 Electroacupuncture therapy for abducent palsy after acoustic neuroma surgery

Abducent palsy, a dysfunction of cranial nerve VI causing diplopia, has an annual population incidence of about 11 per 100 000, of which 3% follow neurosurgery.¹ About 60% of patients with isolated abducent palsy from vascular causes recover within 9 months.² Diplopia can significantly affect the person's quality of life, making simple everyday tasks difficult to manage and even dangerous.

Acupuncture has been used for treating diplopia and ptosis in China, but there are few reports of its use in cases of neurosurgical injury.

CASE REPORT

A 45-year-old man first visited the outpatient department of Baoshan Hospital of Integrated Traditional Chinese Medicine and Western Medicine with symptoms of blurred vision, deep headache and hearing loss. He was diagnosed with right side acoustic neuroma by CT scan and MRI, which showed space-occupying lesions at the opening of the right cerebellopontine angle. The acoustic neuroma was removed by surgery about 1 week later. Diplopia and eye ball movement dysfunction as well as slight vocal cord paralysis and facial paralysis occurred after surgery.

Physical examination demonstrated diplopia and the absence of motility on left lateral gaze related to deficit of the lateral rectus muscle. Ophthalmological and neurological examinations were negative for abnormalities of the oculomotor and trigeminal nerves. Visual acuity (20/20) and pupillary light reflex were also normal before and after surgery and after recovery. At the initial treatment the patient presented with a 45 dioptre basal outward (BO) Fresnel prism over his left lens.

The patient was given electroacupuncture by the first author (LZ), who is an institutionally qualified acupuncture practitioner with 14 years of experience in administering therapeutic acupuncture. Eight points around the affected eye were chosen (see figure 1), together with ipsilateral points LI14, GB20, LI4, GB37, SP6, BL60 and LR3. Stainless steel needles (0.3 mm diameter, 25 mm long) were used for points around and inside the orbit and needles 40 mm long were used for the other points. When needling points inside the orbit, the eyeball was pushed away from the point and held there. We note that orbital needling is not advised without advanced specialised training. For needling the orbital points, the needle tip was turned 5° towards the eye socket when needling through the skin, then advanced to 0.3–0.5 cun without lifting and thrusting. Needles in the other points were manipulated to seek de qi.

Points GB14 and Xinming 2 paired with Taïyang (see figure 2) were treated with electrical stimulation (5 V; 80 pulses/s) in each session.

Figure 1 Location of points around the eye. Xinming 2: 1.0 cun above and 0.5 cun out from the tip of the brow; Zhenguang 2: in the orbital cavity at the junction of the lateral fourth and medial three-fourths of the supraorbital margin; Shengming: in the orbital cavity at the midpoint of the orbital margin.

Figure 2 (A) Eye movement before electroacupuncture. (B) Application of electroacupuncture therapy. (C) Eye movement after electroacupuncture.
for 30 min, while needles in other acupuncture points were retained without any further stimulation. The treatment described above lasted 14 weeks, three times a week.

Diplopia was completely resolved by the end of treatment. At the 10th treatment the patient’s prism changed to a 15 dioptre BO Fresnel prism and returned to normal at the last treatment. However, the facial palsy was hardly improved. It was evaluated using the House–Brackmann Scale (I–VI maximum) and Sunnybrook Scale (0–100 maximum), scores of which changed only slightly from level VI and 5 points to level VI and 9 points. Life Satisfaction Scales were used to evaluate the patient’s quality of life satisfaction which improved from 5 points to 10.

The patient was followed up for 1 year. No diplopia recurred and the patient started driving again. Facial paralysis gradually recovered and the patient’s life satisfaction improved.

**DISCUSSION**

Acupuncture treatment for oculomotor nerve palsy is widely used and has been found to be effective in China for treating simple oculomotor palsy, diabetic oculomotor palsy and stroke.

Case reports have also shown success in treating intracranial aneurysm or herpes zoster-induced oculomotor paralysis. The outcome of treating abducens nerve palsy caused by cerebrovascular accident, hypertension or other unknown conditions has been described, but no cases were found of acupuncture treatment in abducens palsy after neurosurgery.

**COMMENT**

Although the diplopia and eye ball movement dysfunction completely recovered within 4 months, we cannot confirm the contribution of acupuncture from a single case since spontaneous recovery is possible. Causes of abducens palsy other than injury include Gradenigo syndrome or isolated peripheral nerve paralysis.

We recommend case controlled studies to test the effect of acupuncture therapy.

Point selection varies between reports: *Sizhukong*, *Cuanzu* and *Taiyang* are commonly used, the external rectus muscle belly was selected by Zhou et al. as an extra point using electroacupuncture treatment, and Liu et al. named it *Waiming*. Do et al. mainly used points on the four limbs (LJ4, LR3, SP6, ST36 and GB20/32). In this case, we used some extraordinary points (*Shangming, Xingming, Zhengguang*) which are not commonly seen in textbooks but they proved to be effective in practice.

We suggest that electroacupuncture might be helpful for patients with diplopia from abducens palsy following neurosurgical injury, but further studies are needed to confirm that the effects are genuine.

**Liu Zhidan,1,2 Hu Jun3**

1Acupuncture Department, Baoshan Branch of Shuguang Hospital, Shanghai University of Traditional Chinese Medicine, Shanghai, China
2Acupuncture Department, Baoshan Hospital of Integrated Traditional Chinese Medicine and Western Medicine, Shanghai, China
3Ophthalmology Department, Baoshan Hospital of Integrated Traditional Chinese Medicine and Western Medicine, Shanghai, China

**Correspondence to** Dr Hu Jun, Ophthalmology Department of Baoshan Hospital of Integrated Traditional Chinese Medicine and Western Medicine, Shanghai 201999, China; hujun78731@sina.com

**Twitter** Follow Liu Zhidan at @liu54643

**Contributors** LZ was involved in designing and manipulating the therapy, obtaining the participant’s consent, carrying out the literature review and writing the manuscript. HJ conducted the case report, identified the case, reviewed the article and is responsible for the content as guarantor.

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**Patient consent** Obtained.

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Liu Zhidan and Hu Jun

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