Screening for aspiration risk associated with dysphagia in acute stroke

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Key Words

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Introduction

Swallowing difficulties (dysphagia) are common following stroke. People with dysphagia are more likely to aspirate and develop pneumonia, causing further morbidity, increased hospital stay and risk of death.

Objective

To identify the diagnostic accuracy of swallow screening tests to accurately identify aspiration associated with dysphagia, subsequent to acute stroke.

Methods

We searched relevant electronic databases from inception to December 2019: CENTRAL, MEDLINE, Embase, CINAHL, and Health Technology Assessment. We hand searched the reference lists of all included studies and performed a cited reference search using Science Citation Index. We contacted experts in the field to identify

ongoing studies and searched targeted grey literature from Cochrane recommended database: the Canadian Agency for Drugs and Technologies in Health.

We considered cohort and case-control studies comparing the accuracy of a swallow screening test with identified reference tests (Videofluoroscopy, Fiberoptic Endoscopic Evaluation of Swallowing, scintigraphy, expert assessment).

Two review authors independently selected studies, extracted data and assessed risk of bias and methodological quality using the QUADAS-2 tool, with a third author moderating disagreements.

Results

The searches identified 26,703 studies. After removing duplicates, 20,567 studies were screened, and 233 proceeded to full-text review. Thirty seven screening tests were investigated in the 25 included studies and four narratives (no accuracy statistics reported). These tests were categorised: 24 (65%) tests used water only, six (16%) used a combination of water and other consistencies e.g., semi-solids and solids, and seven (19%) used other methods.

The best performing tests in each category with a low risk of bias across all four QUADAS-2 domains were: the Toronto Bedside Swallowing Screening Test (water only) with a sensitivity of 1.00 (95% CI 0.75 to 1.00) and specificity of 0.64 (95% CI 0.31 to 0.89); the Gugging Swallowing Screen (water, semi-solids and solid trials and management plan) with a sensitivity of 1.00 (95% CI 0.77 to 1.00) and specificity of 0.69 (95% CI 0.41 to 0.89); and the Bedside Aspiration test (combined water swallow test and instrumental assessment) with a sensitivity of 1.00 (95% CI 0.87 to 1.00) and specificity of 0.71 (95% CI 0.49 to 0.87).

Screening tools that used a combination of water and other consistencies as testing materials (accuracy ranged from sensitivity of 0.75 (95% CI 0.35 to 0.97) and specificity of 0.89 (95% CI 0.75 to 0.97), to sensitivity of 1.00 (95% CI 0.69 to 1.00) and specificity of 0.86 (95% CI 0.65 to 0.97)) were more accurate than screening tests that used only water (accuracy ranged from sensitivity of 0.46 (95% CI 0.28 to 0.66) and specificity of 1.00 (95% CI 0.83 to 1.00) to sensitivity of 1.00 (95% CI 0.75 to 1.00) and specificity of 0.64 (95% CI 0.31 to 0.89)).

Implications for Practice

This review guides policymakers and healthcare workers to select the most appropriate swallow screening test for their setting. Clinicians should consider these results with caution as the recommended screening tools had small sample sizes ($n < 100$), which limits interpretation of the estimates of reliability.

Implications for Research

High-quality, appropriately statistically powered studies with clearly defined outcomes are needed to provide robust evidence for individual screening tests. Reporting swallow screening test quality and cost-effectiveness data would build up a more robust body of evidence.

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Disclosures

None.

References

This paper is based on a Cochrane Review published in The Cochrane Library 2021, Issue 10 (see www.thecochranelibrary.com for information). Cochrane Reviews are regularly updated as new evidence emerges and in response to feedback, and The Cochrane Library should be consulted for the most recent version of the review.

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