The Physiology of Deglutition and the Pathophysiology and Complications of Oropharyngeal Dysphagia

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Abstract

The opening session of the 2nd International Conference on Oropharyngeal Dysphagia featured a series of invited talks reviewing the definition of dysphagia, its prevalence and its pathophysiology. The discussion arising from these talks focused heavily on the current underrecognition of dysphagia as a significant concern for older adults, particularly those over 75. The burdens associated with dysphagia in this sector of the population were recognized to be substantial, both in social/psychological terms and in terms of economic consequences for the healthcare system. The importance of developing swallow screening protocols as a routine method for the early identification of dysphagia and aspiration was explored. The idea of launching political initiatives aimed at increasing awareness and the utilization of appropriate dysphagia healthcare codes was also discussed.

The opening session of the 2nd International Conference on Oropharyngeal Dysphagia featured a series of invited talks reviewing the definition of dysphagia, its prevalence and its pathophysiology. Dr. Julie Cichero, from the University of Queensland in Brisbane, Australia, spoke first, defining oropharyngeal dysphagia as difficulty swallowing with two primary functional consequences: poor efficiency leading to inadequate hydration and nutrition, and impaired swallowing safety characterized by aspiration leading to a risk of pneumonia. Dr. Cichero's talk reviewed the prevalence of dysphagia in older adults (those over 60 years of age), citing evidence showing that dysphagia is more likely to be seen in those over the age of 80, particularly those residing in nursing homes, who have reduced functional capacity and are taking multiple medications [1].
She cited data from a number of different studies estimating the prevalence of dysphagia amongst older adults in acute care hospitals to range from 25 to 71%, while comparable figures for nursing homes range from 55 to 68%. Figures for seniors living in the community, derived from surveys were cited to be substantially lower, falling between 11 and 16%. It was noted that underreporting of symptoms may be characteristic of seniors living in the community, who may accept dysphagia as a natural part of growing older.

The issue of dysphagia prevalence was also a main focus of the talk given by Dr. Kenneth Altman from the Mount Sinai School of Medicine in New York. Dr. Altman, an otolaryngologist, described rates of dysphagia amongst adults hospitalized at his institution, ranging from 12% in those under 45 to 73% in those over the age of 75 [2, 3]. Dr. Altman argued that dysphagia is an under-recognized condition that contributes to a 40% increased length of stay and 13-fold increased mortality during hospitalization for elderly patients.

These two talks elicited questions and comments from the audience regarding the fact that dysphagia appears to be underrecognized or underdocumented in the geriatric population. One possible reason for this is failure on the part of physicians to implement the appropriate medical codes to capture and note dysphagia as part of a patient’s condition. Dr. Pere Clavé pointed out that the World Health Organization has recently established a specific code for oropharyngeal dysphagia within its International Classification of Diseases (ICD-10) system (http://www.who.int/classifications/icd/en). He acknowledged that dysphagia has not traditionally been considered a disease, but rather a symptom or component of many other disease and injury conditions, but argued that our understanding and appreciation of dysphagia prevalence and epidemiology would be significantly advanced if initiatives were taken to encourage physicians to use the oropharyngeal dysphagia code in their medical reports. Dr. Clavé mentioned that the European Society for Swallowing Disorders would be launching an initiative along these lines called ‘Dysphagia Day’. Another audience member, Ms. Carola Granholm, a dietitian from Stockholm, pointed out that similar concerns have been raised regarding the recognition and awareness of malnutrition in the elderly, and that ESPEN, the European Society for Parenteral and Enteral Nutrition has been working for several years to improve awareness about malnutrition in the EU. She argued that awareness may need to be raised to the political level if the necessary financial resources are going to be made available to properly address the burden of dysphagia for our aging population.

The question of the burden of dysphagia was also addressed in Dr. Cichero’s talk. She argued eloquently that dysphagia results in social, psychological and financial burden. With respect to social concerns, dysphagia frequently leads to patients eating in isolation. Dr. Altman concurred, arguing that this robs patients of the very basic function of ‘breaking bread together’ that is so integral to our lives. Dr. Cichero cited studies showing a strong correlation between dysphagia and depression, and reports that up to half of nursing home residents
report that eating is no longer enjoyable and that requiring assistance to eat is a burden. She further pointed out that many patients find texture-modified foods and thickened liquids to be unpalatable, and that recommendations for enteral feeding and nil-by-mouth status lead to even greater feelings of social isolation.

These considerations prompted comments from the audience regarding the need for follow-up assessment for adults who have been discharged from acute care back into community or nursing-home settings on texture-modified diets. A previous study by Groher and McKaig [4] was cited as evidence that many individuals in nursing homes may be able to tolerate upgrades from texture-modified diets that were recommended during their acute care stays. Dr. Altman further argued for the consideration of allowing some safe oral intake, as tolerated, in older adults who may need enteral feeding to achieve optimal nutrition. He mentioned that many of the individuals he sees who are unable to meet their nutritional needs orally are still able to manage some safe swallowing; from a quality of life perspective, he argued that allowing some oral intake on compassionate grounds could restore some normalcy to these patients’ lives with respect to the important social benefits of eating with their family and friends.

With respect to the economic burden of dysphagia, the available statistics cited by both Drs. Cichero and Altman dealt primarily with the costs of treating aspiration pneumonia as a sequel of dysphagia. A recent Canadian study [5] cited costs per case of USD 17,240 to treat aspiration pneumonia, with British estimates of annual costs reaching as high as GBP 48 million under standard care conditions. Importantly, the British figures showed cost reductions in the order of GBP 22 million when speech pathology care for dysphagia is provided.

These considerations of dysphagia burden led to questions from the audience about the optimum method of intervening to reduce the negative impact of dysphagia. Dr. Michael Jedwab from Nestlé Healthcare Nutrition proposed that early identification and diagnosis would serve to stop the negative cycle of malnutrition and pneumonia risk that seems to spiral out of control when dysphagia is not recognized. He asked whether this cascade should perhaps not be attributed so much to lack of recognition but rather to a lack of simple and efficient screening tools that could be used to identify individuals at risk upon entry to hospital or at physicians’ offices in the community.

Dr. Cichero agreed that screening can play a very important part in raising the awareness and improving the recognition of dysphagia. She reported that an increase in the number of patients identified as having dysphagia had resulted from the implementation of a nurse screening tool at the Royal Brisbane Hospital [6]. Dr. Rosemary Martino from the University of Toronto concurred, citing work by Hinchey and colleagues showing that the implementation of dysphagia screening protocols leads to a 3-fold reduction in the rate of hospital-acquired pneumonia [7]. She pointed out, however, that implementing screening programs is not always easy and a number of barriers may be encountered. Dr. Martino reported that her work on swallow screening
protocols implemented by nursing shows that uptake takes time, and that creating a culture in which nurses accept the role of swallow screening, incorporate the necessary skills into their practice and develop comfort with having this new task as part of their repertoire may require as long as a year. She argued for the importance of mentoring and providing support to nursing staff to implement these kinds of changes.

With respect to barriers to implementing screening programs, Dr. Altman pointed out that investing resources in early identification and screening programs for any disease condition is recognized to be a good investment, but that unfortunately health system budgets frequently fail to invest in such long-term planning, based on pressures that direct money toward more immediate concerns. Financial barriers were also mentioned as a concern with respect to implementing programs to monitor patients upon discharge from acute care back to community settings.

The remaining talks in the opening session of the conference addressed the specifics of the pathophysiology of dysphagia and aspiration. Dr. Shaheen Hamdy from Manchester, UK, reviewed the neurophysiology of swallowing, and described methods for mapping the swallowing neural pathways, both sensory and motor, that are used in his laboratory. Dr. Clave, from Mataro in Spain, described issues related to the timing of the swallow response and the reconfiguration of the oropharynx from a respiratory passage to an alimentary passage. Dr. Cichero, along with Dr. Eric Verin from Rouen, France, discussed issues of respiratory-swallow coordination.

The discussion concluded with a brief exploration of the extent to which clinicians might access dysphagia assessment methods that more fully reveal abnormalities in swallowing neurophysiology. Dr. Hamdy acknowledged that there are very limited options in terms of clinical tools for evaluating the integrity of sensory pathways in swallowing, and reported that advanced methods such as tractography are unlikely to become available on a large scale basis due to cost. He argued that these sophisticated methods would be best used to study small clusters of patients to understand the central mechanisms involved in their dysphagia, and then to extrapolate the findings to other patient groups.

References
