Moxibustion for Stroke Rehabilitation
Systematic Review

Myeong Soo Lee, PhD; Byung-Cheul Shin, OMD, PhD; Jong-In Kim, OMD, PhD; Chang-ho Han, OMD, PhD; Edzard Ernst, MD, PhD, FMedSci, FRCP, FRCPEd

Background and Purpose—Positive effects of moxibustion for stroke rehabilitation may be seen in real clinical practice. Currently, no systematic reviews are available. The aim of this systematic review was to analyze the trial data on the effectiveness of moxibustion for stroke rehabilitation.

Methods—Fourteen databases were searched without language restriction. Randomized clinical trials were included if moxibustion was tested as the sole treatment or as an adjunct to other treatments for stroke rehabilitation.

Results—Nine randomized clinical trials met our inclusion criteria. Three randomized clinical trials reported favorable effects of moxibustion plus standard care on motor function versus standard care alone (N=142; standardized mean difference=0.72; 95% confidence interval, 0.37 to 1.08; P<0.0001). Three randomized clinical trials compared the effects of moxibustion on activities of daily living alone but failed to show favorable effects of moxibustion.

Conclusion—This systematic review found limited effectiveness of moxibustion as an adjunct to standard care in stroke rehabilitation. (Stroke. 2010;41:817-820.)

Key Words: moxibustion ■ stroke ■ rehabilitation ■ systematic review ■ meta-analysis

One recent survey indicated that 46% of stroke patients used some form of complementary alternative medicine, such as herbal medicine, acupuncture, or chiropractic care.1 Another complementary alternative medicine option is moxibustion, a traditional Chinese method that uses the heat generated by burning herbal preparations containing Artemisia vulgaris to stimulate acupuncture points. In East Asian countries, moxibustion is popular for stroke rehabilitation.

However, to date, no systematic review of this topic is available. It was therefore the aim of this systematic review to summarize and critically evaluate the evidence for or against the effectiveness of moxibustion during stroke rehabilitation.

Methods

The following databases were searched from their inception through November 2009: MEDLINE, AMED, EMBASE, CINAHL, PsychInfo, The Cochrane Library, 6 Korean medical databases (KSI, DBPIA, KISTEP, KRIS, KoreaMed, and the Korean National Assembly Library), Chinese medical database (CNKI), and the Japanese medical database (J-Stage). The search terms used were as follows: (moxibustion OR Moxa) AND (stroke OR apoplexy OR cva OR cerebrovascular attack OR cerebrovascular accident OR cerebrovascular* OR cerebral infarction OR cerebral hemorrhage OR cerebral*). In addition, our own files, Myeong Soo Lee, PhD, Division of Standard Research, Korea Institute of Oriental Medicine, Daejeon, 305-811, South Korea.

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Table. Summary of RCTs of Moxibustion for Stroke Rehabilitation

<table>
<thead>
<tr>
<th>First Author, Year, Country</th>
<th>Sample Size, Duration After Stroke</th>
<th>Intervention Group (Regimen), Style of Moxibustion†</th>
<th>Control Group (Regimen)</th>
<th>Main Outcomes</th>
<th>Intergroup Differences*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lee³ (2000), Korea</td>
<td>47, Hemiplegia after stroke (infarction only), NR</td>
<td>(A) Moxibustion (3 times daily, 5 times weekly for 6 weeks, n=21), plus (B) direct</td>
<td>(B) Standard therapy (drug, AT, and physiotherapy, once daily for 6 weeks, n=21)</td>
<td>FIM</td>
<td>5.63 (2.53, 8.78), P&lt;0.001</td>
</tr>
<tr>
<td>Choi² (2003), Korea</td>
<td>46, Hemiplegia after stroke</td>
<td>(A) Moxibustion (5 times once, once daily for 2 weeks, n=20), plus (B) direct</td>
<td>(B) Standard therapy (drug, AT, and standard physiotherapy, once daily for 2 weeks, n=20)</td>
<td>(1) FMA (2) MI (3) MBI</td>
<td>(1) 2.5 (1.37, 9.03), P=0.038 (2) 7.00 (1.32, 12.68), P&lt;0.002 (3) 1.30 (−0.47, 3.07), P=0.35</td>
</tr>
<tr>
<td>Chen⁴ (2000), China</td>
<td>65, Early stage after stroke, 12 weeks</td>
<td>(A) Moxibustion (each point 3 times once daily, 5 sessions weekly for 4 weeks, n=32), plus (B) direct</td>
<td>(B) Standard therapy (Bobath therapy, drug, 45 minutes once daily, 5 sessions weekly for 4 weeks, n=30)</td>
<td>(1) FMA (2) Response rate</td>
<td>(1) 5.00 (0.17, 9.83), P&lt;0.05 (2) RR=1.19 (0.93, 1.54), NS</td>
</tr>
<tr>
<td>Moon⁷ (2003), Korea</td>
<td>35, Spasticity after stroke, 2.5/2.7 months</td>
<td>(A) Moxibustion (3 times once, every 2 days for 15 days, n=10), plus (B) direct</td>
<td>(B) Standard therapy (ROM, exercise once daily, AT 30 minutes, total 10 points, once daily, n=10); (C) EA (n=19), plus (B)</td>
<td>MAS</td>
<td>0.90 (0.23, 1.57), P&lt;0.01</td>
</tr>
<tr>
<td>Xiao⁹ (2008), China</td>
<td>46, Bladder dysfunction after stroke, 6 months</td>
<td>(A) Moxibustion (once daily, n=23), plus (B) direct</td>
<td>(B) Usual catheter removal (n=23)</td>
<td>Response rate</td>
<td>RR=1.05 (0.90, 1.22), NS</td>
</tr>
<tr>
<td>Liu⁸ (2006), China</td>
<td>82, Urination disorders after stroke, 2.4/2.6 months</td>
<td>(A) Moxibustion (2 times once, once daily, 5 times weekly for 3 weeks, n=39), plus (B) indirect</td>
<td>(B) AT (NR, 5 times per week for 3 weeks, n=36)</td>
<td>Frequency of (1) Mean urination times/day (2) Increasing degree of UI</td>
<td>(1) 6.00 (−7.90, −4.10), P&lt;0.01 (2) P&lt;0.05 in favor of moxibustion</td>
</tr>
<tr>
<td>Yun¹⁰ (2007), Korea</td>
<td>41, Poststroke urinary symptoms, 18.6/20.1 days</td>
<td>(A) Moxibustion (5 times daily for 10 days, n=20), plus (B) direct</td>
<td>(B) Routine care (herbal medicine and AT not related to the target symptoms, n=19)</td>
<td>(1) Total IPSS Score (2) Bl</td>
<td>(1) 3.29 (1.90, 4.68), P=0.001 (2) 2.08 (−15.50, 17.10), NS</td>
</tr>
<tr>
<td>Chen¹¹ (2006), China</td>
<td>28, Cerebrovascular function in ischemic apoplexy, 0.8/0.7 month</td>
<td>(A) Moxibustion (3 times once, once daily for 20 days, n=14), plus (B) direct</td>
<td>(B) Usual basic care (daily for 20 days, n=14)</td>
<td>(1) Cerebral vasomotor response in MCA by TCD (2) Recovery of nervous function</td>
<td>(1) P&lt;0.05 in favor of moxibustion (2) P&lt;0.05 in favor of moxibustion</td>
</tr>
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</table>

*Expressed as mean difference (95% confidence intervals), except for RR.
†Direct moxibustion is applied directly to the skin surface at an acupuncture point, whereas indirect moxibustion is performed with some insulating materials (eg, ginger, salts) placed between the moxibustion cone and the skin.

urinary function, whereas 1 RCT³ failed to do so. Two RCTs reported favorable effects of moxibustion on hand edema² and cerebrovascular function.¹¹ One¹⁰ reported that there were no adverse events,¹¹ but the other 3 reported 2 cases of skin burns and blisters⁹ or skin redness and blisters⁴,⁵.

**Discussion**

Few rigorous RCTs of moxibustion during stroke rehabilitation are currently available. Three RCTs⁴–⁶ showed favorable effects on motor function. Two⁹,¹⁰ of 3 RCTs⁸–¹⁰ reported significant beneficial effects of moxibustion on urinary function. The number of trials, their total sample size, and their methodological qualities, however, were too low to draw firm conclusions. Overall, our findings show only limited evidence of a beneficial effect of moxibustion as an adjunct to standard care for stroke rehabilitation.

Five³–³,⁷–⁹,¹¹ of 9 included trials had a high risk of bias. Three RCTs⁴,⁵,¹⁰ were assessor-blinded. All RCTs tested moxibustion plus standard care versus standard care alone. Such study designs are highly prone to generate false-positive results.¹² Four trials⁴–⁶,¹⁰ adopted appropriate sequence generation methods, but the other ²⁹,¹¹ did not. Inadequate sequence generation tends to exaggerate treatment effects.¹³ Six trials³–³,⁶–⁹,¹⁰ reported incomplete outcome measures, and this may have led to exclusion and attrition biases. None of the studies used allocation con-
In conclusion, the results of our systematic review and meta-analyses provide only limited evidence for the effectiveness of moxibustion as an adjunct to standard care during stroke rehabilitation. The number and methodological quality of the primary data are too low to draw firm conclusions.

Figure 1. Flow chart of the trial selection process.

Figure 2. Meta-analysis of moxibustion for stroke. A, Motor function. B, Activities of daily living.
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Disclosures
None.

References
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