Meta-analysis of functional outcome in Parkinson patients treated with unilateral pallidotomy

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Authors' objectives
The authors aimed to assess the effect of unilateral posteroventral pallidotomy on the function of patients with Parkinson’s disease.

Searching
MEDLINE, PsycLIT and HealthSTAR were searched from 1980 to 2001; the keywords were stated. Bibliographies were also searched. Only studies that had been published in a book, journal, or as a proceeding or indexed dissertation abstract were included.

Study selection
Study designs of evaluations included in the review
Only studies with at least five patients, and which presented sufficient data to allow the calculation of effect sizes, were included. The eligible studies were not restricted by research design. The included studies were predominantly pre-test post-test studies; the remaining study was a controlled clinical trial.

Specific interventions included in the review
Studies of unilateral posteroventral pallidotomy were eligible for inclusion. Studies that used other additional surgery were excluded.

Participants included in the review
Studies of patients with symptoms from Parkinson's disease (and no other disease) were eligible for inclusion.

Outcomes assessed in the review
Studies that measured activities of daily living (ADL) were eligible for inclusion. The duration of follow-up in the included studies ranged from 3 months to 2 years, with most studies assessing the outcomes at 6 months postsurgery. The included studies assessed function using the UPDRS (either off and on or both), a modified UPDRS, Schwab and England (off and on) and ADL Scale.

How were decisions on the relevance of primary studies made?
The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction. The tabulated information included study design, the number of patients at baseline and at end point, test interval and the measure used to assess the outcome. The effect size ‘d’ was calculated for each ADL outcome using data from either comparative groups or from pre- and post-test values. Weighted and unweighted effect sizes and 95% confidence intervals (CIs) were calculated for each study. The effect sizes were transformed into success rates of treated compared with non-treated and pre-test compared with post-test, using the Binomial Effect Size Display (BESD).
Methods of synthesis

How were the studies combined?
An average effect size was estimated.

How were differences between studies investigated?
One study that did not report improvement in function after pallidotomy was mentioned in the text.

Results of the review

Twelve studies (301 patients) were included: 1 controlled clinical trial (37 patients) and 11 pre-test post-test studies (264 patients).

Unilateral pallidotomy significantly improved functional outcome. The average effect size 'd' was 0.6086 (95% CI: 0.4630, 0.7542). The BESD was 39% before pallidotomy compared with 61% after surgery. Not all the studies reported the short-term improvement in function after pallidotomy.

Authors' conclusions

Unilateral pallidotomy improved function in patients with clinically advanced Parkinson's disease.

CRD commentary

The review question was clear in terms of the intervention, participants and outcome. Studies of any design were included provided they reported sufficient data. Several relevant sources were searched, the search terms were stated and unpublished studies were eligible. However, it was not stated whether any language restrictions were applied to the included studies. The methods used to select the studies, assess validity and extract the data were not described. Hence, the adequacy of the methods used cannot be judged.

Some relevant information on the included studies was tabulated, but the characteristics of the participants were not described. Thus, the clinical homogeneity of the populations cannot be assessed. Weighted and unweighted effect sizes were presented for the individual studies, but without CIs, so the statistical significance of these results could not be assessed. There was no mention of adverse events or surgical complications. The authors did not describe the methods used to estimate the average effect size. Since statistical heterogeneity was not formally assessed, it is unclear whether it was appropriate to pool the studies. Some exploration of the potential reasons for studies reporting different results would have been informative. The clinical significance of the results was not mentioned.

The authors' conclusion should be interpreted with caution in view of the limitations highlighted.

Implications of the review for practice and research

The authors did not state any implications for practice or further research.

Bibliographic details


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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.