Effect of auricular pressing treatment on myopia in children

Li Yachan, Zhang Ou, Liang Wenna, Li Candong

OBJECTIVE: To observe the effect of pressing auricular points on myopia in children.

METHODS: Myopic children aged 8-9 years were divided into two groups. The Chinese herb Semen Vaccariae was used to stimulate the auricular points of CO10, LO5, TF4, CO15, CO12, and CO13 for three treatment courses for the experimental group (n = 39), while the same therapy was not given to the control group (n = 33). Binocular naked vision of the experimental group and the control group before and after the intervention was measured using a standard E visual acuity chart.

RESULTS: There was no difference in the binocular naked vision between the experimental group and the control group before the intervention. In contrast, there was significant improvement in binocular naked vision in the experimental group after the intervention compared with the control group (P < 0.05).

CONCLUSION: When combined with external medical application, non-invasive auricular therapy could improve the function of myopia in children. Auricular pressing was well received by the children.

INTRODUCTION

Myopia is a common disease in China, with a prevalence of 60%.1 It is especially common among young students; therefore, it is important to ascertain proper treatment for children with myopia.2 At present, the domestic treatment for myopia are treatment with dioptra (Through adjusting the distance, the ciliaris is exercised and overstrain is relieved in a short period. However, the therapeutic effect is uncertain, with a high rate of recurrence).3 Alternative treatment options for myopia include acupuncture-moxibustion treatment (including auricular pressing),4 medical massage that promotes blood circulation to the eye and relaxes the muscles near the eye in the short term,5 and medical eye drops that can soften and relax the musculus ciliaris in the short-term.6 However, the long-term effect on recovery of elasticity is not so satisfactory.7 Laser-assisted in situ keratomileusis is a surgery successful for treating myopia in adults, but it is not suitable for those under 22 years old.8 In Traditional Chinese Medicine, auricular stimulation at specific points is thought to prevent the deterioration of myopia. This study aims to investigate the effectiveness of auricular pressure as a treatment for myopia in children.

MATERIALS AND METHODS

Ethical statement

This study was performed in accordance with interna-
tional ethical standards and approved by Ethics Committee of China Academy of Chinese Medical Sciences.

**Study participants**

The participants were chosen in a randomized, double-blinded fashion from the myopic patients of the Department of Ophthalmology, Acupuncture Hospital, China Academy of Chinese Medical Sciences. Inclusion criteria: myopic children aged 8-9 years whose guardians provided written informed consent for treatment. Exclusion criteria: those who had already received other related treatments which might affect the measurements. Withdrawal criteria: those who received other therapy during the treatment, those who could not continue the treatment due to unpredictable conditions, and those who did not strictly follow the treatment protocol. Children are randomly arranged into the experimental group or control group by computer on the base of the basic experimental principles of random, contrast and double-blind.

There were 72 participants in total; 36 of each sex, 144 eyes in total. Participants were randomly assigned into two groups: the experimental group contained 39 children, 20 male and 19 female, with a total number of 144 eyes; the control group contained 33 children, 16 male and 17 female, with a total number of 66 eyes.

**Diagnosis criterion**

(a) Binocular visual acuity below 0.8 (4.9) in examination using Snellen visual acuity chart. (b) Dioptroscopy: diopter over 0.75 D5 through optometry after mydriasis with 2% guttae atropini sulfatis.

**Treatment**

Vaccaria seed was used as it promotes Blood circulation, and relieves swelling and pain. Removal of stagnation from meridians and collaterals was accomplished through both medical absorption and stimulation of the meridians. For the experimental group, auricular pressure treatment was given every other day by a professional oculist. The vaccaria seed was pressed at the auricular points of CO10, LO5, TF4, CO15, CO12, and CO13 on both ears three times a day; 10-15 presses were given at each of the points every time to cause redness, distension, and a mildly painful sensation in the local area. One month was taken as one course of treatment; ten days were one short treatment course, and a 1-day break was taken between courses. The whole treatment lasted for three treatment courses (that is, 3 months). The participants in the control group underwent examination of their visual function every other day, without vaccaria seed stimulation. Children in the control group only visited the clinic for inquiries and examination.

Testing using a standard E visual acuity chart was done before and after the treatment, and results were collected for comparative analysis.

**Statistical analysis**

Independent sample t-testing was used to analyze the difference in naked visual acuity between the experimental and control groups before and after the treatment. All data were analyzed using SPSS 16.0 software (International Business Machines Co., Ltd., Beijing, China). \( P < 0.05 \) was considered statistically significant.

**RESULTS**

**Result analysis on basic data of the targets**

A total of 72 subjects participated in the study, with a total number of 144 eyes. The experimental group contained 39 children with a total number of 78 eyes. There were 33 children in the control group with a total number of 66 eyes. The actual number of participants who finished the study was 72 (Table 1, Figure 1).

**Analysis of naked visual acuity**

For the experimental group, the mean naked visual acuity of the left eye before the intervention was 0.67 ± 0.13, and the right eye was 0.65 ± 0.14. For the control group, the mean naked visual acuity of the left eye was 0.61 ± 0.13, and the right eye was 0.59 ± 0.15. Before the intervention, there was no significant difference between the mean naked visual acuity of the left eye in the experimental group compared to the control group (\( t = 3.343, P = 0.001 \)). The mean naked visual acuity of the right eye of the experimental group after the intervention was 0.71 ± 0.14, which was significantly better than the mean naked visual acuity of the right eye of the control group (0.59 ± 0.15) (\( t = 3.343, P = 0.001 \)).

The experimental group contained 39 children and 33 children in the control group in which are collected in the clinic of Acupuncture Hospital. \( P \) Value is based on the comparison of the naked visual acuity of the experimental group and control group before intervention (Table 2).

The mean naked visual acuity of the left eye and right eye of the experimental group after the intervention was 0.71 ± 0.15 and 0.71 ± 0.14 respectively, which was better than the respective values of 0.67 ± 0.14 and 0.65 ± 0.14 before the intervention. Although the results indicated that visual improvements could be
Adopted and randomized \((n = 72)\)

Experimental group \((n = 39)\)

Controlled group \((n = 33)\)

Visual testing before and after the experiment \((n = 72)\)

Data summary and statistical analysis \((n = 72)\)

Analyzed \((n = 72)\)

---

**DISCUSSION**

Myopia, also called syndrome of inability of seeing far in traditional Chinese medicine. Its etiology, terminology and treatment prescriptions are already stated in the classic book *Qian Jin Yao Fang* by Sun Simiao of the Tang Dynasty (618-907). Till Ming Dynasty, this disease is named myopia in the book *Yin Hai Jing Wei*. In Traditional Chinese Medicine (TCM) theory, according to the book *Explanation on Huang Di Nei Jing Su Wen Yu Yi*, myopia can be caused by congenital deficiency, mal-development after birth, weakness of the Liver, Spleen, and Kidney, plus improper use of the eyes. The abovementioned factors cause Qi and Blood stagnation in the collaterals of the eye, as well as a lack of nourishment of the eye. The origin of myopia is related to factors such as emotion, overstrain of the eye, improper food intake, and fatigue; this causes syndromes such as Liver and Kidney deficiency, Spleen Qi deficiency, and Heart yang deficiency. It is stated in the book *Huang Di Nei Jing Ling Shu Zhu Zheng Fa Wei* that the ear communicates with the internal organs, viscera, and the four extremities.

---

**Table 1 Result analysis on basic data of the targets**

<table>
<thead>
<tr>
<th>Category</th>
<th>Experimental group ((n = 39, 78) eyes)</th>
<th>Control group ((n = 33, 66) eyes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender ((n))</td>
<td>Male</td>
<td>20/20</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>19/17</td>
</tr>
<tr>
<td>Age ((n))</td>
<td>8 years</td>
<td>23/12</td>
</tr>
<tr>
<td></td>
<td>9 years</td>
<td>16/21</td>
</tr>
<tr>
<td>Average age (years)</td>
<td>8.4±0.5</td>
<td>8.6±0.5</td>
</tr>
<tr>
<td>Duration of TV watching ((n))</td>
<td>Less than 1 h</td>
<td>12/11</td>
</tr>
<tr>
<td></td>
<td>2 h</td>
<td>25/20</td>
</tr>
<tr>
<td></td>
<td>More than 3 h</td>
<td>2/2</td>
</tr>
<tr>
<td>Duration of reading ((n))</td>
<td>Less than 1 h</td>
<td>35/30</td>
</tr>
<tr>
<td></td>
<td>2 h</td>
<td>4/3</td>
</tr>
<tr>
<td></td>
<td>More than 3 h</td>
<td>0/0</td>
</tr>
<tr>
<td>10 mins break in every 40 to 50 mins when watching and reading ((n))</td>
<td>Can</td>
<td>10/8</td>
</tr>
<tr>
<td></td>
<td>Can’t</td>
<td>29/25</td>
</tr>
<tr>
<td>30 to 40cm distance</td>
<td>Between eye and book or TV ((n))</td>
<td>Can</td>
</tr>
<tr>
<td></td>
<td>Can’t</td>
<td>26/23</td>
</tr>
<tr>
<td>Look far into the distance during eyestrain ((n))</td>
<td>Can</td>
<td>12/11</td>
</tr>
<tr>
<td></td>
<td>Can’t</td>
<td>27/22</td>
</tr>
</tbody>
</table>

---

**Table 2 Comparison of naked visual acuity of the two groups before the intervention**

<table>
<thead>
<tr>
<th>Category</th>
<th>Experimental group ((n = 39))</th>
<th>Control group ((n = 33))</th>
<th>(t) value</th>
<th>(P) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Naked vision left</td>
<td>0.67±0.14</td>
<td>0.61±0.13</td>
<td>1.977</td>
<td>0.052</td>
</tr>
<tr>
<td>Naked vision right</td>
<td>0.65±0.14</td>
<td>0.59±0.15</td>
<td>1.596</td>
<td>0.115</td>
</tr>
</tbody>
</table>

Notes: experimental group was given auricular pressure treatment every other day, 10-15 presses at each of the points every time, lasted 3 months. The control group underwent examination of their visual function every other day, without vaccaria seed stimulation.
through meridians and collaterals. Therefore, the ear can reflect information from the whole human body. The major auricular points used for the treatment of myopia in children are CO10, LO5, TF4, CO15, CO12, and CO13. Auricular stimulation at these points can regulate the Qi and Blood of the Zang-Fu organs as well as meridians and collaterals, and hence prevent the deterioration of myopia.

In this study, the naked visual acuity of myopic children after auricular stimulation intervention was obviously better than that without the intervention. The mean naked visual acuity of the experimental group who received auricular pressing showed improvement, and was significantly better than the control group. Both the left and right visual acuities of children who received auricular stimulation were improved. Compared with other therapies, auricular intervention had a high acceptability among children, which was favorable for clinical treatment.

The results show that auricular pressing provided an effective treatment of infantile myopia. Auricular pressing is non-invasive, has minimal side effects, and offers easy manipulation; hence, treatment of infantile myopia with auricular pressing has the advantage of being readily accepted by children.

The aim of this study was to investigate the treatment of infantile myopia with auricular pressing. One limitation was that there was no targeted study with differentiation of TCM syndromes. This should be further investigated in future research.

REFERENCES


7 Guan WL, Duan HY. Observation of the effect of posterior scleral reinforcement on high degenerative myopia. Yi Xue Yan Jiu Za Zhi 2008; 37(3): 128-130.


