Swallowing disorders: management data

Dati sulla gestione dei disturbi della deglutizione

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Key words

Oropharyngeal dysphagia • Treatment • Rehabilitation

Parole chiave

Disfagia orofaringea • Trattamento • Riabilitazione

Summary

Aim of the investigation was to assess the workload and verify the results of oropharyngeal dysphagia management in a large state hospital by means of a descriptive, observational prospective study and descriptive statistical analysis. 81 patients [37 females, 44 males, mean age 61.3 (±13) years] suffering from oropharyngeal dysphagia were evaluated and treated in the in- and outpatient Divisions of the "Azienda Ospedaliera S. Giovanni Battista" in Turin. Treatment of oropharyngeal dysphagia included changes in consistency and texture of food, compensatory postures of head, strengthening exercises for oropharyngeal muscles, and stimulation of pharyngeal sensitivity. In data collection and analysis, the following were used as outcome measures: mode of nutrition delivery (oral, enteral, parenteral), dietary adjustments, presence of aspiration or penetration, and use of compensatory head positioning. Results showed that the number of patients fed by parenteral or enteral tube (50/81 prior to treatment) dropped to 36/81 upon discharge from hospital. Those unable to take anything by mouth, from 55 dropped to 9. The number of patients with aspiration or penetration dropped, respectively, from 47 and 8 to 20 and 4. Postural changes were used in 15 cases. Data obtained indicate that oropharyngeal dysphagia rehabilitation outcomes are promising. Better understanding of the rheological characteristics of food and a stricter, more rigorous evaluation of the outcomes on activities and social participation are warranted.

Riassunto

Scopo dello studio è quantificare il carico di lavoro e verificare i risultati della gestione della disfagia orofaringea in un grande ospedale nazionale, sulla base di uno studio prospettico osservazionale descrittivo e di un'analisi statistica di tipo descrittivo. 81 pazienti [37 femmine e 44 maschi, d'età media di 61,3 (±13) anni] affetti da disfagia orofaringea, sono stati valutati e trattati nelle strutture di degenza e ambulatoriali dell'Azienda Ospedaliera "S. Giovanni Battista" di Torino. Sono stati effettuati valutazione e trattamento della disfagia orofaringea comprendente: modificazioni delle caratteristiche di consistenza degli alimenti, posture di compenso del capo, esercizi di rinforzo della muscolatura orofaringea, stimolazione della sensibilità faringea. Per i rilevamenti, come misure di outcome, sono state usate la via di alimentazione (per os, enterale, parenterale), gli aggiustamenti dietetici, la presenza di aspirazione o penetrazione e l'utilizzo di compensi posturali del capo. Il numero di pazienti alimentati per via parenterale o enterale è passato da 50 su 81 prima del trattamento a 36 su 81 al momento della dimissione. I soggetti che non potevano assumere alcun alimento per os sono passati da 55 a 9. Il numero di pazienti con aspirazione o penetrazione è cambiato da, rispettivamente, 47 e 8 a 20 e 4. Aggiustamenti posturali sono stati utilizzati in 15 casi. In conclusione, i dati suggeriscono che gli outcomes nella riabilitazione della disfagia orofaringea sono promettenti. Sarebbe auspicabile una maggior conoscenza delle caratteristiche reologiche dei cibi e una più rigorosa e soddisfacente valutazione degli outcomes sulle attività e la partecipazione sociale.

Introduction

A new branch of science has developed in the course of these last twenty years, deglutology [1], in response to the growing interest in deglutition both in normal and pathological contexts, as may be seen from the almost-exponential increase in the number of publications in this field [2].

Deglutition (or swallowing) refers to the propulsion of food – solid or liquid – from the mouth to the stomach. Any disorder that distorts or prevents this process is defined as dysphagia [3]. Oropharyngeal dysphagia constitutes a pathological picture in which morbidity, mortality and costs are all high.[4] It is calculated that its prevalence is about 20% in the elderly [5] and 12-13% in acute care hospitals [6].

The causes of dysphagia in the adult and involutional ages may be classified into 2 large groups: central and peripheral neurological syndromes, on the one hand; and, on the other, post-traumatic syndromes, in

particular iatrogenic, following neoplastic surgery of the head and neck [4 5].

The health care professionals who devote their attention to the prevention, assessment, rehabilitation and, more in general, management of swallowing disorders in the developmental, adult and involutional ages constitute a multidisciplinary team comprising not only otorhinolaryngologists, but also phoniatricians, speech-language pathologists, neurologists, physiatricians, gastroenterologists and radiologists [1 7]. The doctors' activity, which concerns, in part, the clinical aspects, assessment, treatment, and counselling, and, in part, the non-clinical activities such as meetings and collection of statistical data [8], is strictly correlated with the outcomes, expressed in terms of variation in the clinical picture, quality of life, and satisfaction of the patient, as well as in costs [9]. Outcomes are defined as the result of a specific intervention; examples of outcomes are returning to work, carrying out everyday activities, patient satisfaction and perception of one's own quality of life [10]. The dramatic increase in health care costs in the last thirty years has led to the rise in the so-called "outcome movement," which aims to identify the effects on health of a particular treatment step [11].

The brief history of deglutology has not yet enabled universal instruments for the measurement of outcomes to be developed, except for the clinical situation [12 13]; of particular interest is the recent creation of a questionnaire for patient self-assessment in cases of post-surgical dysphagia [15], while other instruments still have to be perfected [16 17]. In particular, the duration of enteral or parenteral feeding, the timing of oral intake restoration, the type of oral intake, the presence of aspiration (or the passage of food or liquid into the airways beyond the level of the vocal folds) and penetration (the passage of food or liquid into the airways up to the level of the vocal folds)[1] offer good parameters for outcome measurement in oropharyngeal dysphagia[12].

Aim of the present investigation is not only to quantify of the oropharyngeal dysphagia workloads in a large hospital, but also to assess the duration of parenteral feeding, the timing of oral intake, the type of food intake per os, and the presence of aspiration and penetration phenomena.

Materials and methods

The study was carried out between January 17 and July 17, 2002, in the Speech Therapy service of the U.O.A.D.U. of Audiology and Speech Therapy at "San Giovanni Battista" Hospital in Turin. Patients referred for assessment or treatment of oropharyngeal dysphagia in the adult and involutional age groups, were recorded prospectively. Sex and age of the patients, Unit from the patient was referred, associated communication disorders, aetiology of dysphagia and duration of treatment were analysed.

As far as concerns evaluation of outcome, the following variables in the principal patient care steps were taken into consideration: counselling, assessment and treatment. In evaluating the results, we analysed the system of nutrient delivery i.e., by mouth, via nasogastric tube (NGT), or percutaneous endoscopic gastrotomy (PEG) as well as food consistency and texture (liquid, semiliquid, semisolid, solid, nothing by mouth), the presence of aspiration or penetration phenomena, evaluated by means of videofluorographic swallow study or flexible fibre endoscopy of the upper digestive tract and respiratory airways. Clinical management of the patients under study focused on the following points: compensatory postures, dietary adjustments and guided weaning. Treatment also included specific sensorial and motor stimulation, as well as swallowing manoeuvres, as described by Logemann [17] and Schindler [7].

Statistical analysis of the main outcome findings is of the descriptive type, using histogrammes.

Results

Oropharyngeal dysphagia, whether or not associated with other concomitant disorders, accounted for 40.4% of the overall number of inpatients requiring phoniatric intervention. Of the adult outpatients seen by the Speech-Language Therapy Service, 18.8% were affected by dysphagia.

A total of 81 patients were taken into care for dysphagic disorders (73 hospitalised patients, and 8 outpatients). Of these, 44 males and 37 females; mean age 61.3 (± 13) years, with, 24.7% being between 50 and 60 years, 23.5% between 60 and 70, 25.9% between 70 and 85, and 3.7% >80; the remainder were <50 years of age.

Patients referred for assessment and treatment came from the Departments of Neurology (41 cases), Internal Medicine (8 cases), Otorhinolaryngology (6 cases), and from other Departments (18 cases).

Of the 41 patients hospitalised in the neurological wards, 17 were Neurosurgery inpatients, 18 were Neurology inpatients, and 6 were in Neuroreanimation.

A total of 55 patients were evaluated or treated for dysphagia alone; the remainder were managed for a combination of pathological conditions (9 aphasia, 6 dysarthria, 7 dysphonia, 4 post-coma).

Of the patients enrolled in the study, 56 presented acute dysphagia whilst in 25, the clinical picture was stable.

The principal causes of dysphagia were as follows: in

30 inpatients, the aetiology was related to ischaemic or acute episodes of brain haemorrhage, in 11 cases, it was due to degenerative neurological diseases, in 11, it was secondary to surgical trauma of the oropharyngeal district, whilst in the remaining cases, aetiology was non-specific (tumour or other neurological diseases). Of the outpatients, 7 presented dysphagia following trauma in the oropharyngeal district, whilst in one case, dysphagia was due to bolus.

Duration of treatment varied, also in relationship to the period of hospitalisation, ranging between 3 days, in 14 cases, and 5 months, in one case; whilst in the remaining 66 cases, treatment duration ranged from one week to three months. Mean duration of the treatment was 22 (±25.2 days)

The presence or absence of dysphagia may be detected by means of swallowing tests; the data recorded when the patient was enrolled for speech therapy are compared with those at the end of treatment (Fig. 1).

Assessment was informal in all cases, however in 35 cases, a videofluorographic examination was carried out and, indeed, in 20 cases, the examination had been requested not only to better define the diagnosis but also to determine the specific rehabilitation treatment to be carried out.

Evaluation of the results by analysis of the variables under examination must, however, also take into consideration the spontaneous evolution of a dysphagic picture.

When enrolled for treatment, 41 of the patients were tube-fed by NGT and 9, by PEG; after therapy, the NGT was removed in 11 cases and the PEG had been removed in 3 cases.

As far as concerns the aspiration and penetration phenomena, it was calculated that, at the beginning of therapy, 47 patients presented aspiration phenomena and 8 presented penetration phenomena; upon completion of treatment, these numbers had dropped, respectively, to 20 and 4.

The treatment regimen included compensatory posturing in 15 cases and dietary changes in 71 cases. A

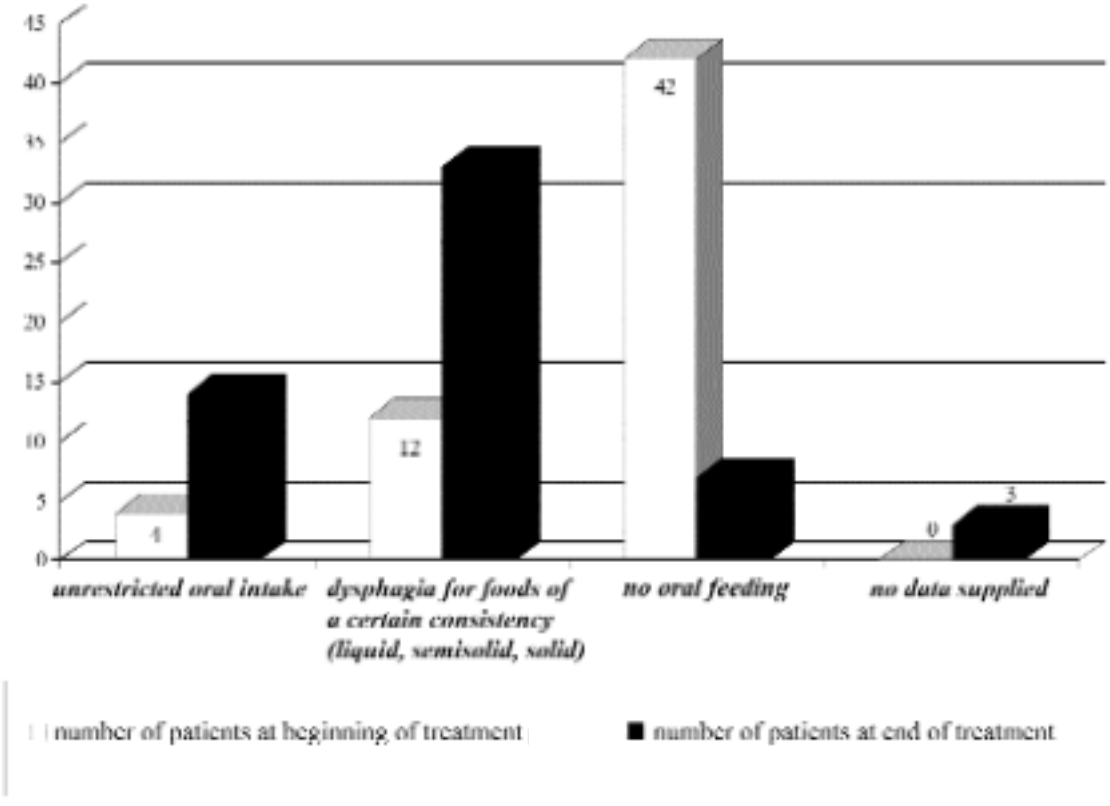

Fig. 1. Presence or absence of dysphagia upon acceptance for speech-language therapy and at the end of treatment. In three cases, data regarding the situation following treatment was not included, due to death of the patients – for causes unrelated to the dysphagic problem – during hospitalisation.

closer analysis reveals that, with dietary changes, of the 55 patients who were initially unable to take any food by mouth, 36 were being partially fed semisolid food and 10 were on oral intake by the end of the treatment period, while 9 were still unable to swallow. There were no cases of pulmonary infections *ab ingestis.*

Another element that characterised management of dysphagic patients was the counselling, in 50 cases, which provided the patients and their families with all the necessary information and allowed the patients to be managed by a team of specialists.

Discussion and conclusions

Numerous studies have evaluated the findings of oropharyngeal dysphagia in specific populations, such as patients suffering from an acute stroke [18], a tronco-encephalic stroke [19], Parkinson's disease [20], or head trauma [21], or who have undergone cervicofacial surgery [22]; very few data are available referring to heterogeneous populations, like that described here.

This prospective study enabled us to ensure that the speech-language therapy methods used in the management of oropharyngeal dysphagia – compensatory postures, dietary adjustments, guided weaning – had led to an improvement in the clinical picture in 48 of the patients by the end of the treatment period. Of particular interest is the fact that there were no pulmonary complications, thus allowing earlier discharge from hospital and thus a general reduction in costs. Hopefully, in future, the effects of oropharyngeal dysphagia treatment on limited activity and social involvement will be assessed, using the latest classifications supplied by the World Health Organisation [23].

Adjustments in food consistency and texture play a double role, both as an instrument of clinical management and of measurement. More scrupulous clinical management and scientific approach, therefore, require that future research focus on food consistency, temperature and viscosity and their effects on swallowing [24-28].

A significant finding emerging from the present study concerns the epidemiological features of dysphagia, confirming data reported in the literature: neurological lesions and old age constitute the main risk factors of dysphagia [4-6]. This is one of the reasons why the management of the dysphagic patient is to be seen as a very topical theme in modern health care.

It is interesting to note that a large percentage of hospitalised patients present swallowing disorders, as pointed out by Groher and Bukatman [6]. In fact, of the 81 patients studied in the present investigation, 41 were, indeed, hospitalised in neurological or neurosurgical wards. During the period in which the investigation was carried out, a total of 1037 patients were hospitalised in these wards (information supplied by the Head of Health Services of the "San Giovanni Battista" Hospital). The dysphagic population, therefore, accounts for 3.9% of the patients in these wards, and these data suggest the need for an adequate staff of trained personnel for the management of oropharyngeal dysphagia in every large-sized hospital.

References

1 Schindler O, Juliani E. *La videofluorografia nella diagnosi e nella terapia dei disturbi della deglutizione.* Giornale dell'Accademia di Medicina di Torino 1998;46:266-77.

2 Perlman AL, Schulze-Delrieu K. *Deglutition and its disorders*. S. Diego: Singular Publishing; 1997.

3 Logemann JA. *Dysphagia: evaluation and treatment*. Folia Phoniatr Logop 1995;47:140-64.

4 Cook IJ, Kahrilas PJ. *AGA Technical review on management of oropharyngeal dysphagia*. Gastroenterology 1999;116:455-78.

5 Bloem BR, Lagaay AM, van Beek W, Roos RAC, Wintzn AR. *Prevalence of dysphagia in community residents over 87*. Br Med J 1990;300:721-2.

6 Groher ME, Bukatman R. *The prevalence of swallowing disorders in two teaching hospitals*. Dysphagia 1986;1:3-6.

7 Schindler O, editor. *Manuale operativo di fisiopatologia della deglutizione*. Torino: Omega Edizioni; 1990.

8 Enderby P, Davies P, *Communication disorders: planning a service to meet the needs*. Br J Disord Communication 1989;24:301-31.

9 Batalden PB, Nelson EC, Roberts JS. *Linking outcomes measurement to continual improvement: the serial "V Way" of thinking about improving clinical care*. J Qual Improv 1994;20:167-80.

10 Scherer MJ, Cushman LA. *A functional approach to psychological and psychosocial factors and their assessment in rehabilitation*. In: Dittmar SS, Gresham GE, editors. *Functional assessment and outcome measures for the rehabilitation health professional*. Gaithersburg: Aspen Publ; 1997.

11 Ellwood PM. *Outcomes management: a technology of patient experience*. N Engl J Med 1988;318:263-7.

12 McHorney CA, Rosenbeck JC. *Functional outcome assessment of adults with oropharyngeal dysphagia*. Seminars in Speech and Language 1998;19:235-47.

13 Sonies BC. *Assessment and treatment of functional swallowing in dysphagia*. In: Worral ED, Frattali CM, editors. *Neurogenic communication disorders: a functional approach*. New York: Thieme; 2000. p. 262-75.

14 Chen AY, Frankowski R, Bishop-Leone J, Hebert T, Leyk S, Lewin J, et al. *The development and validation of a dysphagia-specific quality-of-life questionnaire for patients with head and neck cancer*. Arch Otolaryngol Head Neck Surg 2001;127:870-6.

15 McHorney C, Bricker DE, Kramer AE, Rosenbeck JC, Robbins J, Chignell KA, et al. *The SWAL-QOL outcome tool for oropharyngeal dysphagia in adults: I. Conceptual founda-*

tions and item development. Dysphagia 2000;15:115-21.

[16] McHorney C, Bricker DE, Robbins J, Kramer AE, Rosenbeck JC, Chignell KA. *The SWAL-QOL outcome tool for oropharyngeal dysphagia in adults: II. Item reduction and preliminary scaling.* Dysphagia 2000;15:122-33.

[17] Logemann JA. *Evaluation and treatment of swallowing disorders*. San Diego: College Hill Press; 1983.

[18] Smithard DG, O'Neill PA, Parks C, Morris J, Wyatt R, Martin DF, et al. *Complications and outcome after acute stroke: does dysphagia matter?* Stroke 1996;27:1200-4.

[19] Horner J, Buoyer FG, Alberts MJ, Helms MJ. *Dysphagia following brain-stem stroke: clinical correlates and outcomes*. Arch Neurol 1991;48:1170-3.

[20] Bushmann M, Dobmeyer SM, Leeker L, Perlmutter JS. *Swallowing abnormalities and their response to treatment in Parkinson's disease*. Neurology 1989;39:1309-14.

[21] Winstein CJ. *Neurogenic dysphagia: frequency, progression and outcome in adults following head injury*. Phys Ther 1983;63:1992-7.

[22] Logemann JA. *Impact of the diagnostic procedure on outcome measures of swallowing rehabilitation in head and neck cancer patients*. Dysphagia 1992;7:179-86.

[23] World Health Organization. *International Classification of Functioning*. Basel 2001.

[24] O'Gara JA. *Dietary adjustments and nutritional therapy during treatment for oral-pharyngeal dysphagia*. Dysphagia 1990;4:209-12.

[25] Fujiu-Kurachi M. *Food measures and other critical diagnostic measures*, Folia Phoniatr Logop 1999;51:147-57.

[26] Cichero JA, Jackson O, Halley PJ, Murdoch BE. *Which one of these is not like the others? An inter-hospital study of the viscosity of thickened fluids.* J Speech Lang Hear Res 2000;43:537-47.

[27] Cichero JA, Jackson O, Halley PJ, Murdoch BE. *How thick is thick? Multicenter study of the rheological and material property characteristics of mealtime fluids and videofluoroscopy fluids.* Dysphagia 2000;15:188-200.

[28] Kuhlemeier KV, Palmer JB, Rosenberg D. *Effect of liquid bolus consistency and delivery method on aspiration and pharyngeal retention in dysphagia patients.* Dysphagia 2001;16:119-22.

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