Dysphagia treatment post stroke: a systematic review of randomised controlled trials
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CRD summary
The review concluded that few studies utilised the same treatment and outcomes, which limited the evidence available to support the medical effectiveness of common dysphagia treatments for patients recovering from stroke. The authors’ cautious conclusion appeared reasonable, but it was based on studies with considerable differences, some of which were of low quality.

Authors' objectives
To evaluate therapeutic interventions for adults recovering from stroke and dysphagia.

Searching
MEDLINE, EMBASE, CINAHL and The Cochrane Library were searched for English-language studies only; search dates ranged from 1966 to August 2007. Search terms were reported. Reference lists of included studies were scanned for additional articles. Only articles from peer-reviewed journals were included. Abstracts were not eligible for inclusion.

Study selection
Eligible studies were randomised controlled trials (RCTs), including parallel and planned crossover trials, that evaluated therapeutic interventions for the treatment of dysphagia following stroke. Studies of pharmacological and non-pharmacological interventions were eligible for inclusion. Included studies had to include only participants recovering from stroke who had been identified as dysphagic by study investigators.

Interventions included in the review were based on dietary texture modifications, general dysphagia therapy programs, enteral feeding, thermal or olfactory stimulation, pharmacotherapy, selective decontamination of the digestive tract and subcutaneous hydration. Initiation and duration of treatment varied widely between studies (details reported in review). Mean age of participants included in the review ranged from 67 to 86 years. Diagnosis of stroke was confirmed either by clinical examination and magnetic resonance imaging (MRI) or computed tomography (CT) scan, or was based on the results of a CT scan only. Severity of stroke was assessed using a variety of scales (details reported in review). Included participants had severe, moderate to severe and mild stroke. Diagnosis of dysphagia included confirmation by videofluoroscopic (VFS) examination or clinical assessment, alone or combined. Outcomes reported in the included studies included death, measurements of swallowing physiology, swallowing function, lung infection, malnutrition and dehydration.

Two reviewers independently selected studies for inclusion and resolved disagreements through discussion.

Assessment of study quality
Validity was assessed using the Physiotherapy Evidence-Based Database (PEDro) scale (maximum 10 points) and included assessment of random assignment, allocation concealment, baseline comparison, blinding of patient, clinician or assessor, follow-up, intention to treat (ITT) analysis and point estimate and variability. Three reviewers independently assessed validity and resolved disagreements through discussion.

Data extraction
One reviewer extracted data and these were checked for accuracy by two reviewers.

Methods of synthesis
The studies were combined in a narrative synthesis. Each study was described in the text. Additional descriptive information was presented in tables.

Results of the review
Fifteen RCTs (n=2,226) were included in the review. One RCT scored 8 points, two RCTs scored 7 points, five RCTs scored 6 points, five RCTs scored 5 points, one RCT scored 4 points and one RCT scored 3 points. All 15 studies received one point for random allocation. Only six studies provided a adequate concealment of allocation. Six studies reported blinding of outcome assessor. Subjects and outcome assessors were blinded in three pharmacological interventions. Three studies reported an intention to treat analysis. Sample sizes ranged from 17 to 859.

One RCT (n=321) reported that participants fed with a nasogastric tube were less likely to experience either death or poor functional status compared to patients fed with a percutaneous endoscopic gastrostomy (PEG) tube (p=0.05). There were no statistically significant differences between groups for the risk of developing pneumonia. Two RCTs (n=53) reported that nasogastric tubes were associated with a higher risk of death and worse outcomes (including malnourishment) and more feeding interruptions due to tube failures compared with PEG tubes (individual study data reported in supplementary table).

One RCT (n=114) that evaluated the effectiveness of general swallowing treatment programmes did not report any deaths. A second RCT (n=306) reported no significant differences between groups for rates of death. There was conflicting evidence for reductions in pneumonia: one RCT (n=306) reported that participants who received usual care had significantly higher incidence of chest infection than patients who received more intensive therapies (p=0.03); one RCT (n=114) reported no significant differences between groups for incidence of pneumonia.

One RCT (n=34) that compared subcutaneous hydration with intravenous hydration found no significant differences between groups for the maintenance of serum osmolality with a normal range for three days.

One RCT (n=203) found that topical use of an antimicrobial gel was associated with reductions in the incidence of pneumonia (in particular patients with an abnormal swallow) compared to use of a placebo gel (p=0.029). There were no statistically significant differences between groups for mortality.

Four RCTs (n=190) evaluated interventions to improve the physiological aspects of swallowing and four RCTs (n=146) evaluated the benefit of dietary texture modifications and/or alteration of fluid viscosity. Due to a high level of variation between these studies it was not possible to evaluate the overall effectiveness of these interventions.

Authors' conclusions
Few studies utilised the same treatment and outcomes, which limited the evidence available to support the medical effectiveness of common dysphagia treatments for patients recovering from stroke.

CRD commentary
Inclusion criteria were clearly defined for participants and study design and broadly defined for participants and outcomes. Several relevant sources were searched, but no attempts were made to minimise publication and language biases. Methods were used to minimise reviewer errors and bias in the selection of studies, assessment of validity and extraction of data. Validity was assessed using specified criteria and results of the assessment were reported. A narrative synthesis was appropriate due to the differences between studies in terms of interventions and outcomes. The authors appropriately considered the limitations of the evidence, in particular, small sample sizes and heterogeneity of treatments and outcomes. The authors’ cautious conclusion appeared reasonable, but it should be borne in mind that it was based on studies with considerable differences, some of which were of low quality.

Implications of the review for practice and research
Practice: The authors stated that although there was a paucity of evidence of effectiveness evaluating treatments for dysphagia, they did not suggest discontinuing swallowing therapies and interventions in practice as these were based on clinical experience and physiologically approaches.

Research: The authors stated that there was a need for further methodologically rigorous research to identify effective dysphagia treatments for people after a stroke.

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