**Review: electroconvulsive therapy reduces depressive symptoms**


**QUESTION:** What are the benefits and harms of electroconvulsive therapy (ECT) in patients with depressive disorders?

**Data sources**


**Study selection**

Randomised controlled trials (RCTs) were selected if they compared ECT with no ECT, ECT with pharmacotherapy, or different types of ECT in patients with depressive illness.

**Data extraction**

Reviewers independently extracted data on treatment comparisons, inclusion criteria, patient characteristics and co-treatment, and outcomes. Main outcome was change in symptoms on a continuous depressive symptom scale. Quality of RCTs was assessed on the basis of allocation concealment, masking, loss to follow up, and length of follow up.

**Main results**

73 RCTs met the selection criteria and were combined using a random effects model. ECT reduced depressive symptoms more than simulated ECT or pharmacotherapy (primary tricyclic antidepressants) (table). Bilateral electrode placement reduced depressive symptoms more than unilateral placement, and a higher dose of electrical stimulus was better than a lower dose (table). Frequency of treatment (1 v 3 times/wk and 2 v 3 times/wk) and stimulus waveform (brief pulse v sinewave) had no effect on depressive symptoms (table).

**Conclusions**

ECT reduces depressive symptoms more than pharmacotherapy. Bilateral electrode placement is more effective than unilateral placement, and a higher dose is more effective than a lower dose.

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**Electroconvulsive therapy (ECT) for depressive symptoms**

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Number of trials (n)</th>
<th>Standardised effect size (95% CI)</th>
<th>Type of ECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECT v simulated ECT</td>
<td>6 (n=256)</td>
<td>−0.91 (−1.27 to −0.54)</td>
<td>Favours ECT</td>
</tr>
<tr>
<td>ECT v pharmacotherapy</td>
<td>13 (n=760)</td>
<td>−0.80 (−1.29 to −0.29)</td>
<td>Favours ECT</td>
</tr>
<tr>
<td>Bilateral v unilateral electrode placement</td>
<td>22 (n=1137)</td>
<td>−0.32 (−0.46 to −0.19)</td>
<td>Favours bilateral</td>
</tr>
<tr>
<td><strong>Frequency of ECT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 v 3 times/wk</td>
<td>2 (n=51)</td>
<td>0.83 (0.39 to 1.89)</td>
<td>NS</td>
</tr>
<tr>
<td>2 v 3 times/wk</td>
<td>4 (n=159)</td>
<td>−0.30 (−0.76 to 0.20)</td>
<td>NS</td>
</tr>
<tr>
<td>Higher v lower dose of electrical stimulus</td>
<td>6 (n=337)</td>
<td>0.58 (0.33 to 0.83)</td>
<td>Favours higher dose</td>
</tr>
<tr>
<td>Brief pulse v sinewave ECT</td>
<td>5 (n=181)</td>
<td>0.62 (−0.31 to 1.54)</td>
<td>NS</td>
</tr>
</tbody>
</table>

*NS = not significant. CI defined in glossary. Results based on meta-analysis using a random effects model. Length of follow up ranged from post-treatment to 8 months.*

**COMMENTARY**

Despite widely varying methods and quality that potentially contribute to statistical noise to the meta-analyses, ECT was superior to sham ECT and to drug therapy with regard to the magnitude of symptom improvement in the review by the UK ECT Group. This supports the use of ECT, a treatment for which the National Institute for Clinical Excellence guidelines take an overly conservative position. Regrettably, more efficacious forms of ECT (bilateral ECT and high dose ECT) are also associated with greater cognitive impairment.

The results of the comparison between ECT and drugs may not be applicable to newer antidepressant agents. The comparison also addressed only the magnitude of antidepressant response, not the speed of response, which is likely to be greater with ECT. Most patients require 6–9 ECT sessions, delivered across 2–3 weeks, to respond, whereas most require 4–6 weeks to respond to an antidepressant drug trial. The comparisons of more versus less frequent ECT and high versus low dose ECT also addressed only the magnitude of antidepressant response. Evidence also suggests that more frequent ECT and high dose ECT are each associated with a faster response. A faster response is important because it reduces suffering, risk of suicide, duration of hospital stay, and treatment costs and may hasten return to work.

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