

Case Report

A Case Report of Functional Acupuncture for Treatment of Elderly Type 2 Diabetic Oculomotor Nerve Palsy

Han Bingxue¹, Shao Ming^{2,3}, Liu Qing², Sun Yu¹, Cong Bei¹, Du Fei¹, Li Tong¹, Yang Dan¹, Yan Zhi^{1,2,*}

¹Department of Acupuncture and Tuina, Dalian Port Hospital, Dalian, China

²Department of Neurology, Sichuan Rehabilitation Hospital, Chengdu, China

³Department of Neurological Rehabilitation, Affiliated Brain Hospital, Guangzhou Medical University, Guangzhou, China

Email address:

yyr@dl.cn (Han Bingxue), 1961523453@qq.com (Shao Ming), 269807602@qq.com (Liu Qing), sunyu_bear@126.com (Sun Yu), Congpei@126.com (Cong Bei), dufei198813@126.com (Du Fei), hys907325@163.com (Li Tong), 525768434@qq.com (Yang Dan), qjqiaojie@126.com (Yan Zhi)

*Corresponding author

To cite this article:

Han Bingxue, Shao Ming, Liu Qing, Sun Yu, Cong Bei, Du Fei, Li Tong, Yang Dan, Yan Zhi. A Case Report of Functional Acupuncture for Treatment of Elderly Type 2 Diabetic Oculomotor Nerve Palsy. *International Journal of Chinese Medicine*. Vol. 4, No. 4, 2020, pp. 90-94. doi: 10.11648/j.ijcm.20200404.13

Received: November 14, 2020; Accepted: December 3, 2020; Published: December 16, 2020

Abstract: Objective: To introduce and analyze the method and effect of functional acupuncture in treating one case of elderly type 2 diabetic oculomotor nerve palsy. Methods: The main emphasis is on taking the functional position of the affected area, selecting the functional acupuncture area, and choosing the electroacupuncture stimulation dose. That is, the functional acupuncture method is the main acupuncture method during treatment, that is, the functional position is taken before the upper eyelid acupuncture, and the patient's left upper eyelid Lift to above the functional position (maximum lifting position-eye open state), determine the muscle functional area around the eye (needle entry area) of the raised eyelid, and select acupoints in the corresponding functional area around the eye: Cuanzhu, Yuyao, Sizhu For Kong, Shenting, Tou Lingqi and Ashi points, choose a needle with a model of 0.35 mm×40 mm, take a 0.3 to 1 inch flat puncture, and use an electroacupuncture to form a dense wave. Results: After 20 days of functional acupuncture, the symptoms of ptosis of the left eye of the patient improved significantly, and the limitation of movement of the left eye was significantly improved. Follow-up six months later, there was no recurrence, and the clinical effect was satisfactory. Conclusion: The essence of functional acupuncture improvement is to re-form a powerful neuromuscular effect in the muscles, destroy the paralysis and weakness of the targeted muscle groups, and rebuild the normal neuromuscular coupling mode. The goal of this balancing mechanism is to destroy abnormal muscle paralysis and The reflex pattern of muscle weakness reconstructs an orderly and normal neuromuscular reflex.

Keywords: Type 2 Diabetes, Functional Acupuncture, Oculomotor Nerve Palsy

1. The Introduction

Diabetic neuropathy is one of the most common long-term complications of type 2 diabetes, and its incidence varies with the severity and duration of hyperglycemia. Its prevalence rate is about 30% in hospitalized diabetic patients, 20% ~ 30% in community diabetic patients, and about 50% of patients with type 1 or type 2 diabetes will eventually develop neuropathy [1-2]. Diabetic patients with oculomotor palsy are relatively rare

in the endocrine department, which is related to the triage of the first department of the patient. Most patients go to the department of neurology or ophthalmology for the first symptom of ocular discomfort. Diabetes is a comprehensive disease of the whole body, which is often accompanied by peripheral neuropathy, and cerebral neuropathy is rare, accounting for only 0.7% ~ 1.0% of the neurological complications of diabetes [3]. However, with the aging of the population and the increasing incidence of diabetes, there is a trend of increasing brain neuropathy

caused by diabetes, and oculomotor nerve is the most common clinical brain neuropathy caused by diabetes [4].

The common causes of oculomotor palsy are: trauma, intracranial and orbital tumors, diabetes, brainstem lesions, intracranial aneurysms, myasthenia mg, etc. Statistics show that diabetic oculomotor palsy accounts for 6%-25% of patients with acquired oculomotor palsy [5-6]. The main pathological changes of diabetic peripheral neuropathy include two aspects: the changes of small vessels of the vegetative nerve (lumen stenosis, hyaline degeneration, etc.) and the changes of the nerve itself, including Waller degeneration, demyelination degeneration and axonal degeneration [7]. The diagnosis of oculomotor neuropathy is not difficult. The initial clinical symptoms of L are orbital discomfort and periocular pain, and upper eyelid ptosis usually occurs within 1 ~ 3 days, which seriously affects daily life. The diagnosis of diabetic oculomotor palsy needs to exclude the oculomotor palsy caused by other reasons. The treatment principle is early detection, early diagnosis and early treatment, as soon as possible to reduce the pain around the eyes, and the recovery of the function of opening eyes is the focus of treatment [8]. Active treatment of diabetes to achieve or close to normal blood glucose is the basis for the treatment of diabetic neuropathy. In the acute phase, subcutaneous insulin injection should be used to control blood glucose as soon as possible, and the fluctuation of blood glucose caused by small dose of hormone can be avoided. Due to a nonspecific inflammatory response in the onset of the disease

Diabetic polyneuropathy (DPN) continues to be generally considered as a "microvascular" complication of diabetes mellitus alongside nephropathy and retinopathy. The microvascular hypothesis, however, might be tempered by the concept that diabetes directly targets dorsal root ganglion sensory neurons. This neuron-specific concept, supported by accumulating evidence, might account for important features of DPN, such as its early sensory neuron degeneration. Diabetic sensory neurons develop neuronal atrophy alongside a series of messenger ribonucleic acid (RNA) changes related to declines in structural proteins, increases in heat shock protein, increases in the receptor for advanced glycation end-products, declines in growth factor signaling and other changes. Insulin is recognized as a potent neurotrophic factor, and insulin ligation enhances neurite outgrowth through activation of the phosphoinositide 3-kinase-protein kinase B pathway within sensory neurons and attenuates phenotypic features of experimental DPN. Several interventions, including glucagon-like peptide-1 agonism, and phosphatase and tensin homolog inhibition to activate growth signals in sensory neurons, or heat shock protein overexpression, prevent or reverse neuropathic abnormalities in experimental DPN. Diabetic sensory neurons show a unique pattern of microRNA alterations, a key element of messenger RNA silencing. For example, let-7i is widely expressed in sensory neurons, supports their growth and is depleted in experimental DPN; its replenishment improves features of DPN models. Finally, impairment of pre-messenger RNA splicing in

diabetic sensory neurons including abnormal nuclear RNA metabolism and structure with loss of survival motor neuron protein, a neuron survival molecule, and overexpression of CWC22, a splicing factor, offer further novel insights. [9].

2. Case Description

Li XX, male, 78 years old, chief complaint: left eye ptosis for unknown reasons for about 50 days, came to see the doctor before December 10, 2018. Chief complaint: in 2018 patients with early October left drooping eyelids appears after the morning wake up, with the left side of the headaches, the pain feeling, two weeks did not ease, see a doctor in a 3 armour hospital, physical examination, the above symptoms in patients with persistent, no volatility, no morning sunset light weight, I have double vision, without exophthalmos, conjunctival congestion, edema, dizziness, numbness and activity is ineffective. Previous history of type 2 diabetes, auxiliary test results: HBA1c: 7.60%; Fasting blood glucose: 8.97mmol/L glucose, 5.20 mmol/L total cholesterol, 2.00 mmol/L triglyceride, positive antinuclear antibody (+), 64-slice CT (nerve group) cranial brain (plain scan): white matter demyelination changes, brain atrophy. OMRI (neurologic group) Craniocerebral (enhanced scan): mild white matter demyelination changes, brain atrophy; Septum deviated to the right, bilateral middle inferior turbinate hypertrophy; No abnormalities were found on MRI of the residual brain. TCD: Mild stenosis of the right middle cerebral artery and right vertebral artery. He was diagnosed with left oculomotor palsy and type 2 diabetes mellitus. After one week of hospitalization (mainly with traditional acupuncture), the pain symptoms improved, but there was no improvement in left eyelid ptosis one month after discharge, so I went to Dalian Port Hospital for treatment. Specialist physical examination: the patient's left eyelid was drooping, completely covering the eyeball, the pupil of both sides was large and round, the left eye was slow to light reflection, the right eye was sensitive to light reflection, the left eye was limited to upward, downward and inward movement, the right eye was normal in all directions, and no obvious positive signs were found in the rest physical examination. The diagnosis was as follows: left oculomotor palsy; Diabetic eye paralysis; Type 2 diabetes.

3. Methods and Results

3.1. Acupuncture Treatment in Outpatient Clinic

Ask the patient to receive acupuncture treatment in outpatient clinic, once a day, 30 minutes each time. Treatment according to the professor YanZhi research and the function of acupuncture method of stitch operation, namely the function of upper eyelid acupuncture before taking a, above the upper eyelid to function in patients with a (the largest position - open state), to determine the lift palpebral muscles around the eye area (area) the needles, the corresponding functional areas find around eyes: save

bamboo, fish waist, te 23, god court is o, head Lin chi and acupuncture point, choose the type of 0.35 mm x 40 mm needle, take 0.3 ~ 1 inch flat spines, cooperate with electric acupuncture, waveform for the density wave.

3.2. There Are Four Recovery Exercises for Ptosis of Upper Eyelid

3.2.1. Eye Opening Exercise

Glare exercise method is mainly through the method of staring to exercise the upper eyelid muscles, and then to improve the effect of blepharoptosis, the method is very simple, first is to choose a certain object, and then do their best to open their eyes without blinking at the object, hold this action for 10 to 15 seconds, then close your eyes and rest for 5 seconds, and then repeat this operation 5-8 times a day -Six times. Three days later, when staring, give the resistance to close the eyes, so that the upper eyelid muscles get better strengthening training.

3.2.2. Eye Movement Exercise

Eye movement exercise method can improve the eyelid droop caused by eye fatigue. This method is mainly to turn the eyeball up and down and left and right in the state of closing eyes. Pay attention to the order of rotation. You can rotate anticlockwise and clockwise, then left and right.

3.2.3. Massage Exercise

Eye edema or excessive intraocular pressure around the eye may also lead to eyelid droop, which can be recovered by massage exercise. The key to exercise is to press the brow and eyebrow center close to the upper eyelid with the finger belly of the ring fingers of both hands, until local soreness is felt. Repeat this operation 5-8 times a day, 4-6 times a day.

3.2.4. Lifting Upper Eyelid Exercise Method

Lifting the upper eyelid is mainly a kind of exercise method to lift the upper eyelid with the side of the index finger. Only before lifting, you should first apply appropriate amount of eye skin care products to avoid the problem of fine lines in the eyes. In addition to the upper eyelid directly above the eyes, the corner of the eye should also be lifted. In this way, the upper eyelid can be fully exercised. Repeat this operation 5-8 4-6 times a day.

In a word, the training methods of eyelid ptosis can be summarized as the following four kinds of exercise methods: eye opening exercise method, eye movement exercise method, massage exercise method and eyelid lifting exercise method. Only when using these exercise methods, we should pay attention to do a good job of nursing around the eyes, especially the friends with obvious eye lines should pay more attention to avoid the deepening of eye lines.

3.3. Results

After 20 days of functional acupuncture, the symptoms of ptosis in the patient's left eye were significantly improved, and the limitation of left eye ball movement was significantly

improved (see Figure 1 and figure 2).



Figure 1. Before treatment.



Figure 2. After treatment.

4. Discuss

Oculomotor palsy is a common disease in the department of neurology. It is caused by the damage of oculomotor nerve. The oculomotor nerve [10] is the main motor nerve that innervates the eye muscle, starting from the oculomotor nucleus of the superior thalamus of the middle brain, and mainly innervates the motor functions of the levator palpebrae superioris, superior rectus, internal rectus, inferior oblique, inferior rectus and pupal sphincter. Oculomotor nerve paralysis belongs to the categories of "blepharospasmia" and "blepharospasmia" in Chinese medicine, and its occurrence is mainly related to exogenous pathogenic factors, insufficient endowment, weak temper, etc. [11]. Single filiform needling method can not meet the needs of clinical conditions. Electroacupuncture, blood letting puncture and warming acupuncture are the development of conventional filiform needling, which are the comprehensive application of acupuncture and other stimulation methods. Different acupuncture and moxibustion therapies have more significant curative effect than single filiform acupuncture in the treatment of diabetic peripheral neuropathy [12].

Because diabetes is rarely caused by diabetes, especially the first symptom is even less common, so the failure to inquire or deny the history of diabetes at the first diagnosis, and the

failure to do blood glucose examination or glucose tolerance test are important reasons for missed diagnosis and misdiagnosis in this group of patients. The third diabetic nerve palsy often involves the upper and lower branches of the oculomotor nerve, and only affects the nerve fibers that supply the levator muscle of the upper eyelid, which is rare in diabetic oculomotor nerve palsy [13, 14].

Acupuncture at the Zhongwan acupoint has been widely used in traditional Chinese medicine to relieve symptoms of diabetes mellitus. Our study investigated the effect on plasma glucose of electroacupuncture applied at the Zhongwan acupoint in rat diabetic models. Plasma concentrations of insulin, glucagon and beta-endorphin- were also determined using radioimmunoassay. A decrease in plasma glucose was observed in rats after electroacupuncture (15 Hz, 10 mA) for 30 min at the Zhongwan acupoint. This was observed in normal rats and rat models with Type II (non-insulin-dependent) diabetes mellitus. No significant effect on plasma glucose was observed in rat models with Type I (insulin-dependent) diabetes mellitus: neither the streptozotocin (STZ)-induced diabetic rats nor the genetic (BB/W) rats. Further, the hypoglycaemic action of electroacupuncture stimulation disappeared in rats with insulin-resistance induced by an injection of human long-acting insulin repeated daily to cause the loss of tolbutamide-induced hypoglycaemia [15]. Function core needle punching is weakened and the improvement of traditional meridians, acupuncture points of traditional Chinese medicine acupuncture, on the premise of ensuring security screening can be immediately terminated or obvious symptoms of targeted muscle paralysis (in order to attract more symptoms of muscle for targeted objectives) as the needle into the goal, will expect to achieve the goal as the needle position (in this case is more passive eyelids after carrying on the open state as the needle position), the main areas are the needles occipital frontal muscle (main function on the raised eyebrow, eyelid), at the eyelid make needle after occipital frontal muscle relaxation can make the pillow is stimulated the frontal muscle after rapid contraction (muscle to raise rate), The essence of this improvement of function is to re-form powerful neuromuscular effects in muscles, destroy the paralytic weakness of targeted muscle groups, and rebuild the normal neuromuscular coupling mode. The goal of this balance mechanism is to re-regulate the high-level regulatory center of the brain. With functions of acupuncture method of destroying abnormal myoparalysis and reflection patterns of muscle weakness, reconstruction and orderly, normal neuromuscular reflex, improve acupuncture in the treatment of oculomotor nerve palsy cause drooping eyelids method of weight, through quickly relieve symptoms help patients overcome before and anxiety in the treatment, to achieve the effect of homology of body and mind. Needle punching operation emphasize function position (that is, we want to achieve the effect of the treatment), the function of the patients posture is passive will frontal muscle and the upper eyelid, and then save bamboo, supplemented by choosing fish waist, te 23, o god court, head Lin chi and is hole as the needle point, such

as acupuncture method to the target, attaches great importance to the improvement of the patients with local features, is in the process of the inheritance of Chinese traditional medicine is more emphasis on innovation and carry forward, strive to make the function of acupuncture method in intervention drooping eyelids become the safest and most stable curative effect, the best technology, value for the application of innovation and abundant acupuncture.

5. Conclusion

The essence of functional acupuncture is to re-form strong neuromuscular effects in muscles, destroy the paralytic weakness of targeted muscle groups, and rebuild the normal neuromuscular coupling mode. The goal of this balancing mechanism is to destroy the reflex mode of abnormal muscle paralysis and muscle weakness, and rebuild the ordered and normal neuromuscular reflex.

Acknowledgements

This work was supported by the Natural Science Foundation Guidance Project of Liaoning Province, China (Grants No. 20180550180; 20180550069; 2019-ZD-1000; 2019-ZD-1002).

Science and Technology Planning Project of Sichuan Province, China (Grants No. 2018JY0664).

References

- [1] Cannistra SA. Cancer of the ovary [J]. *N Engl J Med*, 2004, 351 (24): 2519-2529.
- [2] Wong E, Giandomenico CM. Current status of platinumbased antitumor drugs [J]. *Chem Rev*, 1999, 99 (9): 2451-2466.
- [3] Xia Qun, Guan Hang, Zhang Wei, et al. Clinical analysis of 32 cases of diabetic ophthalmoplegia [J]. *Chin J ophthalmology*, 1997, 33 (3): 235.
- [4] Zhang Chengfen, Zhang Huirong. Ocular complications and treatment of diabetes [M]. Beijing: People's Medical Publishing House, 2003: 253-254.
- [5] Shiyu Spring. Practical neurology [M]. Shanghai: Shanghai Science and Technology Press, 1994: 184--186, 576.
- [6] li. Etiological analysis of 80 cases of extraocular muscle paralysis with diplopia as the first symptom [J]. *Journal of clinical ophthalmology*, 2014, 22 (2): 165-168.
- [7] Wang Guixia. Neuropathology and clinical study of diabetic peripheral neuropathy [J]. *Journal of stroke and neurological disease*, 2000, 10 (5): 277-279.
- [8] Zhang Kang Yi, Hu Qinjin, Leap Zhencheng. A case report of oculomotor palsy caused by type 2 diabetes [J]. *Occupational Health and Diseases*, 2015, 33 (6): 389-391.
- [9] Masaki Kobayashi, Douglas W Zochodne. Diabetic neuropathy and the sensory neuron: New aspects of pathogenesis and their treatment implications [J]. *Journal of Diabetes Investigation*, 2018, 9 (6): 1239-1254.

- [10] Lu Shaojie. Acupuncture therapy for neuropathy [M]. Beijing: People's Medical Publishing House, 2004: 32.
- [11] Li Xiaolei, WANG Qiuyan, Li Gang, et al. Light puncture of the eyelid combined with conventional therapy in the treatment of 30 cases of oculomotor nerve palsy [J]. Chinese Medicine Research, 2012, 31 (8): 66-68.
- [12] Li Mengyuan, Wang Guan, Wang Zhaohui, et al. General Situation of Different Acupuncture Therapy for Diabetic Peripheral Neuropathy [J]. Journal of Liaoning University of Traditional Chinese Medicine, 2019, 21 (5): 64-66.
- [13] Bregman DK, Harbour r. Diabetic superior division oculomotor nerve palsy. Case report [J]. Arch Ophthalmol, 1988, 106 (9): 1169-1170.
- [14] Kao HJ, Chang YY, Lan MY, et al. Diabetic minor division palsy of the oculomotor nerve [J]. Acta Neurol Taiwan, 2005, 14 (2): 79-83.
- [15] Chang S L, Lin J G, Chi T C, et al. An insulin-dependent hypoglycaemia induced by electroacupuncture at the Zhongwan (CV12) acupoint in diabetic rats.[J]. Diabetologia, 1999, 42 (2): 250-255.