

Clinical Experience and Appropriate Technique of Acupuncture for Ischemic Optic Neuropathy

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Abstract: The objective is to summarize the clinical experience and standardize the appropriate technique of acupuncture for ischemic optic neuropathy (ION). A core acupuncture protocol was developed based on long-term clinical practice, comprising three key regions: (1) five periocular points: Cuanzhu (BL2), Jingming (BL1), Yuyao (EX-HN4), Taiyang (EX-HN5), and Sibai (ST2); (2) the visual cortex projection area on the scalp; and (3) five distal points: Hegu (LI4), Taichong (LR3), Guangming (GB37), Sanyinjiao (SP6), and Taixi (KI3), bilaterally. Needling techniques were described in detail. A retrospective analysis was performed on 42 ION patients treated with this protocol. After 2 courses (8 weeks) of treatment, visual acuity improved significantly in 33 patients (78.6%), and visual field defects were reduced in 29 patients (69.0%). No serious adverse events occurred. This standardized acupuncture protocol is effective and safe for ION, representing a valuable appropriate technique for clinical practice.

Keywords: ischemic optic neuropathy; acupuncture; appropriate technique; periocular points; scalp acupuncture

1. Introduction

Ischemic optic neuropathy (ION) is a common cause of acute or subacute vision loss in middle-aged and elderly populations, resulting from insufficient blood supply to the optic nerve head or the intraorbital portion of the optic nerve. Anterior ION (AION) is the most frequent subtype, often associated with non-arteritic causes such as nocturnal hypotension, sleep apnea, and small cup-to-disc ratio. Despite various medical and surgical interventions, effective treatments remain limited. Corticosteroids may be used in acute cases but carry significant side effects, and no standard therapy has been established for chronic ION.

Acupuncture has been widely applied in ophthalmic diseases in China, particularly for optic nerve disorders. By stimulating specific acupoints, acupuncture is believed to improve local microcirculation, regulate neurotrophic factors, and promote nerve repair[1]. However, the lack of standardized protocols limits its reproducibility and acceptance. Therefore, we summarize our clinical experience and propose a standardized acupuncture protocol for ION, focusing on three key regions: periocular points, scalp visual cortex area, and distal points. This paper aims to present the technique, its rationale, and preliminary clinical outcomes[2-5].

2. Methods

2.1 Study design

A retrospective clinical observation was conducted on patients diagnosed with ION (including anterior and posterior types) at our ophthalmology and acupuncture department between January 2022 and December 2024. All patients received standardized acupuncture treatment as described below. The study was approved by the institutional ethics committee and followed the principles of the Declaration of Helsinki.

2.2 Patients

Inclusion criteria: (1) diagnosed with non-arteritic ION based on typical history, visual field defects, and optic disc edema (in AION) or normal disc (in PION); (2) age 18–80 years; (3) stable visual function for at least 1 month (non-acute stage).

Exclusion criteria: arteritic ION, severe systemic diseases, bleeding disorders, or pregnancy.

A total of 42 patients (28 males, 14 females; mean age 56.4 ± 12.3 years) were included. Among them, 35 had AION and 7 had PION.

2.3 Acupuncture protocol

All treatments were performed by licensed acupuncturists with more than 5 years of experience. The core acupuncture prescription was as follows:

2.3.1 Periocular five points (bilateral)

Cuanzhu (BL2) – medial end of the eyebrow

Jingming (BL1) – 0.1 cun medial to the inner canthus

Yuyao (EX-HN4) – midpoint of the eyebrow

Taiyang (EX-HN5) – in the depression about 1 cun posterior to the midpoint of the eyebrow and outer canthus

Sibai (ST2) – in the infraorbital foramen

2.3.2 Scalp visual cortex area

The visual cortex area corresponds to the projection of the calcarine sulcus on the scalp, located in the occipital region. Specifically, the midline point 1.5 cun above the external occipital protuberance (Dumai line) and bilaterally 1.5–2 cun lateral to that point. A line connecting these points forms the occipital visual area.

2.3.3 Distal five points (bilateral)

Hegu (LI4) – between the 1st and 2nd metacarpal bones, at the midpoint of the 2nd metacarpal bone on the radial side

Taichong (LR3) – between the 1st and 2nd metatarsal bones, at the depression distal to the metatarsal junction

Guangming (GB37) – 5 cun directly above the tip of the external malleolus, on the anterior border of the fibula

Sanyinjiao (SP6) – 3 cun directly above the tip of the medial malleolus, on the posterior border of the tibia

Taixi (KI3) – in the depression between the medial malleolus and the Achilles tendon

2.4 Needling technique

Periocular points: Using 0.25×25 mm needles (Hwato, China). Jingming (BL1) is needled perpendicularly 0.2–0.5 cun, lifting and thrusting gently, avoiding any twisting. Other periocular points are needled perpendicularly 0.3–0.5 cun. Mild even manipulation is applied to achieve local soreness or a radiating sensation around the eye. Needles are retained for 20 min.

Scalp area: Using 0.30×40 mm needles. Insert subcutaneously or obliquely (15–30 degree angle) into the subgaleal layer, then advance horizontally for 1–1.5 cun. Manual stimulation (twisting at 200 rpm) is applied for 1–2 min, followed by retention for 20 min. Electroacupuncture (2 Hz, 1–2 mA) may be added if tolerated.

Distal points: Using 0.30×40 mm needles. Hegu and Taichong are needled perpendicularly 0.5–1 cun using reducing method; Sanyinjiao and Taixi are needled perpendicularly 0.5–1 cun using reinforcing method; Guangming is needled perpendicularly 1–1.5 cun. Even manipulation is applied for all.

Treatment is given three times per week, with 4 weeks as one course. Two consecutive courses (8 weeks) were evaluated.

2.5 Outcome measures

Visual acuity (VA): Best-corrected visual acuity (BCVA) measured by Snellen chart, converted to LogMAR for analysis. Improvement defined as a decrease of ≥ 0.2 LogMAR units.

Visual field (VF): Humphrey 30-2 program. Mean deviation (MD) and pattern deviation were recorded. Improvement defined as a reduction in MD of ≥ 2 dB or significant reduction in defect area.

Adverse events: Recorded at each visit.

2.6 Statistical analysis

Data were analyzed using SPSS 26.0. Paired t-tests were used for pre-post comparisons of normally distributed data. A P-value < 0.05 was considered statistically significant.

3. Results

3.1 Visual acuity

After 8 weeks of treatment, mean LogMAR BCVA improved from 0.82 ± 0.31 to 0.61 ± 0.28 ($P < 0.01$). Thirty-three patients (78.6%) showed improvement of at least 0.2 LogMAR, among whom 12 (28.6%) improved by ≥ 0.3 LogMAR. Nine patients (21.4%) had stable vision, and no patient worsened.

3.2 Visual field

Mean MD improved from -12.35 ± 5.67 dB to -9.02 ± 5.13 dB ($P < 0.01$). Twenty-nine patients (69.0%) showed a reduction

of MD ≥ 2 dB. The visual field defect area decreased in 31 patients (73.8%), particularly in the inferior and nasal sectors.

3.3 Subjective symptoms

Patients reported significant relief of visual cloudiness, blurred vision, and light sensitivity. The global symptom score (0–10 scale) decreased from 6.8 ± 1.9 to 3.1 ± 1.5 ($P < 0.001$).

4. Discussion

Ischemic optic neuropathy remains a challenging condition with limited treatment options. In traditional Chinese medicine, ION is attributed to “eye blindness due to blood stasis” or “optic nerve atrophy” related to liver-kidney deficiency and qi-blood stagnation. The acupuncture protocol described here integrates three levels of regulation:

Periocular points (BL2, BL1, EX-HN4, EX-HN5, ST2) directly target the optic nerve and its surrounding circulation. BL1 (Jingming) is the crossing point of the Bladder and Small Intestine meridians and has a proven effect on intraorbital blood flow. Yuyao and Taiyang are extra points with local vasodilatory effects. Together, they increase perfusion in the short posterior ciliary arteries and central retinal artery, as confirmed by Doppler studies.

Scalp visual cortex area corresponds to Brodmann area 17. Scalp acupuncture (also called “zhu ci”) is believed to modulate cortical excitability through afferent somatosensory input. Previous neuroimaging studies have shown that occipital scalp stimulation activates the visual cortex and improves visual evoked potentials (VEP) in optic neuropathy patients. Distal points have systemic regulatory functions:

Hegu (LI4) and Taichong (LR3) (the “Four Gates”) open the meridians, promote qi circulation, and relieve blood stasis – a key pathological factor in ION.

Guangming (GB37) is the luo-connecting point of the Gallbladder meridian and a specific point for eye disorders (“Guangming means bright eyes”).

Sanyinjiao (SP6) regulates the spleen, liver, and kidney, supporting blood production and nourishing the optic nerve.

Taixi (KI3) is the source point of the Kidney meridian, which stores essence that engenders marrow – the optic nerve being a part of the brain (marrow). Thus, Taixi replenishes the fundamental substance for nerve repair.

The combination of local, cortical, and distal stimulation creates a synergistic effect that enhances optic nerve survival and function. The 78.6% improvement rate in our series is comparable to or better than reports using corticosteroids or neuroprotective agents alone, with minimal side effects.

This protocol has several strengths: (1) it is standardized and reproducible; (2) it uses commonly available acupoints; (3) it can be safely performed in outpatient settings. Limitations include the retrospective design and lack of a control group. Future prospective randomized trials are warranted.

5. Conclusion

The proposed acupuncture protocol – comprising the five periocular points, the scalp visual cortex area, and the five distal points – is effective and safe for treating ischemic optic neuropathy. It significantly improves visual acuity and visual field defects. This standardized technique can be promoted as an appropriate therapy in ophthalmology clinics, especially for patients who are refractory to conventional treatments or prefer non-pharmacological options.

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