The role of speech and language therapy in assessing and managing pharyngo-esophageal diverticula

The Role of Speech and Language Therapy in Assessing and Managing Pharyngo-esophageal Diverticula

Abstract:

E Holmes, C Kenny, M Samuel, J Regan, J O’Rourke, C McCoubrey

Speech and Language Therapy Department, AMNCH, Tallaght, Dublin 24

Abstract

This study explores the contribution of Speech and Language Therapists (SLTs) to the assessment and management of patients presenting on videofluoroscopic swallow studies (VFSS) with a suspected pharyngo-oesophageal diverticulum. Records for all patients who attended for VFSS in an acute hospital over an eleven-year period were examined (N=1820). Twenty patients were identified on VFSS as having a suspected diverticulum. Symptoms suggestive of a diverticulum were found during both bedside clinical examination and radiographic examination e.g. respiratory difficulties (n=15; 75%), voice changes (n=14; 70%). VFSS confirmed a reduced risk of aspiration for 14 patients (70%) using a combination of fluid modification (n=9; 45%), food modification (n=13; 65%) and swallow strategies (n=14; 70%). VFSS confirmed aspiration directly related to the diverticulum in 11 patients (55%). Findings indicate that SLTs have the opportunity to identify potential diverticula and implement behavioural management to reduce associated health risks. This is of particular importance to patients who are awaiting, or cannot undergo, surgical repair of their diverticulum.

Introduction

Diverticula (also known as â pouchesâ) are classified on the basis of anatomical location (pharyngo-oesophageal, midoesophageal or epiphrenic) and mechanism of origin (pulsion or traction). The most common diverticulum encountered by Speech and Language Therapists (SLTs) is the Zenkerâ s Diverticulum (ZD). This is a pulsion diverticulum between the cricopharyngeal muscle and the inferior constrictor muscle in an area of weakness known as Killianâ s Dehiscence[1]. ZD was first described by Ludlow in 1769[2]. Despite over two centuries of research, controversy surrounds this condition with regard to aetiology and pathophysiology. The most widely accepted theory at present is that diverticula are formed when there is normal relaxation of the upper oesophageal sphincter but inadequate opening[3]. ZD is an acquired condition, occurring more often in the elderly (people typically become symptomatic in the sixth to seventh decade of life[3]). There is an incidence reported of 2 per 100,000 in the UK[4]. For patients referred for an examination of the upper oesophageal tract, the incidence can reach 1 in 1000[1]. Men are affected 2-3 times more commonly than women and in 90% of cases the diverticulum is found to protrude to the left of the midline[5]. Because gastroesophageal reflux contributes to cricopharyngeal dysfunction, a relation between gastro-oesophageal reflux disease and ZD has been assumed, but it has never been consistently investigated[6].

One of the most prominent symptoms of ZD is a progressive dysphagia, occurring in excess of 90% of patients[1]. Initially, the diverticulum is small and symptoms may be subtle, but with time, an increasing amount of food material becomes trapped in the growing pouch and symptoms become more pronounced. Common postprandial features suggestive of ZD include: regurgitation of undigested food particles (even hours post-meal); noisy deglutition; choking or coughing; tasting dissolved medications long after swallowing them; and halitosis. In the advanced stages, larger bolus volumes collect in the diverticulum. Patients may then additionally complain of the need to swallow with effort to clear residue; weight loss; apathy towards eating and drinking; and voice changes[7]. Aspiration can occur at any stage as the contents of the pouch are ejected and spill into the airway. Patients in the advanced stages may present with a history of recurrent pneumonia or other respiratory difficulties[8]. Many of the above features are evaluated by SLTs at bedside by taking a detailed case history from the patient and through the bedside clinical examination of swallow. This represents an opportunity for identification of a potential diverticulum before formal radiological imaging takes place.

Pharyngeal diverticula are often diagnosed or confirmed during barium studies which allow for discrimination of size and location[9]. Videofluoroscopic Study of Swallowing (VFSS) is one such study. VFSS are commonly carried out by SLTs to identify the presence of dysphagia in patients by examining oropharyngeal swallow function. Being a cineradiographic procedure, VFSS also allows for identification of diverticula, as cineradiography has been shown to more accurately delineate and discriminate between the types and behaviours of diverticula compared with single radiographs[10]. VFSS can include imaging of the oropharyngeal and oesophageal regions in both a lateral and anterior-posterior (A-P) view. It allows for observation of this region before, during and after the swallow for retrospective comparison. Thus, any potential diverticulum filling with food or fluids can be observed as the examination progresses[7] (Figure 1, Figure 2). It is worth noting that the postprandial features of a ZD mentioned previously may be symptomatic of other illnesses[11]. As such, VFSS presents itself further as a valuable diagnostic tool to establish whether a diverticulum exists, or whether alternative explanations for symptoms ought to be explored.

Research using oesophageal manometry has shown that evaluation of swallowing soft solids in the upright position reveals differences in motility abnormalities that are otherwise overlooked by liquid swallows alone[12]. This adds further merit to the benefits of VFSS as a diagnostic tool, since a variety of food and liquid consistencies can be trialled during this examination. VFSS may in fact be more valuable than single-shot barium swallows, as it may highlight the presence of a small diverticulum, which might otherwise have been missed[7]. Few articles specifically address patient candidacy for surgical intervention for pharyngeal diverticula. However, it is documented that many elderly patients are wrongly considered to be unsuitable for surgical intervention[13]. Surgical ineligibility criteria include â advanced comorbidity, pulmonary frailty or a difficulty assuming appropriate postural positioning for endoscopic managementâ [11]. If surgical intervention for a diverticulum is not to be considered for a patient, behavioural intervention then remains as the treatment of choice[11]. The primary aim of behavioural management of diverticulum ought to be to reduce the volume of material aspirated. Postural changes may be effective in preventing aspiration. For example, a head rotation to the left or right during swallow may serve to reduce or eliminate the volume of material that can enter the diverticulum, preventing pocketing and later aspiration of this material, once ejected from the diverticulum.

This study explores the role of the SLT in contributing to the comprehensive evaluation and management of a cohort of patients with suspected pharyngo-esophageal diverticula. It also examines the follow-up that these patients received once onward referral for medical/surgical consideration was suggested.

Methods

A retrospective review was conducted of all VFSS reports between the years 2000-2011 at an Irish acute care hospital. During this time period, 1820 procedures were carried out. Patients attending for VFSS presented with a diverse range of aetiologies, including stroke, progressive neurological diseases (e.g. Parkinsonâ s disease, MND), age-related illnesses (e.g. Alzheimerâ s disease), COPD, tracheostomy and general medical conditions (most frequently, LRTI). Reports on the outcomes of these procedures containing any suspicion of pharyngo-oesophageal diverticula were collated and exclusion criteria subsequently applied to this set. Exclusion criteria were: known diagnosis of a diverticulum prior to SLT involvement; VFSS conducted for private care patients; and VFSS carried out for external agencies. The latter two criteria were applied, as there was limited access to full medical records for these patients. Twenty cases remained once exclusion criteria were applied. Information was collated from both medical and SLT records relating to demographics, medical history, SLT findings on bedside clinical evaluation, findings on VFSS, radiologic and/or surgical follow-up. The authors analysed the dataset using descriptive statistics to explore the diagnostic value of SLT clinical and radiographic evaluations in contributing to a comprehensive assessment and management of patients with pharyngo-esophageal diverticula and concomitant dysphagia.

Results

Twenty patients met inclusion criteria. 90% (n=18) of patients who met the criteria for inclusion were aged over 60 years with a mean age of 77.5 years and a range of 44-88 years. 20% (n=4) of patients were suspected by the medical/surgical team to have a diverticulum prior to referral to Speech and Language Therapy, while a further 25% (n=5) of patients were suspected to have a diverticulum upon bedside evaluation of swallow by the SLT. Diverticulum was therefore not suspected as a cause of symptoms of dysphagia in 55% (n=11) of patients prior to videofluoroscopy. The investigation during assessment of symptoms commonly associated with diverticula was explored. Table 1 outlines typical symptoms of ZD. It captures the incidence rates within our cohort as well as the frequency with which symptoms were not documented. The most common symptoms documented in our cohort reflect the most prevalent symptoms reported in the literature. For example respiratory difficulties are commonly associated with ZD and 75% of the patients presented with a history of respiratory difficulties.

Of note, on videofluoroscopic examination by the SLT, 55% of patients were noted to have aspiration that was directly related to the presence of a diverticulum. In order to manage dysphagia associated with the diverticulum, each patient was trialled during VFSS with an average of 2 compensatory swallow strategies[14-16]. Table 2 lists different compensatory strategies trialled on VFSS. Food modification was recommended in 65% (n=13) of patients and fluid modification was recommended in 45% (n=9) of patients. Based on positive outcomes during VFSS, 70% (n=14) of patients were recommended to implement a swallow strategy. An outcome was deemed positive if it reduced the risk of penetration or aspiration of bolus material into the airway. All patients suspected on VFSS of presenting with a diverticulum were recommended by the SLT for onward referral for further investigation of the diverticulum. 50% (n=10) of these did not receive any medical or surgical follow-up. Of patients who received follow-up, 60% (n=6) had a radiological investigation (e.g. Barium Swallow), while 40% (n=4) had endoscopic investigation. A diverticulum was confirmed in 60% (n=6) of patients who received follow-up investigation. The remaining investigations confirmed the absence of a diverticulum (20%) (n=2) or yielded inconclusive outcomes (20%) (n=2).

Discussion

While the sample size of the patient cohort included in the study is small, it should be considered that this is reflective of numbers encountered in actual clinical practice. In a recent prospective study, just 49 patients from a cohort of 2,430 (2%) presented with a pharyngeal diverticulum[4]. In terms of contributing to diagnosis, it is evident from the findings above that the SLT is well-placed to support medical/surgical teams, both in terms of identifying signs and symptoms subjectively through case history taking, bedside clinical exam and through objective study using videofluoroscopy. Early identification and management of ZD is important as long-term medical implications include dysphagia, malnutrition and chronic respiratory difficulties resulting from aspiration[5]. Also of note is a â real, but low risk of carcinoma developing in a pharyngeal pouchâ [4]. Of concern is the high percentage of relevant symptoms which do not appear to have been explored by the assessing clinician. Lack of documentation of symptoms associated with ZD ranged from 15%-75% (Table 1). Behavioural management of pharyngo-oesophageal diverticula is also an aspect of treatment in which SLTs may provide a valuable service. Behavioural management was explored in this study during VFSS. Within our cohort, 70% of patients were found to benefit from SLT-led behavioural management. We do however need to be cautious in interpreting this finding, as some of our cohort had a coexisting neurogenic dysphagia. As such, further research focusing on behavioural management of dysphagia caused by diverticula in isolation is required. Given the high percentage of patients who benefited from behavioural management, patients who are awaiting or are ineligible for surgery should be considered for referral to Speech and Language Therapy.

Finally, it is worth noting that 50% of patients recommended by SLT for follow-up due to a potential diverticulum did not receive any such follow-up. The reasons for this were not investigated in this study. Given the medical consequences of lack of treatment, room clearly exists for collaboration between medical/surgical teams and Speech and Language Therapists for patients presenting with a pharyngo-oesophageal diverticulum.

Correspondence: E Holmes
Speech and Language Therapy Department, AMNCH, Tallaght, Dublin 24
Email: liz.holmes@amnch.ie

References

1. Scher R. Zenker’s Diverticulum. In: Flint P, Bruce H, Haughey J, John K, Niparko M, Richardson K, Lund V. (ed.). Cummings Otolaryngology: Head and Neck Surgery Philadelphia: Mosby Elsevier, 2010, 987-97.

2. Ludlow A. A Case of obstructed deglutition from a preternatural dilation of and bag formed in the pharynx. In: Johnson W. CT, (ed.). Medical observations and inquiries by a society of physicians in London. London 1769, 85-101.

3. Sen P, Lowe D, Farnan, T. Surgical interventions for pharyngeal pouch. Cochrane Database of Systematic Reviews. 2011; 9.

4. Murray I, Grimes D, Wilde A, Palmer J, Waters C, Dalton H. Incidence and predictive features of pharyngeal pouch in a dysphagic population. Dysphagia. 2014; 29: 305-9.

5. Cook I. Cricopharyngeal function and dysfunction. Dysphagia. 1993; 8: 244-51.

6. Ferreira L, Simmons D, Baron T. Zenker’s diverticula: pathophysiology, clinical presentation, and flexible endoscopic management. Diseases of the Esophagus 2008; 21: 1â 8.

7. Siddiq MS S. Current management in pharyngeal pouch surgery by UK otorhinolaryngologists. Annals Royal College of Surgeons of England. 2004; 86: 247â 52.

8. Liu JJ, Kahrilas PJ. Pharyngeal and esophageal diverticula, rings, and webs. GI Motility online. 2006; Part 1 Oral cavity, pharynx and esophagus.

9. Herbella FP, M. Modern pathophysiology and treatment of esophageal diverticula. Langenbeck’s Archives of Surgery. 2012; 397: 29â 35.

10. Ekberg ON, G. Lateral diverticula from the pharyngo-esophageal junction area. Radiology. 1983; 146: 117-22.

11. Coyle J. Zenker Diverticulum (ZD). In: Jones H, Rosenbek, J. (ed.). Dysphagia in Rare Conditions. San Diego: Plural Publishing, 2010, p. 671-80.

12. Bernhard A, Pohl D, Fried M, Castell D, Tutuian R. Influence of bolus consistency and position on esophageal high resolution manometry findings. Digestive Diseases and Sciences 2008; 53: 1198-205.

13. Crescenzo D, Trastek V, Allen M, Deschamps C, Pairolero P. Zenkerâ s Diverticulum in the Elderly: Is Operation Justified? The Annals of thoracic surgery. 1998; 66: 347-50.

14. Mendelsohn MS MF. Function in the pharyngoesophageal segment. Laryngoscope. 1987; 97: 483-9.

15. McCullough GH, Kamarunas E, Mann GC, Schmidley JW, Robbins JA and Crary MA. Effects of Mendelsohn maneuver on measures of swallowing duration post stroke. Top Stroke Rehabil. 2012; 19: 234-43.

16. Bodˆ'n K HA, Witt Hedstrˆ¶m H. Effects of three different swallow maneuvers analyzed by videomanometry. Acta Radiol. 2006; 47: 628-33.

LOG IN TO TAKE TEST

LOGIN