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Title **The Clinical Effectiveness and Cost of Repetitive Transcranial Magnetic Stimulation Versus Electroconvulsive Therapy in Severe Depression: A Multicenter Pragmatic Randomized Controlled Trial and Economic Analysis**

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Aim

1. To determine whether repetitive transcranial magnetic stimulation (rTMS) is equivalent to electroconvulsive therapy (ECT) in treating major depression.
2. To compare the side-effect profiles of rTMS and ECT.
3. To calculate and compare the costs of courses of rTMS and ECT in treating major depression.

Conclusions and results

Hamilton rating scale for depression (HRSD) scores at end-of-treatment were significantly lower with ECT (p=0.002), with a significantly higher remission rate compared to the rTMS group (59% vs 17%; p=0.005). Similar results were found with self-rated depression scales. Improvement in subjective reports of side effects following ECT correlated with the therapeutic response. No difference was found between the two groups before or after treatment on global measures of cognition. The costs of administering rTMS were similar to those for ECT. Service costs did not differ between the groups in the subsequent 6 months, but the rTMS group incurred more informal care costs. rTMS has a very low probability of being more cost effective than ECT.

Recommendations

This study demonstrated that ECT was significantly more effective than rTMS in treating major depression.

Methods

This study was a pragmatic multicenter, randomized controlled trial to test equivalence of rTMS with ECT in treating major depression.

Further research/reviews required

Further research is needed to:

1. refine the ECT technique to reduce its cognitive side effects while maintaining its clinical effectiveness.
2. identify the optimum treatment parameters for rTMS as a potential treatment for depression.

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