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Clinical Study on Treating of Light Myopia with Acupuncture

Pong Ae-Ryo[1]*, Jong A-Son[1], Yong Ran-An [2], Kyong Un-Kim[1], and Yong Paek-Kwon[1]

[1] *Acupuncture and Moxibustion Department, Medical Faculty No.1, Pyongyang University of Medical Sciences, Pyongyang, Democratic People's Republic of Korea.*

[2] *Koryo Medicine General Hospital, Pyongyang, Democratic People's Republic of Korea.*

Corresponding Author E-mail: *shypinguo202108@163.com*

ABSTRACT

Background: *In recent years, the prevalence of light myopia has become higher and higher. The symptoms of this disease include far distance visual disorder, getting blurred or sometimes double vision, eyes fatigue, etc. It can seriously affect the quality of life of patients.Therefore, more and more attention has been paid to light myopia.* ***Objective:****To observe the clinical effect of acupuncture for light myopia.* ***Methods:****115 patients with light myopia were randomly allocated into a study group with 60 cases (120 eyes) or a control group with 55 cases(110 eyes). The study group was treated with acupuncture, while the control group was treated with manual technique therapy. Acupuncture is applied once a day, one therapeutic course is 15-20 times, and another course is repeated after 2 months of rest. The clinical efficacy was observed after two course of treatment.* ***Results:****Treatment of a light myopia with acupuncture led to 90.8% of eyesight improvement in the study group, being significant as compared with the control group (61.8%; p<0.01).* ***Conclusions:*** *Acupuncture is effective for light myopia. The curative effect of light myopia is better than that of manual technique therapy.*

Keyword: Myopia, Acupuncture, Clinical Study, Acupoint.

Article Information

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1. INTRODUCTION

Light myopia is one of the most frequently seen eye diseases due to refractory disorder, which is characterized by pseudomyopia accompanied and a gradual progressive trend. This disease includes far distance visual disorder, getting blurred or sometimes double vision, eyes fatigue, etc. Considering the modern medical treatment of youth myopia at home and abroad till now indicates that there are no other therapeutic methods with an exception of surgical method or glass correction for high myopia and dropping mydriatic into eyes for light myopia[1)]. In traditional Koryo medicine only the treatment of pseudomyopia with manual therapy and acupuncture therapy to local acupoints selected were suggested but the therapeutic method for light myopia combining the proximal and distal acupoints has not been found yet. A lot of experts are applying acupuncture at home and abroad but they didn't divide myopia stages according to the refractory degrees and analyze eyesight according to ages on the basis of pathogenetic cause and refractory state[3)]. Therefore, we performed an investigation to treat light myopia with acupuncturing to pts of JingMing (BL1), Fengchi (GB20), Guangming (GB37) and Taichong (LR3).

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2. MATERIALS AND METHOD

2.1 Materials

Patients with myopia who visited the hospital of Pyongyang University of Medical Sciences and Koryo Medicine General Hospital during 2015-2020 were divided into the study group (60 cases; 120 eyes) and the control one (55 cases; 110 eyes) for the study. Light myopia means a true early myopia in which refraction is leaned towards (-) and which is corrected by a low degree of concave lens. As for ages of patients in the study group, 16-20 years old were 26 cases (43.3%) among 60 cases, 21-25 years old– 18 cases (30.0%), 10-15 years old– 11 cases (18.3%) and 26-30 years old– 5 cases (8.4%), and also, in the control one, it is similar to. As for the gender, women were 2 times more than men either in the study group or in the control one (22 cases of men and 38 cases of women in the study group), and as for the pathogenetic causes, short distance working or inappropriate reading occupies a heavy density. As for the disease duration, less than 5 years were 42 cases (70.0%), less than 10 years – 14 cases (23.3%) and less than 15 years – 4 cases (6.7%). Composition according to the refractory degree indicates that 30 eyes (25.0%) were below -1.25 D, 54 eyes (45%) – below -2.25 D and 36 eyes (30.0%) – below -3.0 D. As for the refractory state depending on ages, myopia below -2.25 D is 26 eyes in 16-20 years old, being 48.1%.

2.2 Method

2.2.1 Selection of acupoints and manipulation

2.2.1.1 The study group

Acupoints: Jingming(BL1) : 0.1cun superior and medial to the inner canthus of the eye, in a depression.Fengchi(GB20): At the lower border of the occipital bone, in the depression between the origins of the sternocleidomastoid and trapezius muscles. Guangming(GB37): 5 cun proximal to the highest prominence of the lateral malleolus, on the anterior border of the fibula, between the peroneus longus and extensor digitorum lonus muscles. Taichong(LR3): On the dorsum of the foot, between the 1st and 2nd metatarsal bones, in the depression proximal to the metatarsophalangeal joints and the proximal angle between the two bones.

Manipulation: Patient is asked to lie down on his back and acupoint area are sterilized. 0.25mm filiform needles are applied to pts. of Jingming, Fengchi, Guangming and Taichong with neutral supplementation and draining method for 15 min. Acupuncturing is applied once a day, one therapeutic course is 15-20 times, and another course is repeated after 2 months of rest. The outcome is compared with the control group.

2.2.1.2 The control group

On the basis of reference data, acupoint pressing and rubbing are applied to pts. of Jingming(BL-1), Taiyang(Ex-HN-5), Fengchi(GB20), Hegu(LI-4) and Binao(LI-14) for 20-25min and for 3-4 min on every acupoint.

2.2.2 Groups

The study group: acupuncture

The control group: manual technique therapy

2.2.3 Indices of observation

2.2.3.1 Indices of observation for subjective symptoms

Visual disorder, getting blurred, double vision, eyes fatigue, etc

2.2.3.2 Objective test

Naked and mydriatic eyesight, corrected eyesight and refraction are tested for consideration.

2.2.4 Criteria for assessment of therapeutic efficacy

The therapeutic efficacy is mainly assessed by change in eyesight.Remarkable improvement: naked eyesight was improved more than 3 stages as compared with before treatment. Improvement: naked eyesight was improved more than 2 stages as compared with before treatment. No change: naked eyesight was improved less than 1 stage or eyesight after treatment was same to pretreatment.Worsening:

eyesight was decreased after treatment as compared with pretreatment.

2.2.5 Statistical ananlysis

Statistical analysis was performed using SPSS version 17.0 statistical software. Measurement data were expressed as mean ± standard error ($\bar{X}$±SE) and analyzed by t-test. $p<0.05$ indicated that the difference was statistically significant. We received approval from the institution's ethic committee of Pyongyang University of Medical Sciences.

3. RESULT

3.1 Change in a mean eyesight and corrected one before and after treatment.

As shown in (**Table 1)**, there was a significant difference in mean eyesight and corrected one before and after treatment ($p<0.05$).

Table 1. Change in a mean eyesight and corrected one ($\bar{x}$±SE).

Eyesight		Number of eyes	Before treatment	After treatment
Study	**Mean eyesight**	**120**	**0.29±0.022**	**0.68±0.017 ***
	Corrected eyesight	**120**	**0.65±0.041**	**0.89±0.037 ***
Control	**Mean eyesight**	**110**	**0.31±0.021**	**0.60±0.024**
	Corrected eyesight	**110**	**0.67±0.028**	**0.79±0.022**

**** : p <0.05 (compared with the control group) .***

3.2 Change in eyesight according to ages.

(Table 2) shows that the younger age is, the better the therapeutic efficacy is either in the study group or in the control one.

Table 2. Change in eyesight according to ages.

Groups	Ages (years)	Number of eyes	Remarkable improvement	Improvement	No change
The study group (n=120)	**10~15**	**22**	**10(45.5)**	**12(54.5)**	
	16~20	**52**	**26(50.0)**	**11(21.2)**	**15(28.8)**
	21~25	**36**	**4(11.1)**	**19(52.8)**	**13(36.1)**
	26~30	**10**	**1(10.0)**	**5(50.0)**	**4(40.0)**
	all	**120**	**41(34.1)**	**47(39.2)**	**32(26.7)**
The control group (n=110)	**10~15**	**16**	**6(37.5)**	**7(43.7)**	**3(18.8)**
	16~20	**50**	**12(24.0)**	**14(28.0)**	**24(48.0)**
	21~25	**34**	**8(23.5)**	**7(20.6)**	**19(55.9)**
	26~30	**10**		**4(40.0)**	**6(60.0)**
	all	**110**	**26(23.6)**	**32(29.1)**	**52(47.3)**

( ) : %.

3.3 Change in eyesight according to the refractory degree

As shown in **(Table 3**), consideration of change in eyesight according to the refractory degree indicates that the lower the refractory degree was either in the study group or in the control one, the higher the efficacy was and a significant difference was recognized in the therapeutic efficacy ($p<0.01$).

Table 3. Change in eyesight according to the refractory degree.

Groups	Refractory degree (D)	Number of eyes	Remarkable Improvement	improvement	No change	Efficacy
The study group (n=120)	-0.5~-1.25	30	21(70.0)	7(23.3)	2(6.7)	28(93.2)
	-1.5~-2.25	54	14(26.0)	22(40.7)	18(33.3)	36(66.7)
	-2.5~-3.0	36	6(16.7)	18(50.0)	12(33.3)	24(67.7)
	Total	120	41(34.2)	47(39.1)	32(26.7)	88(73.3)**
The control group (n=110)	-0.5~-1.25	26	18(69.2)	4(15.4)	4(15.4)	22(84.6)
	-1.5~-2.25	52	4(7.7)	21(40.4)	27(51.9)	25(48.1)
	-2.5~-3.0	32	4(12.5)	7(21.9)	21(65.6)	11(34.4)
	Total	110	26(23.6)	32(29.1)	52(47.3)	58(52.7)

: p<0.01(compared with the control group) ( ) : %.

3.4 Change in eyesight according to disease duration

As shown in **(Table 4)**, evident improvement in eyesight was recognized for disease duration less than 10 years both in the study group and the control one ($p<0.01$).

Table 4. Change in eyesight according to disease duration.

Groups	Disease duration	Number of eyes	Remarkable improvement	Improvement	No change	Efficacy
The study group (n=120)	~5 years	84	38(45.2)	42(50.0)	4(4.8)	80(95.2)
	~10 years	28	11(39.3)	13(42.8)	4(14.3)	24(85.7)
	~15 years	8	2(25.0)	3(37.5)	3(37.5)	5(62.5)
	Total	120	51(42.5)	58(48.3)	11(9.1)	109(90.8)**
The control group (n=110)	~5 years	78	27(34.6)	27(34.6)	24(30.7)	54(69.2)
	~10 years	26	4(15.4)	8(30.8)	14(53.8)	12(46.2)
	~15 years	6		2(33.3)	4(66.7)	2(33.3)
	Total	110	31(28.1)	37(33.6)	42(38.2)	68(61.8)

: p<0.01(compared with the control group) ( ) : %.

3.5 Change in subjective symptoms in eyes

As shown in (Table 5), considering change in subjective symptoms in study group and control group indicates that there was a significant difference in eyesight disorder and dizziness due to eyes between both groups ($p<0.05$, $p<0.01$).

Table 5. Change in subjective symptoms before and after treatment.

Groups		Eyesight disorder	Getting blurred	Diplopia	Eyes fatigue	Dizziness due to eyes
The study group (n=60cases)	Before treatment	60	60	34	60	19
	After treatment	32(46.6) **	30(50.0)	27(20.5)	17(71.6)	8(57.8) *
The control group (n=55cases)	Before treatment	55	55	30	55	18
	After treatment	45(18.2)	46(16.4)	24(20.0)	23(58.2)	11(38.9)

** : p<0.05, **: p<0.01(compared with the control group) ( ) : disappearance rate.*

3.6 General therapeutic results

As shown in (Table 6), the general therapeutic result indicates that the therapeutic efficacy is 90.8% and 61.8%, respectively, in the study group and the control one, being a significant difference (p<0.01).

Table 6. General therapeutic results.

Groups	NO. of eyes	Remarkable improvement	Improvement	No change	Worsened	Efficacy
The study group	120	51(42.5)	58(48.3)	11(9.2)	-	109(90.8) **
The control group	110	31(28.2)	37(33.6)	42(38.2)	-	68(61.8)

***: p<0.01 (compared with the control) ( ) : %.*

4. DISCUSSION

Myopia develops for child age below 10 years old and young people above it without a special cause, its progression is different from person to person, and most of patients stay in stage of pseudomyopia or light myopia but some patients may progress quickly to reach to a high myopia. A lot of researchers suggest that today a rapid development of science and technology leads to wide use of computer in short distance and results in a long time short distance regulation with electronic game among youth, which increases a morbidity of myopia due to refractory disorder[2,5].

Some researchers reported that administration of mydriatic for relieving regulation tension of ciliary muscle in pseudomyopia or light myopia could improve eyesight and reduce eye fatigue[4].

On the basis of reference, we considered a change in eyes' subjective symptoms and refractory state according to the therapeutic prescriptions, analyzed eyesight and indexes related to eyes' function before and after treatment and performed the follow-up consideration after treatment. Applying acupuncture to pts of Jingming, Fengchi, Guangming and Taichong significantly improved naked eyesight, corrected eyesight and refractory degree in the study group as compared with the control one (p<0.01).

CONCLUSIONS

Treatment of a light myopia with acupuncturing pts of Jingming, Fengchi, Guangming and Taichong led to 90.8% of

eyesight improvement in the study group, being significant as compared with the control group (61.8%). ($p<0.01$).

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Declaration of competing interest

The authors declare that they have no conflict of interest.

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Author Contribution

Pong Ae-Ryo:Clinical Application, Jong A-Son: Reference Research , Yong Ran-An: Ophthamology Test, Kyong Un-Kim: Article Table Preparation, Yong Paek-Kwon: Clinical Introduction**.**

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