

ANALYTIC REVIEW OF DYSPHAGIA SCALES

Revisão analítica das escalas de disfagia

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ABSTRACT – Introduction - An efficient instrument for dysphagia measurement, easily reproducible and statistically consistent, should provide consistent data on the outcomes and follow-up of diseases with dysphagia. Existing proposals do not show a global coverage in the evaluation of this symptom. **Objective** - To analyze the available dysphagia scales determining those that allow a more objective and statistically consistent evaluation, and not only a measurement tool. Also, which of them achieve a better quantification of the symptom and useful in the follow-up. **Method** - Searching descriptors in the database Pubmed: "dysphagia", "scale", "index", "score", 10 papers were selected published between 1995 and June 2012 with proposals of dysphagia scales. **Results** - Most scales do not reach the requirements to be classified as a complete tool in the evaluation of any dysphagia. Many are specific to a single disease and few, which have a global assessment, have no statistical consistency. In oropharyngeal (cervical) dysphagia, the FOIS and ASHA scales are the most often cited. In motor dysphagia (cervical), the Zaninotto and Youssef scale have extremely practical applicability, but both require statistical validation. Zaninotto's seems to be more accurate by including more variables (dysphagia, chest pain and heartburn). The scales which cover the two forms of dysphagia (ASHA and DHI) are extremely different regarding the goal of their evaluation. The DHI is a scale of recent publication, which examines the two types of dysphagia and has a well-structured statistical validation. Future important step would be testing this new proposal with a more expressive and representative sample, probably enshrining this new assessment tool. **Conclusion** - The most frequent scales of dysphagia reported in the last 17 years have different purpose and structure. The FOIS and ASHA scales are often used for evaluation of oropharyngeal (cervical) dysphagia, both focused on nutritional therapy. For the evaluation of motor (low) dysphagia, the scale of Zaninotto and Youssef has practical application, and the DHI seems to represent the most promising tool in the overall assessment of dysphagia.

HEADINGS - Deglutition disorders. Esophagus. Esophageal achalasia

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RESUMO - Introdução - Instrumento eficiente para medição da disfagia, facilmente reprodutível e estatisticamente consistente, deveria fornecer dados mais consistentes sobre os resultados e acompanhamento de doenças com disfagia. As propostas existentes mostram ampla cobertura na avaliação do sintoma disfágico. **Objetivos** - Analisar as escalas de disfagia disponíveis sugerindo as que permitem avaliação mais objetiva e estatisticamente consistente, e não apenas ferramenta de mensuração, e sugerir as que melhor quantificam o sintoma e úteis para seguimento dos pacientes. **Método** - Foram pesquisados os seguintes descritores no Pubmed: "disfagia", "escala", "index", "score". Dez artigos foram selecionados entre 1995 e 2012 com propostas de escalas para a disfagia. **Resultados** - A maioria das escalas não atingiram os requisitos para serem classificadas como ferramenta completa na avaliação de qualquer disfagia. Muitas são específicas para uma única doença, e poucas com maior abrangência, não têm consistência estatística. Para disfagia orofaríngea (cervical), as escalas FOIS e ASHA são citadas com mais frequência. Na disfagia motora (cervical), a de Zaninotto e Youssef têm aplicabilidade prática, mas ambas necessitam de validação estatística. A de Zaninotto parece ser mais precisa por incluir mais variáveis (disfagia, dor no peito e azia). As escalas que cobrem as duas formas de disfagia (ASHA e DHI) são bem diferentes em seus objetivos. A DHI é escala publicada recentemente examina os dois tipos de disfagia e tem validação estatística bem estruturada. Importante passo no futuro seria testar essa nova proposta com amostra mais expressiva e representativa, provavelmente consagrando esse novo instrumento de avaliação. **Conclusão** - As escalas mais frequentes de disfagia relatadas nos últimos 17 anos têm propósito e estruturas diferentes. As escalas FOIS e ASHA são muitas vezes utilizadas para a avaliação da disfagia orofaríngea (região cervical), ambas focadas em terapia nutricional. Para a avaliação motora baixa, a escala de Zaninotto e Youssef tem aplicação prática, e a DHI parece representar a ferramenta mais promissora na avaliação global da disfagia.

DESCRIPTORES - Transtornos de deglutição. Esôfago. Acálasia esofágica

INTRODUCTION

There is not a consolidated consensus concerning a more objective measurement tool for evaluation and follow-up of dysphagia. An efficient instrument, easily reproducible and statistically consistent would provide more consistent data on the outcomes and follow-up treatment of diseases related to dysphagia^{1,2,3,4,5,6,7,8,9,10,11,12}.

Classically the dysphagia are divided into oropharyngeal (cervical) and motor (low). The first is usually resulting from head and neck cancer, post-stroke status and neurological diseases (amyotrophic lateral sclerosis and Parkinson's, for example). The second, is commonly represented by achalasia, gastroesophageal reflux disease, progressive systemic sclerosis, post-operative recovery of the esophagogastric junction including bariatric surgery and other movement disorders of the esophagus⁹.

The proposals in the literature to measure and classify dysphagia did not usually show a global coverage in the evaluation of this symptom.

This article has the objective to analyze scales of dysphagia available determining those that allow a more objective and statistically consistent evaluation and not only a measurement tool. Also with achieved a better quantification of the symptom and those useful to follow-up patients

METHOD

Through research of the following descriptors in the database Pubmed "dysphagia", "scale", "index", "score", it was intended to get the studies that have proposed scales of dysphagia regardless of whether they evaluate only those whose etiology was oropharyngeal, motor or both.

It was found 14 papers published between 1995 and June 2012. Four of them were excluded due to no proposed scales of dysphagia were observed.

RESULTS

Of the ten studies shown in Table 1, it was observed that there are two scales that investigate the dysphagia in its two types

The DHI study raises the scarcity situation of scales that evaluates dysphagia in a more complete way. It is noted that there are several assessment tools that analyze the symptom, but much of them are specific to a single disease⁹. This method proposes to develop and to validate a score of dysphagia analyzing both oropharyngeal and motor causes. With detailed statistical description, it shows a 25 items questionnaire in which the patient can assign three responses for each question (never, sometimes and always), adding a value to each response (0, 2 and 4, respectively) and reaching a score ranging from 0 to 100. Moreover, each patient performs a self-evaluation of their dysphagia, assigning a score from 0 to 71. In the results, the author crosses the values of self-evaluation (1=normal; 2 and 3=mild; 4 and 5=moderate; 6 and 7=severe) with videodeglutogram findings (normal; mild; moderate; severe) correlating scores from the questionnaire in the control group (without dysphagia) and in the group with dysphagia⁹.

The classification of Chicago only defines the criteria and a flowchart to evaluate patients with esophageal motor disorders, correlating the results of esophageal pressure topography with high-resolution manometry. While not proposing any scale, it can be relevant comparing their findings with others scores¹.

Tsuboi evaluated 4215 patients who underwent esophageal manometry in which were obtained 3095 (73.4%) normal examinations and 1120 (26.6%) abnormal tests. Of these, 130 (3.1%) corresponded to achalasia, 192 (4.6%) to diffuse esophageal spasm, 290 (6.9%) the esophagus "nutcracker" and 508 (12.1%) had other esophageal amendments. The three main symptoms in decreasing order of relevance (eg: 1st: dysphagia; 2nd: chest pain, and 3rd: heartburn) were identified for each patient. For each group of etiology above mentioned it is proposed a weighted formula that multiplies the number of individuals who reported

TABELA 1 - Análise comparativa das escalas publicadas para disfagia

NAME	AUTHOR	YEAR	CERVICAL DYSPHAGIA	DISFAGIA MOTORA	SCORE Δ	ITEMS	ESTAT	CLINIC	VDG	MANO	
1	DHI	Silbergleit	2012	Y	Y	0 a 100	25	Y	Y	Y	N
2	Chicago	Bredenoord	2011	N	Y	N	N	N	N	N	Y
3		Tsuboi	2012	N	Y	equation	3	Y	Y	N	Y
4		Youssef	2007	N	Y	0 a 10	2	N	Y	N	N
5		Zaninotto	2002	N	Y	0 a 33	3	N	Y	N	N
6	DOSS	O'Neil	1999	Y	N	1 a 7	7	Y	Y	N	N
7	FOIS	Crary	2005	Y	N	1 a 7	7	Y	Y	N	N
8	CDS	Chun	2011	Y	N		8	Y	Y	Y	N
9	SOMA	Reily	1995	Y	N	5 types of consistencies	5	Y	N	Y	N
10	NOMS	ASHA	2003	Y	Y	1 a 7	7	N	Y	N	N

DHI: Dysphagia Handicap Index; DOSS: dysphagia outcome and severity scale; FOIS: functional oral intake scale; CDS: clinical dysphagia scale; SOMA: schedule for oral-motor assessment; NOMS: national outcomes measurement system; ASHA: American Speech-Language Hearing Association; YEAR: year of publication; Δ SCORE: variation of the numerical score in the study; ITEMS: number of items evaluated in the score; SUM: statistical clear in the text; CLINICAL: clinical evaluation; VDG: videodeglutogram; MANO: esophageal manometry; Y : yes N: no / absent.

such symptoms by a weight factor. The first mentioned symptom is multiplied by a factor of 3, the second by 2 and the third by 1. The symptom of dysphagia was more prevalent in the group of achalasia, followed by group diffuse esophageal spasm¹⁰. In this proposal, it cannot be inferred or provide an assessment of the degree of dysphagia. It only can observe the weighted distribution in the sample.

Youssef report the relief of dysphagia and quality of life after laparoscopic Heller cardiomyotomy in patients with achalasia. Regarding the dysphagia, was used a non-validated scale proposing a score ranging from 0 to 10 that contains two variables: the severity (0=none, 1=very mild, 2=mild, 3=moderate, 4=moderately severe; 5=severe) and frequency (0=never, 1=<1 day/week, 2=1 day/week, 3=2 to 3 days/week, 4=4-6 days/week, 5=daily). It was adopted as a successful treatment those patients who were above the 75th percentile of the dysphagia scale¹¹. This scale does not quantify or stratifies, in a objective and statistically based way, the symptom in relation to all surrounding aspects; it has difficult to provide a reliable parameter to be used in the follow-up of patients.

Zaninotto et al.¹² used a not yet validated scale for achalasia in a study evaluating the possible causes of failure of laparoscopic Heller cardiomyotomy. Three variables, dysphagia, regurgitation and chest pain, were studied analyzing the frequency (0=never, 1=occasionally; 2=monthly, 3=weekly, 4=2 times / month; 5=daily) and severity (0=none, 2=mild, 4=moderate; 6=severe). Its score ranged from 0 to 33. The lack of symptoms was adopted as therapeutic success¹². It was compared the score of symptoms pre and postoperatively, with a statistically significant difference between the group with successful treatment and recurrence of symptoms. This scale showed a good ability to represent an instrument for measuring and monitoring, but requires statistical validation to support possible hypotheses.

The DOSS study proposes a subjective scale of oropharyngeal dysphagia and functional capacity based on the ability of food intake and indicates the best nutritional regimen for each individual⁶. It shows a good statistical concordance, but its subjectivity brings interpretation bias that can represent a disadvantage on its use as a tool for follow-up or for making decisions.

In the same way, the FOIS study is highly recognized, statistically validated and evaluates specifically patients with oropharyngeal dysphagia in post-stroke status. It presents a seven ordinal graduations based on clinical questions that reflects the functional oral intake of patients with dysphagia³.

To validated the CDS², 59 patients were evaluated after stroke regarding eight variables (brain stem lesion, presence of tracheostomy, history of aspiration, chewing, tongue protrusion, elevation of the larynx

and the cough reflex), calculating its correlation with the videofluoroscopic dysphagia scale (VDS)^{4,8}. Applicable only in oropharyngeal dysphagia, some conflicts are shown, such as history of aspiration in patients still under oral fasting.

Ko in his study evaluated the clinical usefulness of SOMA tool in children with dysphagia. It uses clinical observation of the ingestion of six foods of different consistency (puree, semi-solids, solids, cracker, liquid-bottle, and liquid-cup). Highly specific, it hardly will have applicability in other groups without modifying some parameters⁵.

ASHA developed a series of 15 graduated scales. Concerning swallowing status, it ranged from 1 (the least functional) to 7 (the normal). Its subjectivity is widely accepted in the evaluation of oropharyngeal dysphagia and it is based on clinical observation. Its major application is as a guide for adequate nutritional strategy for the patient at the moment of evaluation and do not represent an objective and quantitative tool of the symptom⁶.

DISCUSSION

Most scales do not meet the requirements to be classified as a complete tool in the evaluation of any dysphagia. Many are specific to a single disease, and few which have a global evaluation, have no statistical consistency to strengthen their assessments.

In oropharyngeal dysphagia (cervical), the FOIS and ASHA scales are the most often cited. The first is recognized to have applicability in the follow-up and evaluation of nutritional status of patients with stroke. The ASHA scale evaluates the clinical status of patients with dysphagia indicating the most proper nutritional program for each patient.

In motor (low or retrosternal) dysphagia, the Zaninotto and Youssef scale have good practical applicability, but both require statistical validation. Zaninotto's seems to be more accurate by including more variables (dysphagia, chest pain and heartburn).

The scales which cover the two types of dysphagia (ASHA and DHI) are different regarding the goal of their evaluation. The main focus of the ASHA classification is related to determination of the proper diet consistency in patients with dysphagia and includes 15 other items besides evaluation of swallowing. Although described, its applicability to motor dysphagia is not found in the literature. The DHI is a scale of recent publication, which examines the two types of dysphagia and has a well-structured statistical validation. Aims to quantify and compare the symptom at different times from the same patient or occasionally in groups of different diets. An important step would be to test this new proposal with a more expressive and representative sample that will probably enshrine this new assessment tool.

CONCLUSION

The most frequent scales of dysphagia reported in the last 17 years have different purpose and structure. The FOIS and ASHA scales are often used for evaluation of oropharyngeal (cervical) dysphagia, both focused on nutritional therapy. For the evaluation of motor (low) dysphagia, the scale of Zaninotto and Youssef has practical application, and the DHI seems to represent the most promising tool in the overall assessment of dysphagia.

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