Clinical Research on Abdominal Acupuncture plus Conventional Acupuncture for Knee Osteoarthritis

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Objective: To probe the therapeutic effect of abdominal acupuncture plus conventional acupuncture on knee osteoarthritis. Methods: PEMS3.1 software was used. The 105 patients with knee osteoarthritis were randomly divided into an abdominal acupuncture group, a conventional acupuncture group and a combined group (abdominal acupuncture plus conventional acupuncture). For the abdominal acupuncture group, the abdominal acupuncture was performed at Zhongwan (CV 12), Guanyuan (CV 4), Wailing (ST 26), Daheng (SP 15), Lower Rheumatism point and Qipang with needles retained for 30 minutes. For the conventional acupuncture group, the acupuncture was practiced at Neixiyan (EX-LE4) and Dubi (ST 35) of the affected limb, Yanglingquan (GB 34), Liangqiu (ST 34), Xuehai (SP 10) and Xiyangguan (GB 33). For the combined group, both methods were applied. Treatment was given once a day, 6 times a week, for 4 weeks. Lysholm knee scoring scale was used to score the functions of knee before and after treatment. Results: Of 35 cases in the abdominal acupuncture group, 8 cases were remarkably relieved, 10 cases relieved, 14 cases improved, and 3 cases failed, the total effective rate was 91.4%. Of 35 cases in the conventional acupuncture group, 7 cases were remarkably relieved, 8 cases relieved, 16 cases improved, and 4 cases failed, the total effective rate was 88.6%. Of 35 cases in the combined group, 13 cases were remarkably relieved, 16 cases relieved, 5 cases improved, and 1 cases failed, the total effective rate was 97.1%. There was a remarkable difference in the effect among 3 groups (P<0.05). The difference in scores of Lysholm knee scoring scale for knee joint after treatment among 3 groups was very significant (P<0.01). Conclusion: Abdominal acupuncture has reliable effect for knee osteoarthritis and it has the synergized function when combined with conventional acupuncture.

Key words: knee osteoarthritis; abdominal acupuncture; acupuncture; therapeutic effect

Abdominal acupuncture, a new acupuncture therapy gradually developed in recent years, has gradually popularized for clinical treatment of diseases. In authors’ experiment, the random control method was adopted and the standard accepted at home and abroad taken to objectively evaluate the effect of abdominal acupuncture on knee osteoarthritis, providing the fact of an evidence-based medicine for clinical popularization of abdominal acupuncture.

CLINICAL MATERIALS
General Data
The 105 patients (51 males and 54 females) with knee osteoarthritis diagnosed by Acupuncture Department of Guangdong Provincial TCM Hospital from January to December 2006 were randomly divided into an abdominal acupuncture group, a conventional acupuncture group and a combined group with 35 cases in each.
Table 1. Comparison of baseline data of three groups

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Sex</th>
<th>Age (year)</th>
<th>Illness course (year)</th>
<th>Syndrome</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Abdominal acupuncture</td>
<td>35</td>
<td>18</td>
<td>17</td>
<td>51.2±2.5</td>
<td>2.38±0.25</td>
</tr>
<tr>
<td>Conventional acupuncture</td>
<td>35</td>
<td>16</td>
<td>19</td>
<td>51.5±2.4</td>
<td>2.35±0.21</td>
</tr>
<tr>
<td>Combined acupuncture</td>
<td>35</td>
<td>17</td>
<td>18</td>
<td>50.9±2.1</td>
<td>2.47±0.26</td>
</tr>
</tbody>
</table>

Notes: 1. deficiency of kidney and marrow; 2. yang deficiency and cold accumulation; 3. stagnation of blood stasis.

There was no obvious difference in enumeration data of sex and syndrome under χ² analysis and in measurement data of age and illness course under t-test (P>0.05), hence they were comparable.

Criteria for Inclusion
1) Patients conformed to the Western Medicine Standard for Diagnosing Knee Osteoarthritis put forward by American Rheumatism College in 1986 and the TCM diagnosis and treatment of knee osteoarthritis in TCM Conventional Diagnosis and Treatment of Internal Diseases edited by ZHU Wen-feng. 1-2 2) Patients aged 40–70. 3) Patients took no analgesic in the previous week.

Criteria for Exclusion
1) Patients with complications of rheumatic arthritis, rheumatoid arthritis or gouty arthritis. 2) Patients with metabolic osteopathy, acute trauma or other complications affecting joints. 3) Patients with so severe swelling pain that it was necessary for them to be treated with liquid abstraction from articular cavity.

METHODS

Abdominal Acupuncture Group
Points: Zhongwan (CV 12), Guanyuan (CV 4), Qipang (on the healthy side, 0.5 *cun* lateral to Qihai (CV 6)), Wailing (ST 26), Daheng (SP 15) and Lower Rheumatism point (on the affected side, 0.5 *cun* below and 0.5 *cun* lateral to Wailing (ST 26)). Method: The patient was in a supine position. The disposable needles 0.22 mm × 50 mm (produced by Suzhou Tianyi Acupuncture Apparatus Limited Company) were inserted into points according to the order mentioned above and avoiding the skin pores and blood vessels (the patient should feel no pain, otherwise the needle should be removed and inserted again). Attention should be paid to rapidly insertion and slow twirling of needles. Needles were deeply inserted into Zhongwan (CV 12) and Guanyuan (CV 4), moderately into Qipang, Wailing (ST 26) and Daheng (SP 15), and shallowly into Lower Rheumatism point. After insertion of all needles, wait for the *qi* to come and manipulate the needles to the depth according to requirement in the recipe to improve symptoms of patients. Three to five minutes later, if the effect was not good, the adjustment of points in the recipe should be continued. The needles were retained for 30 minutes, and then removed in an order of insertion. Press the points with dry cotton balls.

Conventional Acupuncture Group
Points: Neixiyan (EX-LE4), Dubi (ST 35), Yanglingquan (GB 34), Liangqiu (ST 34), Xuehai (SP 10) and Xiyangguan (GB 33). Method: The patient was in a supine or sitting position. The disposable needles 0.22 mm × 40 mm (produced by Suzhou Tianyi Acupuncture Apparatus Limited Company) were vertically inserted into Neixiyan (EX-LE4) and Dubi (ST 35) 0.8–1.2 *cun* in depth and Yanglingquan (GB 34), Xiyangguan (GB 33), Liangqiu (ST 34) and Xuehai (SP 10) 1–1.2 *cun* in depth. After arrival of *qi*, the needles were manipulated with even method once every 10 minutes to strengthen the needling sensation. The needles were removed after 30 minutes’ retaining.

Combined Group
Abdominal acupuncture and conventional acupuncture were used at the same time.
The above-mentioned acupuncture was practiced once a day, 6 times a week with an interval of 1 day, for 4 successive weeks. During acupuncture, treatment with hydro-acupuncture, moxibustion, cupping, Chinese medicines, physical therapy, massage, pain-killers, and hormone were stopped. If pathological condition was so deteriorated that the patient could not tolerate the pain, Fenbid (Ibuprofen Sustained Release Capsule) could be orally taken. However, it is necessary to record in detail the time, cause, dosage and adverse reactions.

**Statistical Method**

The first author used SPSS11.0 software to process the recorded data (if both knees were involved, the severer one was selected). $\chi^2$ test and rank test were used to compare enumeration data, and $t$-test was used to compare measurement data. $P<0.05$ indicated a significant difference.

**RESULTS**

**Standards to Evaluate the Effect**

The function of knee joint was scored with Lysholm Knee Scoring Scale before and after treatment. The therapeutic effect was evaluated with the difference of total scores: remarkably relieved: difference ≥30 scores, relieved: 11–29 scores, improved: 6–10 scores, failed: ≤5 scores.

The comparison of Lysholm knee scores before and after treatment among the 3 group (Table 2)

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Before treatment</th>
<th>After treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdominal acupuncture</td>
<td>35</td>
<td>62.8±4.58</td>
<td>80.1±5.31</td>
</tr>
<tr>
<td>Conventional acupuncture</td>
<td>35</td>
<td>61.9±4.24</td>
<td>79.5±4.82</td>
</tr>
<tr>
<td>Combined group</td>
<td>35</td>
<td>62.8±4.73</td>
<td>85.5±6.06</td>
</tr>
</tbody>
</table>

Notes: In-group comparison before and after treatment, $^\Delta P<0.01$. Comparison of the abdominal acupuncture group and conventional acupuncture group with the combined group after treatment, $^\Delta P<0.01$.

Table 2. shows no obvious difference in the scores before treatment among the 3 groups ($P>0.05$), hence being comparable; no remarkable difference in the scores after treatment between the conventional acupuncture group and the abdominal acupuncture group ($P>0.05$); and a very significant difference in the scores after treatment between the combined group and the abdominal acupuncture group and between the combined group and the conventional acupuncture group respectively ($P<0.01$).

**Table 3. Comparison of therapeutic effect after treatment among the 3 groups (%)**

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Remarkably relieved</th>
<th>Relieved</th>
<th>Improved</th>
<th>Failed</th>
<th>Total effective rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdominal acupuncture</td>
<td>35</td>
<td>8 (22.9)</td>
<td>10 (28.6)</td>
<td>14 (40.0)</td>
<td>3 (8.6)</td>
<td>91.4$^*$</td>
</tr>
<tr>
<td>Conventional acupuncture</td>
<td>35</td>
<td>7 (20.0)</td>
<td>8 (22.9)</td>
<td>16 (54.3)</td>
<td>4 (11.4)</td>
<td>88.6$^{**}$</td>
</tr>
<tr>
<td>Combined group</td>
<td>35</td>
<td>13 (37.1)</td>
<td>16 (45.7)</td>
<td>5 (14.3)</td>
<td>1 (2.9)</td>
<td>97.1</td>
</tr>
</tbody>
</table>

Notes: Comparison of the combined group with the abdominal acupuncture group and conventional acupuncture group, $^*P<0.05$, $^{**}P<0.01$.

Table 3. shows a significant difference in the effect among the 3 groups ($P<0.05$); no significant different in the effect between abdominal acupuncture group and conventional acupuncture group ($P>0.05$); a significant difference between combined group and abdominal acupuncture group ($P<0.05$); and a very significant difference between combined group and conventional acupuncture group ($P<0.01$).

Adverse reaction and side effect: none of the patients taking supine position fainted and took analgesic during acupuncture treatment. In the abdominal acupuncture group, 3 patients/times had subcutaneous bleeding in abdominal area after the
needles were removed; while 5 patients/times had it in the knee in the conventional acupuncture group; 2 patients/times had the hematoma in the knee and 4 patients/times had hematoma in the abdominal area in the combined group. The bleeding was stopped by pressing with the sterilized cotton ball, and the hematoma disappeared by applying hot compress for 3–4 days.

**DISCUSSION**

Knee osteoarthritis is a disease in which the *Ben*-root is deficiency and the *Biao*-branch is excess. Deficiency of the liver, the kidney and *yang-qi* is the *Ben*-root, and cold, blood stasis and dampness are the *Biao*-branch. Therefore, supplementing deficiency and purging excess are the principle of treatment, and warming *yang*, dispersing cold, promoting blood circulation and clearing collaterals are the method of treatment. Chinese medicines and acupuncture are effective for the treatment of knee osteoarthritis. Through 30 years of clinical exploration and in combination of research achievements in the past, Prof. BO Zhi-yun has summarized a law of indications of abdominal points and discovered the Shenque (CV 8)-Channel-Collateral system, which has a responsive relation with the whole body.\(^4\)

According to Bo’s theory on abdominal acupuncture, the authors have selected Zhongwan (CV 12), Guanyuan (CV 4), Qipang, Wailing (ST 26), Daheng (SP 15) and Lower Rheumatism point to treat knee osteoarthritis. Zhongwan (CV 12) is a Front-*Mu* point of the stomach, which is exterior-interiorly related to the spleen. As the acquired foundation of human body, the stomach and spleen are known as the production source of *qi* and blood. Guanyuan (CV 4), also called Dantian, a Front-*Mu* point of the small intestine, has the effect of nourishing the kidney to consolidate the *Ben*-root and reinforcing *qi* and restore *yang*. The two points used together can nourish the spleen and kidney and promote the generation of *qi* and blood. Wailing (ST 26), a point of the stomach channel of Foot-Yangming, related to hip joint according to the abdominal hologram (Miraculous Turtle Diagram), is a pathway for *qi* and blood of internal organs to the four limbs. Therefore, acupuncture at Wailing (ST 26) enables *qi* and blood to arrive at limbs. Acupuncture at Daheng (SP 15), a point of spleen channel of Foot-Taiyin, can strengthen the spleen, remove dampness and smooth joints. The point Qipang has the effect of regulating lower-*jiao* and promoting circulation of *qi* and blood. Lower Rheumatism point is related to the knee joint in Miraculous Turtle Diagram, being an important point for treating lesions of knee joints. The above-mentioned points used together can make internal organs generate *qi* and blood, make channels and collaterals circulate *qi* and blood, and make the knee joints get *qi* and blood to achieve the purpose of stopping pain. The authors treated 35 cases of knee osteoarthritis with this method and used Lysholm knee scoring scale to evaluate the effect. The results of treatment showed no significant difference between the abdominal acupuncture group and the conventional acupuncture group (*P*>0.05), indicating that the reliable effect has been achieved in the two groups. Remarkable difference was found between the combined group and the abdominal acupuncture group (*P*<0.05). There was a very significant difference (*P*<0.01) between the combined group and the conventional acupuncture group, indicating that abdominal acupuncture plus conventional acupuncture in the local area of knee can further enhance the therapeutic effect, thus providing an optimized therapy for treating knee osteoarthritis.

**REFERENCES**


(Translated by DUAN Shu-min 段树民)