Research into acupuncture for respiratory disease in Japan: a systematic review

Masao Suzuki,1,2 Yoko Yokoyama,1 Hiroshi Yamazaki3

ABSTRACT

Background: In Japan, studies on acupuncture therapy for respiratory disease have rarely been reported. Additionally, most of the reports are difficult for overseas researchers to access because they are written in Japanese and cannot be located using Medline.

Purpose: To review studies on acupuncture and moxibustion therapy for respiratory disease conducted in Japan.

Data sources: The results of a literature search using “Igaku Chuo Zasshi Web” and the Medical Online Library, both of which are Japanese databases, covering the period between 1979 and 2006.

Study selection: This study reviewed references cited in retrieved documents and selected original articles and case reports on acupuncture and moxibustion therapy for respiratory disease.

Data extraction: The search terms used were “acupuncture” and “respiratory disease”, along with “asthma”, “COPD”, “bronchitis” and “common cold”.

Results: The study retrieved 34 papers on acupuncture treatment for respiratory disease written in Japanese (9 full papers, 19 case reports and 6 case series). The papers dealt with such conditions as asthma (14 trials), cough variant asthma (one trial), chronic obstructive pulmonary disease (seven trials), chronic bronchitis (one trial), usual/idiopathic interstitial pneumonia (one trial) and the common cold (two trials). The study also found eight trials dealing with cold prevention.

Conclusions: A small number of reports on acupuncture and moxibustion treatment for respiratory diseases were found in the Japanese databases. Future studies must use more rigorous evaluation methods, such as randomised controlled trials, to measure the effectiveness of acupuncture and moxibustion therapy for treating respiratory diseases.

Acupuncture, a non-invasive therapy based on traditional Chinese medicine (TCM), may be a valuable modality in managing symptoms of chronic obstructive pulmonary disease (COPD).1 Moreover, the World Health Organization has recognized that acupuncture may be effective in treating chronic pulmonary disorders,2 and it is widely used in Japan for the treatment of chronic disease. The traditional theory behind the use of acupuncture is to restore the balance of “vital flows” by inserting needles at particular points on the body surface where the “meridians” of these flows lie. The specific points can also be stimulated with pressure or laser application.3

In many patients, particularly those with advanced pulmonary disease, symptomatic measures are required in addition to other therapies, and may even be the mainstay of treatment.3 Jobst et al showed an improvement in subjective scores and the 6-minute walking distance (6MWD) after acupuncture treatment in a randomised controlled trial (RCT) that compared real and placebo treatment of the knee in breathless patients with COPD.3 The open evaluation of a standardised acupuncture technique for cancer-related breathlessness by Filshie et al also showed significant short-term symptomatic relief in relation to breathlessness, relaxation, anxiety and respiratory rate in 14 of the 20 patients studied.6 In addition, several reviews have examined the efficacy of acupuncture for the relief of respiratory disease.7-9

Acupuncture is a popular alternative therapy.2 Needle acupuncture has been used to treat various complaints for hundreds of years in Japan and has been reported to be of therapeutic benefit in controlling pain. However, in Japan, reports on patients with respiratory disease who have received acupuncture and moxibustion therapy are rare and clinical trials intended to assess the effectiveness of the therapy for respiratory disease are even rarer. Moreover, most of the papers on acupuncture published in Japan are written in Japanese and cannot be retrieved using major English-language medical databases. Thus, the purpose of this review was to evaluate and introduce the current status of clinical trials conducted in Japan on acupuncture in treating respiratory disease.

METHODS

Accessing the literature

A computer-assisted search was used to examine the Igaku Chuo Zasshi (Japana Centra Revuo Medica) and Medical Online Library (Meteointergate, Inc.) databases. We also investigated the references that were cited in each retrieved document and selected relevant papers. The period covered was from January 1979 to May 2006. The keywords used in the database searches were “respiratory disease”, “acupuncture”, “asthma”, “chronic obstructive pulmonary disease”, “bronchitis”, “common cold”, “pulmonary disease” and “clinical trial”. The search was limited to original papers and case reports.

Study selection criteria

Clinical trials (case reports, random parallel- or crossover-designed trials and non-random parallel- or crossover-designed trials) that assessed the efficacy of needle acupuncture were included. All studies that used a control were labelled CCT (controlled clinical trial) including N-of-1 studies and RCTs.
Experimental studies, animal studies and duplications of published papers were excluded.

**Data extraction**

For each study, the following items were reviewed: trial design, randomisation, blinding, handling of dropouts, publication year, health condition examined, treatment and control procedures, number of participants, main result, number of treatments, type of control used, main outcome measure, descriptions of informed consent, affiliations of authors and publication types.

The quality of reporting was evaluated using the scale developed and validated by Jadad et al (table 1). This scoring system took into account the most relevant characteristics of a clinical trial, randomisation and blinding. Two points were given for correct, random allocation and correct blinding, and one point was given if a description of dropouts and withdrawals was provided. Thus, the maximum score was 5, and a score of at least 3 indicated an adequate methodology.

**Additional information**

Control groups were classified into one of six categories as follows: (i) waiting lists; (ii) physiologically inert controls, for example, sham transcutaneous electrical nerve stimulation (TENS), placebo acupuncture; (iii) sham acupuncture; (iv) standard medical care, for example, drug therapy or physiotherapy; (v) other acupuncture methods; and (vi) other control methods. Placebo acupuncture was defined as a mock acupuncture procedure in which needles were not actually inserted. On the other hand, sham acupuncture was defined as a mock acupuncture procedure in which needles were inserted in the skin. Therefore, placebo acupuncture was considered a physiologically inert control whereas sham acupuncture was considered as a separate control group, because the growing body of evidence indicates that sham acupuncture may actually produce some effects that are not specific to the points used. When the proportions responding were cited in the article, this information was also extracted, in order to compare proportions responding to physiologically inert controls to those responding to sham acupuncture. The country of the study was also recorded due to recent research indicating that certain countries may be associated with positive outcomes.

**RESULTS**

We found a total of 34 Japanese papers on acupuncture that was applied to respiratory disease (19 case reports, 6 case series and 9 full papers). Nineteen (55.9%) of the 34 Japanese trials were published before 2001, and the rest after 2001 (fig 1).

### Table 1 Scoring system of trial according to Jadad et al

<table>
<thead>
<tr>
<th>Question</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Study described as randomised (including the words “random”, “randomisation”, “randomly”?</td>
<td>Yes = 1</td>
</tr>
<tr>
<td>2 Study described as double-blind?</td>
<td>Yes = 1 No = 0</td>
</tr>
<tr>
<td>3 Withdrawals and dropouts described?</td>
<td>Yes = 1 No = 0</td>
</tr>
<tr>
<td>4 Method of randomisation described and appropriate?</td>
<td>Yes = 1 No = 0</td>
</tr>
<tr>
<td>Appropriate tables of random numbers, computer-generated sequences</td>
<td></td>
</tr>
<tr>
<td>5 Method of double-blinding described and appropriate?</td>
<td>Yes = 1 No = 0</td>
</tr>
</tbody>
</table>

**Case reports and case series**

A list of 25 case reports and case series is shown in table 2 and fig 2.

**Diagnosis**

The conditions examined in these types of papers were asthma (14 trials), COPD (five trials), chronic bronchitis (one trial), usual interstitial pneumonia (UIP) (one trial) and the common cold (two trials). We also found studies dealing with cold prevention (two trials) (fig 3).

**Intervention**

Eighteen of 25 case reports used TCM as the standard method of acupuncture treatment. Of the rest, some applied special acupuncture treatments, such as electric acupuncture treatment, roller acupuncture, skin implant needles, Doushi and Ryoudouraku.17

**Duration of treatment**

The duration of treatment observation for respective research was over 1 month for 17 reports, but only 1 day in three reports. The rest did not report the period of treatment observation.

**Outcome measures**

The main outcome was not measured by commonly validated methods in 14 papers. These papers measured their outcomes by...
<table>
<thead>
<tr>
<th>Year</th>
<th>Author/reference no</th>
<th>Diagnosis</th>
<th>n</th>
<th>Study design</th>
<th>Intervention</th>
<th>No of treatments/duration</th>
<th>Outcome measures</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>Yamashita Y/32</td>
<td>Common cold</td>
<td>1</td>
<td>Case report</td>
<td>Roller acupuncture</td>
<td>160 times/104 weeks</td>
<td>Symptom</td>
<td>+</td>
</tr>
<tr>
<td>2005</td>
<td>Suzuki M/25</td>
<td>COPD</td>
<td>1</td>
<td>Case report</td>
<td>Acupuncture (TCM)</td>
<td>10 times/10 weeks</td>
<td>Exercise tolerance test, respiratory function, attack</td>
<td>+</td>
</tr>
<tr>
<td>2005</td>
<td>Suzuki M/26</td>
<td>COPD</td>
<td>1</td>
<td>Case report</td>
<td>Acupuncture (TCM)</td>
<td>10 times/10 weeks</td>
<td>Exercise tolerance test, respiratory function</td>
<td>+</td>
</tr>
<tr>
<td>2005</td>
<td>Tsuru K/27</td>
<td>COPD</td>
<td>1</td>
<td>Case report</td>
<td>Acupuncture (TCM)</td>
<td>33 times/20 weeks</td>
<td>Exercise tolerance test, respiratory function</td>
<td>−</td>
</tr>
<tr>
<td>2004</td>
<td>Katayama Y/28</td>
<td>COPD</td>
<td>1</td>
<td>Case report</td>
<td>Acupuncture (TCM)</td>
<td>33 times/7 weeks</td>
<td>Exercise tolerance test, respiratory function</td>
<td>+</td>
</tr>
<tr>
<td>2004</td>
<td>Oyagi T/12</td>
<td>Asthma</td>
<td>1</td>
<td>Case report</td>
<td>Acupuncture (TCM)</td>
<td>No description/no description</td>
<td>Symptom</td>
<td>+</td>
</tr>
<tr>
<td>2005</td>
<td>Uematsu Y/13</td>
<td>COPD</td>
<td>1</td>
<td>Case report</td>
<td>Acupuncture (TCM)</td>
<td>10 times/9 weeks</td>
<td>Symptom</td>
<td>+</td>
</tr>
<tr>
<td>2005</td>
<td>Egawa M/13</td>
<td>Asthma</td>
<td>1</td>
<td>Case report</td>
<td>Acupuncture (TCM)</td>
<td>60 times/72 weeks</td>
<td>Symptom</td>
<td>+</td>
</tr>
<tr>
<td>2003</td>
<td>Uematsu Y/33</td>
<td>UIP</td>
<td>1</td>
<td>Case report</td>
<td>Acupuncture (TCM)</td>
<td>50 times/50 weeks</td>
<td>Symptom</td>
<td>+</td>
</tr>
<tr>
<td>2002</td>
<td>Nakano T/14</td>
<td>Asthma</td>
<td>10</td>
<td>Case series</td>
<td>Electroacupuncture, acupuncture</td>
<td>10 times/10 weeks</td>
<td>Symptom</td>
<td>+</td>
</tr>
<tr>
<td>2000</td>
<td>Gotou K/15</td>
<td>Asthma</td>
<td>17</td>
<td>Case series</td>
<td>Acupuncture (Ryoudouraku)</td>
<td>13 times/no description</td>
<td>Ryoudouraku, symptom</td>
<td>+ (availability: 9, variability: 7)</td>
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<tr>
<td>2000</td>
<td>Suzuki M/29</td>
<td>COPD</td>
<td>1</td>
<td>Case report</td>
<td>Acupuncture (TCM)</td>
<td>60 times/61 weeks</td>
<td>Attack diary, PEFR, symptom</td>
<td>+</td>
</tr>
<tr>
<td>2000</td>
<td>Tokuchi J/36</td>
<td>Cold prevention</td>
<td>1</td>
<td>Case report</td>
<td>Acupuncture (TCM)</td>
<td>8 times/4 weeks</td>
<td>Symptom</td>
<td>+</td>
</tr>
<tr>
<td>1998</td>
<td>Tanaka K/35</td>
<td>Cold prevention</td>
<td>2</td>
<td>Case report</td>
<td>Child acupuncture</td>
<td>No description/no description</td>
<td>Symptom</td>
<td>+</td>
</tr>
<tr>
<td>1995</td>
<td>Matsuzawa M/18</td>
<td>Asthma</td>
<td>30</td>
<td>Case series</td>
<td>Acupuncture, Kampo (TCM)</td>
<td>No description/no description</td>
<td>Effective: 90%</td>
<td>+</td>
</tr>
<tr>
<td>1995</td>
<td>Yu S/17</td>
<td>Asthma</td>
<td>2</td>
<td>Case report</td>
<td>Acupuncture (TCM)</td>
<td>26 times/12 weeks</td>
<td>Symptom</td>
<td>+</td>
</tr>
<tr>
<td>1994</td>
<td>Hashimoto K/18</td>
<td>Asthma</td>
<td>1</td>
<td>Case report</td>
<td>Acupuncture (TCM)</td>
<td>47 times/28 weeks</td>
<td>Symptom</td>
<td>+</td>
</tr>
<tr>
<td>1993</td>
<td>Rin S/30</td>
<td>Chronic bronchitis</td>
<td>1</td>
<td>Case report</td>
<td>Acupuncture, Kampo (TCM)</td>
<td>8 times/8 weeks</td>
<td>Symptom</td>
<td>+</td>
</tr>
<tr>
<td>1992</td>
<td>Seki Y/33</td>
<td>Common cold</td>
<td>3</td>
<td>Case report</td>
<td>Acupuncture (TCM)</td>
<td>No description/no description</td>
<td>Symptom</td>
<td>+</td>
</tr>
<tr>
<td>1990</td>
<td>Shinohara M/19</td>
<td>Asthma</td>
<td>1</td>
<td>Case report</td>
<td>Acupuncture (TCM)</td>
<td>30 times/84 weeks</td>
<td>Category scale, emergency outpatient, medication, ABG</td>
<td>Category scale (+), emergency outpatient (+), medication (+), ABG (−)</td>
</tr>
<tr>
<td>1989</td>
<td>Hayasaka Y/20</td>
<td>Asthma</td>
<td>3</td>
<td>Case report</td>
<td>Acupuncture (TCM)</td>
<td>Once/1 day</td>
<td>Symptom</td>
<td>+</td>
</tr>
<tr>
<td>1987</td>
<td>Tsukada Y/21</td>
<td>Asthma</td>
<td>12</td>
<td>Case series</td>
<td>Electroacupuncture, acupuncture</td>
<td>28 times/56 weeks</td>
<td>Symptom, PEFR, blood test</td>
<td>Symptom (+), PEFR (10% improvement), blood test (−)</td>
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<td>1987</td>
<td>Fu Y/22</td>
<td>Asthma</td>
<td>21</td>
<td>Case series</td>
<td>Acupuncture (implant a needle)</td>
<td>Once/1 day</td>
<td>Symptom</td>
<td>+</td>
</tr>
<tr>
<td>1982</td>
<td>Sugiura R/23</td>
<td>Asthma</td>
<td>1</td>
<td>Case report</td>
<td>Acupuncture (TCM)</td>
<td>No description/no description</td>
<td>Symptom</td>
<td>+</td>
</tr>
<tr>
<td>1979</td>
<td>Takahashi T/24</td>
<td>Asthma</td>
<td>10</td>
<td>Case series</td>
<td>Acupuncture (Japanese: Doushi)</td>
<td>Once/1 day</td>
<td>Symptom</td>
<td>+</td>
</tr>
</tbody>
</table>

ABG, artery blood gas; COPD, chronic obstructive pulmonary disease; CVA, cough variant asthma; PEFR, peak expiratory flow rate; TCM, traditional Chinese medicine; UIP, usual interstitial pneumonia; +, positive; −, negative.
conducting unstructured individual interviews of the patients. The rest carried out reliable examinations, such as testing improvement in respiratory function, keeping asthma diaries or measuring exercise tolerance.13 15 16 21 23 27–31 33

Results
All trials but one indicated positive results, 29 although unusual techniques of acupuncture were used in some case reports. In one study, the common cold was treated with roller acupuncture34 (fig 4). In another study, the acupuncture point ST10 in the front of the neck was treated for bronchial asthma (Japanese: Doushi).26

Full papers: controlled clinical trials
We found a total of nine papers regarding CCTs on acupuncture in treating respiratory disease and in cold prevention. One of the first CCT papers on acupuncture was published in 1996.38 A list of these CCTs is shown in table 3.

Figure 3  The conditions examined in these case reports and case series were asthma (13 trials), CVA (one trial), COPD (five trials), chronic bronchitis (one trial), UIP (one trial), cold prevention (two trials) and common cold (two trials). The conditions examined in these CCTs were asthma (one trial), COPD (two trials) and cold prevention (six trials). CB, chronic bronchitis; CC, common cold; CCT, controlled clinical trial; COPD, chronic obstructive pulmonary disease; CP, cold prevention; CVA, cough variant asthma; UIP, usual interstitial pneumonia.

Diagnosis
The conditions examined in these CCTs were asthma (one trial)39 and COPD (two trials).40 41 We also found six trials on cold prevention38–46 (fig 3).

Study design
The mean (SD) Jadad score for all nine papers was 0.9 (1.2). In fact, using the Jadad score, only four trials received any points.39 42–44 Of them, three were regarded as genuine RCTs.42–44 No subjects were blinded. Dropouts or withdrawals from the studies were indicated in three trials.39 42 43

Intervention
The method of acupuncture used was TCM (three trials),39–41 specific acupoint needles (four trials)38 43 44 46 and moxibustion (two trials).42 45

Control
Regarding controls, no trial used sham or placebo procedures, six trials employed drugs or vaccine injections38–41 45 46 and three trials employed no treatment42–44 (table 3).

Duration and frequency of treatments
The duration of all trials was over 1 month. The mean frequency of treatments was 16.8 times (range 8–32).

Outcome measures
Of six papers that intended to measure the effects of acupuncture and moxibustion therapy on cold prevention, two required research participants to maintain diaries to record changes in cold symptoms, and three conducted blood tests that revealed relationships between particular biomarkers (CD4, CD8 and CD53) and patients’ cold symptoms. However, one paper measured the effects based solely on self-reports by participating patients.

Two papers measured the effects of acupuncture and moxibustion therapy for COPD using validated tests, such as respiratory function inspection and exercise tolerance. Similarly, one measuring the effects on bronchial asthma used validated measurements, such as requiring patients to keep asthma diaries and conducting respiratory function inspections.

Results
The results were positive in five trials (55.6%).39–41 43 44 For COPD, one study41 with Jadad score of zero, found acupuncture superior to drugs, but was not supported by an N-of-1 study.40 For asthma, one n-of-1 study39 suggested acupuncture may have an effect compared with drugs. For prevention of the common cold, five studies found acupuncture or moxibustion superior to control, but only one of these studies44 had an adequate quality score.

DISCUSSION
We examined the methodological quality, acupuncture treatment characteristics and respiratory outcome of nine CCTs on acupuncture for respiratory disease in Japan. Only one of these trials received an adequate quality score (>3).44 For most, the research methods used were inadequate or inappropriate (ie, not randomised, controlled and/or blinded, and without any quantitative measurement). Furthermore, even the CCTs that scored 2 or 3 on the Jadad scale did not indicate whether a third person had assessed them, and thus the validity of their results cannot be guaranteed to be high.
### Table 3  Summary of controlled clinical trials on acupuncture and moxibustion in the Japanese literature

<table>
<thead>
<tr>
<th>No</th>
<th>Author/reference no</th>
<th>Year</th>
<th>Diagnosis</th>
<th>Study design</th>
<th>Allocation method</th>
<th>n</th>
<th>Intervention</th>
<th>Control</th>
<th>Duration</th>
<th>No of treatment</th>
<th>Outcome measures</th>
<th>Result</th>
<th>Jadad score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Suzuki M/39</td>
<td>2006</td>
<td>Asthma</td>
<td>N-of-1</td>
<td>No description</td>
<td>6</td>
<td>A: acupuncture</td>
<td>B: iv (drugs)</td>
<td>40 weeks</td>
<td>20 times</td>
<td>Asthma diary, respiratory function</td>
<td>A&gt;B, p = 0.0001</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Egawa M/40</td>
<td>2005</td>
<td>COPD</td>
<td>N-of-1</td>
<td>No description</td>
<td>1</td>
<td>A: acupuncture</td>
<td>B: iv (drugs)</td>
<td>64 weeks</td>
<td>32 times</td>
<td>Exercise tolerance, respiratory function</td>
<td>A = B, p value (no description)</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Takahashi N/42</td>
<td>2006</td>
<td>Cold prevention</td>
<td>RCT, N-of-1</td>
<td>No description</td>
<td>2</td>
<td>A: moxibustion</td>
<td>B: vi (temperature-controlled room)</td>
<td>16 weeks</td>
<td>24 times</td>
<td>Symptom</td>
<td>A&gt;B, p value (no description)</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Suzuki M/41</td>
<td>2004</td>
<td>COPD</td>
<td>Parallel</td>
<td>Each establishment</td>
<td>37</td>
<td>A: acupuncture</td>
<td>B: iv (drugs)</td>
<td>10 weeks</td>
<td>10 times</td>
<td>Exercise tolerance test, respiratory function</td>
<td>A&gt;B, p = 0.0001</td>
<td>0</td>
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<tr>
<td>5</td>
<td>Shichidou T/43</td>
<td>2001</td>
<td>Cold prevention</td>
<td>RCT</td>
<td>Computer software</td>
<td>24</td>
<td>A: acupuncture</td>
<td>B: I (waiting lists)</td>
<td>4 weeks</td>
<td>9 times</td>
<td>Symptom diary</td>
<td>A&gt;B Acupuncture group had the protective efficacy compared with the control group</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Isobe Y/44</td>
<td>2000</td>
<td>Cold prevention</td>
<td>RCT</td>
<td>Computer software</td>
<td>24</td>
<td>A: acupuncture</td>
<td>B: I (waiting lists)</td>
<td>4 weeks</td>
<td>8 times</td>
<td>Symptom diary</td>
<td>A&gt;B Acupuncture group had the protective efficacy compared with the control group</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>Tanaka J/45</td>
<td>2000</td>
<td>Cold prevention</td>
<td>Parallel</td>
<td>No description</td>
<td>60</td>
<td>A: moxibustion</td>
<td>B: iv (vaccine + moxibustion), C: iv (vaccine)</td>
<td>4 weeks</td>
<td>16 times</td>
<td>Symptom, CD4+, CD8+, CD53</td>
<td>A = B&gt;C p&lt;0.05</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>Kaneko I/46</td>
<td>1998</td>
<td>Cold prevention</td>
<td>Parallel</td>
<td>No description</td>
<td>60</td>
<td>A: acupuncture</td>
<td>B: iv (vaccine + acupuncture), C: iv (vaccine)</td>
<td>4 weeks</td>
<td>16 times</td>
<td>Symptom, CD4+, CD8+, CD53</td>
<td>A = B&gt;C p&lt;0.05</td>
<td>0</td>
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<tr>
<td>9</td>
<td>Kobayashi Y/38</td>
<td>1996</td>
<td>Cold prevention</td>
<td>Parallel</td>
<td>No description</td>
<td>40</td>
<td>A: acupuncture</td>
<td>B: iv (vaccine + acupuncture), C: iv (vaccine)</td>
<td>48 weeks</td>
<td>16 times</td>
<td>Virus serum antibody titre</td>
<td>A = B&gt;C p&lt;0.05</td>
<td>0</td>
</tr>
</tbody>
</table>

COPD, chronic obstructive pulmonary disease; RCT, randomised controlled trial; vaccine, influenza vaccine.
Most case reports and case series dealt with chronic disease, such as bronchial asthma, COPD and UIP. Chronic diseases require relatively long periods of acupuncture treatment and monitoring. However, several of these case reports and case series conducted treatment and monitoring for only short periods of time. Thus, we cannot know the long-term effects, beyond the periods covered by the respective studies. The validity of acupuncture treatment in these studies must be gauged in this light. Nevertheless, a few studies have carried out relatively long periods of acupuncture treatment and monitoring. These studies are of great importance in assessing the realistic effects of acupuncture treatment on these chronic diseases.

Because only three complete RCTs were found out of 34 papers, we cannot strongly argue that acupuncture was effective in treating respiratory disease. As Martin et al argued, the effect of a treatment can be systematically assessed only by improving study quality. In this review, the result was positive in 24 papers (case reports and case series) (54.1%). However, in 13 of these 24 papers, the assessment was based solely on patients' complaints, indicating that these results are weak in terms of validity and reliability. This result suggests the publication bias was present, in the sense that only positive outcomes tended to be published.

Our review clarified that weaker study designs may bias study results and overestimate positive effects of the treatment — consistent with the findings of Martin et al. Despite the weaknesses observed, some studies demonstrated the potential of acupuncture in the sense that it may be effective in treating certain diseases, such as COPD and UIP, which are currently incurable by modern medicine. Likewise, some papers suggested a possibility of using acupuncture in health promotion, such as cold prevention. These cold prevention studies, along with the RCT study of 326 subjects reported by Kawakita et al., showing significant improvements in preventing colds in the treatment group, are seminal in that they examined the possibility of applying acupuncture and moxibustion therapy as preventive medicine.

The Japanese CCTs that measured the effects of acupuncture in treating respiratory diseases lag far behind in quality compared with those conducted in the West. Whilst studies in the West began to apply RCTs in the 1980s, the Japanese counterparts did not do so until 2000. The overall scarcity of reports on acupuncture and moxibustion therapies for respiratory disease in Japan is probably due to the medical insurance system. The system enables practically every Japanese citizen to seek mainstream modern (Western) medicine treatments offered by medical institutions at relatively low cost. Because most complementary and alternative medicine treatments are not covered by insurance; it is unlikely that Japanese patients with respiratory disease would choose acupuncture or moxibustion therapy as their first choice of treatment. In some Western countries, however, acupuncture treatment for some kinds of diseases have been reported to be more effective and less costly than treatments with modern medicine.

It is, of course, true that acupuncture has been practised much more widely in Japan than in the West. Of 2000 respondents, 6.5% had received acupuncture treatment in Japan, whilst the number was only 2% in Australia and 1% in the USA. However, acupuncture treatment has been used primarily for relieving pains, such as back pains and stiff shoulders in Japan, whilst in the USA and the former Czechoslovakia, the treatment has been used more for bronchial asthma, allergy or mental disorders, than for pain relief. Particularly interesting is that whilst 3.1% of respondents had received acupuncture treatment for respiratory diseases in the USA, none had done so in Japan.

Another difference is that in Euro-American countries, doctors practise acupuncture treatment at hospitals, whilst in Japan doing so is illegal. That is, when patients seek acupuncture treatment for respiratory diseases in some countries in the West such as Germany and the USA, they may have easier access than their Japanese counterparts.

Japanese acupuncture has developed some culturally unique methods whilst being practised for hundreds of years. Some papers reviewed here dealt with such unique methods as roller acupuncture (Roller-shin in Japanese), Ryoudouraku and Doushi. For roller acupuncture treatment, practitioners apply a roller with a warty surface across a patient's skin, which stimulates cutaneous vessels and results in their dilation. Because no needle penetrates the skin, roller acupuncture is considered to be easier to practise than the orthodox method. Yamashita reported that roller acupuncture was a safe and effective method for cold prevention. Ryoudouraku and Doushi are traditional Japanese concepts. Ryoudouraku therapy is the method of search for needling point using a special probe. Doushi is treatment in which an intercarotid body is stimulated by insertion of the acupuncture from ST9 (Renyig), and the excitation of a vagus nerve takes place, and bronchodilatation.

CONCLUSION

In conclusion, future trials should have larger sample sizes, more rigorous methods and reflect principles and practices of acupuncture as applied in practice today. Furthermore, to complete systematic reviews on acupuncture, we encourage researchers in Japan and elsewhere to publish relevant results of RCTs in English, so that they will be listed in major English-language databases. We believe that conducting reviews of non-English papers on RCTs, which have especially been published in East Asia, would promote a more thorough scientific evaluation of acupuncture treatments of respiratory diseases.

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