The efficacy of electrotherapy for Bell's palsy: a systematic review

Quinn R, Cramp F

CRD summary
This review assessed the efficacy of electrotherapy for Bell's palsy. The authors concluded that electrical stimulation may benefit patients with chronic Bell's palsy and that biofeedback was beneficial when muscle activity was present, but further research is required. The review presented limited evidence from poor-quality studies in mixed populations, thus the authors' conclusions appear over optimistic.

Authors' objectives
To assess the efficacy of electrotherapy for Bell's palsy.

Searching
AMED, CINAHL, the Cochrane Library, MEDLINE and PEDro were searched from 1975 to 2002 for reports in English; the keywords were given. In addition, reference lists in selected studies were checked, unindexed journals (unspecified) were searched and experts in the field were contacted.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs), clinical trials and case series were eligible for inclusion.

Specific interventions included in the review
Studies of electrotherapy (limited to electrical stimulation, electromyographic feedback, ultrasound, laser and short-wave diathermy) were eligible for inclusion. Studies combining electrotherapy with other interventions were eligible and were included.

Participants included in the review
Studies of patients with Bell's palsy were eligible for inclusion, regardless of their age, gender, or stage of the condition. Studies of patients with facial paralysis were also included if some of the sample had Bell's palsy.

Outcomes assessed in the review
Studies that assessed any of the following outcomes were eligible for inclusion: grade of recovery using a specific grading system, sequelae, time to full recovery, or time to partial recovery. Some studies that used subjective report as an outcome measure were also included.

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 stated that they assessed the following quality criteria: study design; sample size, duration of lesion, type of intervention, characteristics of the treatment, outcome measures and duration of follow-up. The authors did not state who performed the quality assessment.

Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction. The data extracted were as described under the criteria for quality assessment.
Methods of synthesis

How were the studies combined?
The studies were grouped according to the interventions and combined in a narrative.

How were differences between studies investigated?
Differences between the studies were discussed in the text of the review.

Results of the review

Fifteen studies were included: 2 RCTs (n=53), 2 studies described as controlled clinical trials (CCTs; n=57), 2 'clinical trials' (n=89) and 9 case series (n=31).

Methodological flaws in the studies included inappropriate research methods, small sample sizes and incomplete reporting of information on the dosage used.

Only results from RCTs, CCTs and clinical trials were reported below. The review also reported results from case series.

Electrical stimulation (2 CCTs with 57 patients and 4 case studies with 6 patients).

One CCT (n=40, including 39 patients with Bell's palsy for between 0.5 and 29 years) found that electrical stimulation significantly improved the Facial Paralysis Recovery Profile from baseline (P<0.0001). The other CCT (n=17, including 12 patients with Bell's palsy for between 1 and 7 years) found that electrical stimulation decreased mean motor nerve latency (P=0.0001) and improved House-Brackmann scores (P=0.0003) from baseline.

Electromyographic feedback (2 RCTs with 53 patients and 3 case studies with 4 patients).

One RCT (25 patients including 4 with Bell's palsy) found that electromyography plus mirror feedback and mirror feedback alone significantly improved symmetry of voluntary movement and facial expression from baseline (P<0.01 and P<0.03, respectively). The study selected 7 patients living remotely as the no treatment control. The other RCT (21 patients including 9 with Bell's palsy) found that standard biofeedback and small movement therapy both significantly improved symmetry of facial movements from baseline, but found no significant difference between treatments.

Laser treatment (1 retrospective report with 17 patients and 1 case report with 4 patients).

There was no rigorous evidence that laser treatment was effective.

Ultrasound (1 clinical trial of 29 patients with Bell's palsy for less than 5 days).

This study found that 72% of patients achieved grade 1 on the House-Brackmann scale 6 months after ultrasound.

Short-wave diathermy (1 retrospective clinical trial with 60 patients).

There was no evidence that short-wave diathermy was beneficial.

Authors' conclusions

There was no evidence that electrical stimulation was beneficial in patients with acute Bell's palsy, although studies suggested that it was of benefit to patients with chronic Bell's palsy. Studies suggested that electromyographic feedback was beneficial when muscle activity was present. There was limited evidence to suggest that ultrasound may be beneficial for acute Bell's palsy. There was no rigorous evidence that laser was effective or evidence that short-wave diathermy was beneficial. Further research is required.

CRD commentary

The review question was clear in terms of the intervention, participants and outcomes. The inclusion criteria for study
design were broad and the designs of the included studies were unclear. The stated aim of the review was to assess electrotherapy for Bell's palsy, but studies of patients with other conditions were also eligible and such patients formed the majority of participants in the included studies. The results reported may not, therefore, be applicable to patients with Bell's palsy. Several relevant sources were searched and attempts were made to locate unpublished studies, but no attempts were made to minimise language bias. The methods used to select the studies, assess quality and extract the data were not described, so it is not known whether any efforts were made to reduce errors and bias. Although quality was assessed, some of the criteria used related to the study participants and treatments rather than methodological quality.

Some information on the included studies was presented in either tables or in the text, but details of the control treatments were not always clear. The narrative synthesis was appropriate given the differences between the studies. The reporting of results from individual studies was not always clear, while the results from controlled trials were often reported as changes from baseline rather than differences between treatments.

The review presented limited evidence from poor-quality studies, thus the authors' conclusions about the need for further research are likely to be reliable. The included studies provided insufficient evidence to draw conclusions about the effectiveness of the therapies examined. The authors' conclusions about the beneficial effects of treatment modalities therefore appear over optimistic.

**Implications of the review for practice and research**

Practice: The authors did not state any implications for practice.

Research: The authors stated that further research to assess the benefits and potential short- and long-term adverse effects of electrotherapy in patients with Bell's palsy is required. They stated that research should determine the best treatment for specific stages of Bell's palsy, and that there is a need to standardise outcome measures and adequate follow-up.

**Bibliographic details**


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