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ORIGINAL ARTICLE

Lowering bronchoaspiration rate in an acute stroke unit by means of a 2 volume/3 texture dysphagia screening test with pulsioximetry☆,☆☆

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KEYWORDS
Acute ischaemic stroke;
Dysphagia;
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Abstract
Introduction: During acute stroke, 30% of all patients present dysphagia and 50% of that subgroup will experience bronchoaspiration. Our aim was to compare mortality and bronchoaspiration rates associated with the water test compared to those associated with a 2 volume/3 texture test controlled with pulse oximetry (2v/3t-P test) in our stroke unit.
Patients and methods: Over a 5-year period, we performed a prospective analysis of all consecutive acute ischaemic stroke patients hospitalised in the stroke unit. Dysphagia was evaluated using the water test between 2008 and 2010 (group 0 or G0), and the 2v/3t-P test (group 1 or G1) between 2011 and 2012. We analysed demographic data, vascular risk factors, neurological deficit on the NIHSS, aetiological subtype according to TOAST criteria, clinical subtype according to the Oxfordshire classification, prevalence of dysphagia, percentage of patients with bronchoaspiration, and mortality.

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Results: We examined 418 patients with acute stroke (G0 = 275, G1 = 143). There were significant differences between the 2 groups regarding the percentage of patients with TACI (17% in G0 vs 29% in G1, *P* = .005) and median NIHSS score (4 points in G0 vs 7 points in G1, *P* = .003). Since adopting the new swallowing test, we detected a non-significant increase in the percentage of dysphagia (22% in G0 vs 25% in G1, *P* = .4), lower mortality (1.7% in G0 vs 0.7% in G1, *P* = .3) and a significant decrease in the bronchoaspiration rate (6.2% in G0 vs 2.1% in G1, *P* = .05).
Conclusions: Compared to the water test used for dysphagia screening, the new 2v/3t-P test lowered bronchoaspiration rates in acute stroke patients.

PALABRAS CLAVE
Infarto cerebral;
Disfagia;
Broncoaspiración;
Mortalidad

Reducción de la tasa de broncoaspiración con el test 2 volúmenes/3 texturas con pulsioximetría en una unidad de ictus

Resumen
Introducción: En la fase aguda del ictus el 30% de los pacientes presentan disfagia, y de ellos, el 50% experimentarán broncoaspiración. Nuestro objetivo fue evaluar los resultados de mortalidad y broncoaspiración del test del agua comparado con el test 2 volúmenes/3 texturas controlado con pulsioximetría (2v/3t-P) en una unidad de ictus.
Pacientes y métodos: Durante 5 años se analizaron de forma prospectiva y consecutiva todos los pacientes con infarto cerebral en la Unidad de Ictus. Del año 2008 al 2010 se utilizó el test del agua (grupo 0 o G0), y del 2011 al 2012, el test 2v/3t-P (grupo 1 o G1). Se recogieron las siguientes variables: demográficas, factores de riesgo vascular, gravedad neurológica con la escala NIHSS, subtipo etiológico según criterios TOAST, subtipo clínico según la clasificación Oxfordshire, prevalencia de disfagia, broncoaspiración y exitus.
Resultados: Se analizaron 418 pacientes con infarto cerebral agudo (G0 = 275, G1 = 143). Se detectaron diferencias significativas entre ambos grupos en el porcentaje de pacientes con TACI (17% en G0 vs. 29% en G1, p = 0,005) y en la mediana de NIHSS (4 puntos en G0 vs. 7 puntos en G1, p = 0,003). Con el test 2v/3t-P se detectó un aumento no significativo en el porcentaje de disfagia (22% en G0 vs. 25% en G1, p = 0,4), una menor tasa de mortalidad (1,7% en G0 vs. 0,7% en G1, p = 0,3) y una reducción significativa de broncoaspiración (6,2% en G0 vs. 2,1% en G1, p = 0,05).
Conclusiones: El nuevo test 2v/3t-P, comparado con el test del agua, mejoró significativamente los resultados de broncoaspiración en los pacientes con infarto cerebral agudo.

Introduction

Dysphagia, a frequent complication of stroke, is associated with increased risk of bronchoaspiration. Between 19% and 81% of stroke patients have dysphagia,[1–3] and half of them experience bronchoaspiration within the first week of stroke onset.[4,5] Dysphagia is an important predictor of poor outcome: it leads to poor functional status at discharge[2] and increases the number of respiratory complications,[6] the length of hospital stays, hospitalisation rates, and mortality.[7] Furthermore, presence of dysphagia entails a three-fold increase in the risk of pneumonia,[2] which in turn leads to a three-fold increase in the risk of mortality at 30 days.[1]

Scientific evidence suggests that early diagnosis and treatment of dysphagia in stroke patients reduces not only respiratory complications but also the length of hospital stay and health-related costs.[8]

The 3-oz water swallow test[9] is one of the most widely used tests for dysphagia screening. However, this test uses a large volume of water (which has a low viscosity) and it regards coughing as the sole indicator of aspiration, although this reflex is absent in nearly 40% of all patients with cerebrovascular diseases.[10] Silent aspiration may be detected with pulse oximetry: a drop of more than 2% in oxygen saturation compared to baseline values is regarded as a sign of bronchoaspiration.[11,12]

At present, videofluoroscopy and fibreoptic endoscopy are the main validated techniques used to assess swallowing function and determine the most suitable treatment.[13–16] However, as these techniques are not readily accessible, we need a swallowing test which is both easy to use and sensitive for detecting dysphagia.

The Spanish Society of Neurology's current treatment guidelines for stroke recommend using the 2 volume/3 texture dysphagia screening test to study dysphagia in stroke