Intraorbital Electroacupuncture Therapy for Thyroid-associated Ophthalmopathy

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To the Editor: Intraorbital electroacupuncture (IEA) therapy is highly effective in treating ocular motility disorders, but it has only rarely been used to treat thyroid-associated ophthalmopathy (TAO). Herein, we report one successful case.

A 54-year-old Chinese man was diagnosed with hyperthyroidism 4 years ago and received I^{131} therapy. However, the result was unsatisfactory. He had to keep taking antithyroid drugs (ATDs). His palpebral edema gradually worsened and he developed visual impairment during the ATD therapy. Glucocorticoid therapy was administered to relieve his symptoms. However, his condition worsened after a reduction in the glucocorticoid dosage.

During his first visit to our center, he complained of diplopia, visual decrease (from vision of oculus sinister [VS] 1.0–0.2 to vision of oculus dexter [VD] 1.0–0.8). In addition, he had binocular palpebral edema, proptosis, chemosis, lagophthalmos, and ocular motility disorder.

Ocular computed tomography showed enlargement of the extraocular muscles on the binoculus. His clinical activity score (CAS) was six while his total eye score (TES) was about 32.[1] Orbital decompression surgery was recommended,[2] but the patient refused the surgery. Thus, we administered IEA therapy, thiamazole tablets 2.5 mg/d, levothyroxine sodium tablets 100 μg/d, and smoking cessation.

IEA was performed using acupuncture needles (25.0 mm in length, 0.20 mm in diameter) gently inserted into the extraocular acupuncture muscle points (the surface projections of the extraocular muscles) coordinated with Tongziliao (GB1), Jingming (BL1), and Cuanzhu (BL2) points as well. The piercing depth was about 20 mm. The surgeons adjusted their piercing strength while using their thumb and index fingers to insert: once they felt resistance or emptiness of the needle, then they immediately stopped inserting the needles. The electrostimulation was performed through the needles for 30 min/d using the electric acupuncture apparatus (Wujin Great-wall Medical Instrument LLC, Changzhou, China). The electric current was 0.5 mA, the frequency was 2 Hz, and the dilatational waves were according to our previous study.[3] One course of treatment had lasted 15 days.

We reevaluated the patient after two and four courses of treatment. After four courses of treatment, his CAS had decreased to 5 due to relief of the chemosis. His TES decreased significantly from 32 to 21. His diplopia, chemosis, and conjunctivitis had improved and so did his visual acuity (from VS 0.2, VD 0.8 to VS 0.4, VD 1.0). Moreover, his lagophthalmos had improved. However, his palpebral edema and proptosis did not change.

His free triiodothyronine (2.36–3.53 pg/ml), free thyroxine (8.6–13.3 ng/L), and thyroglobulin antibody (2.02–2.54 U/ml) were in the normal range during the whole process, but his thyroid peroxidase antibody (30.65–140.61 U/ml) and thyroid-stimulating hormone (5.6085–13.6435 μU/ml) were elevated (all data were collected by SIEMENS ADVIA Centaur CP immunoassay system [Siemens 511, Benedict Avenue, Tarrytown, New York, USA]). The patient was discharged after four courses of treatment. A follow-up study was arranged after 2 months [Table 1]. We could clearly note the patient's recovery by the TES decline.

In our department, we have found that intraorbital electrostimulation through the acupuncture extraocular muscle points is effective in treating TAO in some cases. We hypothesize that the effect might be explained by electroacupuncture reducing the expression of prostaglandin E2 (PGE2) and interleukin 6 (IL-6). Raychaudhuri *et al*.[4] found that reducing the expression of IL-6, bridging by PGE2, might be a promising method for TAO treatment. Lee and Lee[5] have shown that electroacupuncture can effectively reduce the levels of PGE2 in serum and urine. Therefore, the underlying mechanism whereby IEA relieves TAO symptoms might be mediated through attenuating local inflammation by interfering with production of PGE2 and the expression of IL-6.

In the current case, visual acuity and chemosis improved, but other items such as soft tissue involvement and extraocular muscle involvement still had elevated scores [Table 1]. This is because the soft tissue accumulates and the enlargement of the extraocular muscle is irreversible and requires surgical treatment.

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Table 1: Details of total eye score

Items	Pretreatment	After two courses treatment	After four courses treatment	Two months follow-up
No signs or symptoms	0	0	0	0
Only signs	1	1	1	1
Soft tissue involvement, with symptoms and signs	6	6	6	6
Proptosis	0	0	0	0
Extraocular muscle involvement	8	8	8	8
Corneal involvement	5	0	0	0
Sight loss (visual acuity)	12	6	6	0
Total eye score	32	21	21	15

One course of treatment was 15 days.

Therefore, IEA could be a complementary method to regular treatment and might help prevent patients' condition from deteriorating. TAO has rarely been treated with electroacupuncture in the past, but we have reason to believe that it might be a useful method to consider.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s)/patient's guardians has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients/patients' guardians understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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