CO45-007-f
Évaluation de l'efficacité de la toux volontaire en phase aiguë post-accident vasculaire cérébral (AVC) : temps maximal de phonation
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Introduction.- L’objectif de ce travail est d’observer l’efficacité de la toux volontaire post-AVC.

Matériaux et méthodes.- Le temps maximal de phonation (TMP) a été réalisé chaque jour, pendant les dix premiers jours post-AVC. Des explorations fonctionnelles respiratoires (EFR) ont permis d’évaluer la mesure du débit expiratoire de pointe (DEP) à la toux, la capacité vitale, le volume expiratoire maximal en seconde. Un DEP à la toux inférieur à 160 L/min est considéré comme le critère d’inefficacité de la toux.

Résultats/Discussion.- Soixante-dix patients ont été inclus, seuls 32 patients ont pu être explorés par EFR. Le TMP est corrélé au DEP (r = 0,413, p = 0,025) et la valeur seuil de dix secondes retenues comme corrélées avec une toux efficace. Quarante-sept patients ont pu réaliser le TMP en phase aiguë au deuxième jour et 49 au dixième jour. Tous les patients se sont améliorés lors des répétitions quotidiennes du test.

Conclusion.- Le TMP paraît intéressant à visée diagnostique pour évaluer l’efficacité de la toux, mais aussi pour améliorer le contrôle volontaire de la fonction respiratoire.

Pour en savoir plus

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Stimulations électriques neuromusculaires (SENM) chez les patients traités par radiothérapie pour un cancer des voies aérodigestif supérieur
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Les stimulations électriques neuromusculaires (SENM) constituent une technique validée pour le traitement des dysfonctionnements pharyngés. Cette a pour objectif d’évaluer et de comparer les résultats des SENM versus technique de rééducation classique (TR) chez les patients traités par radiothérapie pour un cancer des voies aérodigestifs supérieurs. Vingt et un patients (18 hommes et trois femmes) ont été inclus. Douze patients ont été randomisés dans le groupe SENM et 13 dans le groupe TR. Les critères d’inclusion étaient :
– patients traités par radiothérapie plus ou moins chirurgie pour un cancer des voies aérodigestives ;
– un délai supérieur à trois ans après la fin du traitement ;
– absence de récidive de la maladie ;
– capable de déglutir.

Les mesures réalisées avant et après ont été réalisées avec une vidéoradioscopie de la déglutition, une évaluation de l’état nutritionnel, une évaluation de la fonction oromotrice, et un auto-questionnaire de qualité de vie spécifique à la déglutition (Deglutition Handicap Index, DHI). Tous les sujets ont réalisé 15 séances. Un effet statistiquement significatif est mis en évidence dans les deux groupes uniquement sur le questionnaire (DHI). Dans deux cas est observé une aggravation sur la vidéoradioscopie. Ces résultats incitent à la prudence dans les indications des SENM pour les troubles de la déglutition.

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Neuroscience perspective for swallowing disorders management
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The neurobiological study of swallowing and its dysfunction, defined as dysphagia, has evolved over two centuries beginning with electrical stimulation applied directly to the central nervous system, and then followed by systematic investigations that have used lesioning, transmagnetic stimulation, magnetoencephalography, functional magnetic resonance imaging, and electrical stimulation among many techniques. The science has evolved from mapping the central neural pathway and peripheral nerves, to defining the importance of specific regions of the lower brain stem in terms of interneurons that provide sequential control for multiple muscles in the most complex reflex elicited by the nervous system, the pharyngeal phase of swallowing. The science is now emerging into defining how the higher cortical regions interact with this brain stem control and is providing a broader perspective of how the intact nervous system functions to control the three phases of swallowing (i.e., oral, pharyngeal, and esophageal). Much of the present interest focuses on how to retrain a damaged nervous system (i.e., cortical stroke) using a variety of stimulus techniques that follow fundamentals in rehabilitation of the nervous system. The present field of swallowing and dysphagia is working closely with investigators and clinicians in rehabilitation to design and create new approaches to rehabilitate patients with dysphagia and is relying on fundamental principles in rehabilitation.

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CO45-002-e
Swallowing and ventilation coordination after cortical inhibition in animals
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The pharynx is a common organ for both swallowing and breathing. Their coordination is important to avoid pulmonary aspiration and is characterized mainly by the occurrence of swallowing during expiration. In neurological disorders this coordination seems altered with an increase of swallows during inspiration. In previous works, we showed that it is possible to study swallowing and its coordination with ventilation by analyzing ventilation in healthy and unstrained rat. Secondly, we showed the implication of upper airways in swallowing and breathing coordination by studying the effects of specific and peripheral neurological disorders of upper airways experimentally induced on this coordination. Our aim now is to study swallowing and breathing coordination in an experimental model of stroke in rat.

To perform the study, repetitive transcranial magnetic stimulation was used at low frequency, which induce a cortical inhibition. We studied eight rats before and after repetitive transcranial magnetic stimulation (rTMS) located on the right hemisphere, at 1 Hz frequency during 10 minutes. rTMS was applied during a slight anesthesia. Alternation of ventilation and swallowing was analyzed during swallowing, one hour after rTMS. The results demonstrated that before rTMS, most of swallowing were during expiration, which was not changed after rTMS.
The conclusion of the study is that the regulation of swallowing and ventilation is characterized mainly by the occurrence of swallowing during expiration. The coordination of breathing and swallowing during hypercapnia in rats I. Ghannouchi a, J.-P. Marie, E. Verin a
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Introduction.– The pharynx is a common organ for both swallowing and breathing. Their coordination is important to avoid pulmonary aspiration and is characterized mainly by the occurrence of swallowing during expiration.

Objective.– The aim of this study was to investigate the effect of hypercapnia on swallowing function as well as on the coordination swallowing–ventilation in unrestrained animal.

Methods.– The study was carried out on 20 Wistar rats (2–3 months, 275–300 g) subdivided in two groups (G1: exposed to ambient air; G2: exposed to 10% CO2) using whole-body plethysmography and video recordings. The rats were given water via a baby bottle fitted with a nipple after 24 h without drinking. The experiment was continued until rest ventilation and swallowing periods were identified on the video recordings.

Results.– In healthy animals during swallowing, we observed a decrease in total respiratory time (TTOT), a decrease in inspiratory time (TI) (P < 0.001), a decrease in expiratory time (TE) (P < 0.001), no change in tidal volume (VT) and an increase in mean inspiratory time (VT/TI) (P < 0.05) compared to the rest period. Animals exposed to 10% of CO2 presented during swallowing a decrease in VT (P < 0.05), no change in VT/TI, TTOT and TI and an increase in TE (P < 0.05). Swallow frequency and swallowing characteristics based on ventilation change in group exposed to hypercapnia. Swallows during expiration decreased (84%, P < 0.05) while swallowing during inspiration increased (26%, P < 0.05).

Conclusion.– These results confirmed the coordination ventilation–swallowing in rats exposed to ambient air and suggest that the deglution and the coordination of swallowing and ventilation may be compromised during hypercapnia.

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Stroke and swallowing disorders: Clinical assessment
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Introduction.– Swallowing disorders are common (about 50%) and lead to serious problems post-stroke (pneumonia and death) but is so regressive. The initial assessment must induce an efficient management (decision of feeding adaptation of non oral feeding) Physical signs and ingestion test consist of main approaches of bedside screening of aspiration.

Assessment.– Patients were assessed using three swallowing assessments (clinical tests without feeding, feeding tests or combined tests). A clinical examination allows the research of predictive signs correlated with aspiration at the videofluoroscopic examination. This clinical scale (CPAS) observes velar reflex and gag reflex, archeic reflex, faulty voluntary laryngeal closure, faulty voluntary swallow, dysphonia or dysarthria, meal reduced of 50% on three consecutive times, increased time of meal (> 30 minutes). Clinical examination alone has a poor sensitivity (58.3%). A feeding test appears to be necessary like the 3-ounce Water swallow Test (sensitivity of 76%). The combined screening schema, Practical Aspiration Screening Scheme (PASS), consisted of a 3 oz WT to enhance results of the uncertain of CPSA and show a sensitivity at 89.1% [1].

Conclusion.– Combined schema enhances the efficiency of bedside screening of aspiration.

Reference

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Clinical screening of oropharyngeal dysphagia in patients with ALS
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Keywords: ALS; V-VST; Oropharyngeal dysphagia

It’s a major concern to diagnose and detect oropharyngeal dysphagia in early stage of ALS, to avoid pulmonary and nutritional complications. The aim of this study was to validate a simple clinical test, the volume-viscosity swallow test (V-VST), to detect oropharyngeal dysphagia in this population. Twenty patients were included in this study (age: 66.1 ± 8.13, six females) and swallowing function was study by videofluoroscopy and V-VST. Among these 20 patients, 15 presented oropharyngeal dysphagia, diagnose by videofluoroscopy and five had normal swallowing. NORRIS scale was lower in patient with oropharyngeal dysphagia compare to patients with normal swallowing (27 ± 6 vs. 36 ± 2; P = 0.003). Among 15 patients with oropharyngeal dysphagia, 14 had an abnormal V-VST and only one had a normal V-VST. The sensitivity of the V-VST to detect oropharyngeal dysphagia was 93% and the specificity was 80% (P = 0.007). There was no difference between the two populations for ALSFRS scale (22 ± 6 vs. 20 ± 6) and BMI (26 ± 6 vs. 26 ± 6). In conclusion, the V-VST presented a good sensibility and specificity and it may be useful to systematically be used to detect oropharyngeal dysphagia in ALS.

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Study of the validity of cervical auscultation during the learning phase of a swallowing test to screen inhalations
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Keywords: Testing; Swallowing

Does cervical auscultation allow the therapist a less probabilistic approach in detecting silent aspiration?

The objective of this study was to compare in terms of aspiration detection the predictive values of the test of swallowing with and without cervical auscultation, the reference test is fluoroscopy swallowing. Sixty-four patients were hospitalized for an assessment of swallowing in the Unity of Voice and Swallowing Service ENT Hospital Larrey. Each patient underwent radioscopic examination by a physician who did not know the results of tests performed previously by two students in speech therapy. For each