that the role and efficacy of acupuncture in Bell palsy should be considered unproven until well-designed clinical trials clearly show a benefit.

When patients with abducens palsy are evaluated, it is of utmost clinical importance that the clinician look for an underlying cause since abducens palsy may be a benign phenomenon, as well as the presenting sign of serious disease.^{10,11} Ischemia (eg, arteriosclerosis, diabetes mellitus, migraine, hypertension) is a common cause. However, abducens palsy can be produced through increased intracranial pressure, intracranial tumors (particularly at the base of the skull), trauma, meningitis, demyelination, dural arteriovenous fistula, intracranial hypotension, and infections.

Treatment of abducens palsy is always aimed at prompt correction of the underlying cause. However, if the cause continues to be obscure or is related to ischemia, patching or applying a temporary prism to one eye provides relief of diplopia until the palsy resolves. In this situation, the use of acupuncture may be helpful in speeding a lengthy recovery. If recovery is incomplete, eye muscle surgery nearly always can realign the eyes, at least in the primary position.¹²

In conclusion, the present case report is suggestive that acupuncture may provide a valuable, effective approach to reduce lengthy recovery rates due to abducens palsy. Since this is a single case report and no well-designed studies regarding acupuncture use for abducens palsy exist, it is important to recognize that the approach described herein is not a generalized treatment for all cases of isolated abducens palsy, for which only symptomatic treatment (ie, patching and prism) is available. Deduction in acupuncture point selection and larger controlled studies are needed to determine the effectiveness of acupuncture in the treatment of well-defined cases of isolated abducens palsy.

PATIENT PERSPECTIVE

First of all, I am very grateful about the acupuncture treatments that you provided. They were not only helping me to have my vision back to normal again but they also help me to have faith in acupuncture and to realize that medical treatment should not be restricted to just medications and/or surgeries.

On October 1st of 2012, I woke up in the morning seeing two images of everything that my eyes could see. Needless to say, I could not function normally since my brain was confused greatly with what my eyes provided. My daughter

brought me to the Mayo Clinic Ophthalmology Department for diagnosis and treatment, only to hear the doctors advise me to stay calm and to cope with the situation since the problem will heal and disappear by itself. I asked for the average time for double vision to cure itself. The answer was from 2 weeks to 6 weeks. Blood tests and thorough eye exam were done to make sure that the situation was not a result from my diabetes nor from my high blood pressure condition.

I was quite frustrated and came back several times to the eye department (both downtown and Northeast facilities). With some discussions with the doctors I was provided a prism to attach to my left eye in order for me to avoid double vision and to be able to function at work and at home. Over a period of 8 weeks, the prism degrees went down from 40 to 25, and to 15. I should mention that the prism was not meant to fix my double vision but only provided so I can see one image (instead of two) in order to do normal daily routines like walking, driving, working, eating, etc.

On December 4th of 2012, I was able to convince my primary physician (after several attempts) to send me to acupuncture therapy for my double vision problem. The result was outstanding: With just 3 sessions on December 14th, 2012, on February 7th and on February 15th, 2013, I was able to be back to normal vision, ie, I could see single vision even without the prism attached to my glasses. Since then, I don't have double vision any more. However, I continued to have acupuncture sessions up to August of 2013 to make sure that double vision won't come back.

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