

A Service Evaluation of Videofluoroscopy of Swallow Outcomes in People with Parkinson's Disease

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Abstract

Background: Dysphagia is a common non-motor feature in People with Parkinson's disease (PwP), and aspiration pneumonia is a common cause of death. Best practice guidance advocates videofluoroscopy of swallow (VF) be considered as an adjunct to clinical bedside assessment when advising about safest food and fluid consistency to reduce aspiration risk. There is sparse literature about prevalence of this investigation in PwP, the clinical features leading to VFs being recommended and the yield of VF outcomes. We wished to study this further.

Methods: An observational study of VF carried out over a 6 year period in PwP attending a movement disorder service. VF reports were reviewed and the clinical concerns leading to the VF being requested, and any change in dietary and fluid advice from previous clinical bedside assessment were noted. Demographic data was also collected including stage of Parkinson's disease (Hoehn and Yahr score), and mortality data.

Results: We report on 68 consecutive VF carried out over 6 years on 60 PwP. A change in diet and/or fluid consistency from was noted in 47% of PwP. VFs were carried out evenly at all Hoehn and Yahr stages. A quarter (15/60) of the PwP died over the study period and moreover in 11/15 (73%) aspiration pneumonia or pneumonia was documented as the primary cause of death.

Conclusions: VF is resulted in significant yield in terms of changed recommendations to both diet and fluid consistency intake that may well impact on both aspiration risk and quality of life. Limitations of this study are recognised and further prospective studies are suggested.

Keywords: Parkinson's Disease; Videofluoroscopy of Swallow; Aspiration

Introduction

Parkinson's disease (PD) is a slowly progressive neurodegenerative disorder defined by both motor and non-motor features. Oropharyngeal dysphagia is a common motor feature and although it can occur at any stage of the disease, is more frequently noted as the disease progresses [1]. Studies have shown that subjective dysphagia is present in at least a third of people with Parkinson's disease (PwP) and that objectively measured dysphagia rates were much higher with at least eighty percent of PwP being affected [1-4]. Dysphagia is associated with an increased risk of aspiration pneumonia, malnutrition dehydration and death [1-9]. It is also well recognised to have a significant impact on quality of life for the PwP and their carers [1,3,4,9,10].

The National Institute for Clinical Excellence (NICE) and best practice speech and language therapy guidance advise early referral to a speech and language therapist (SLT) for assessment of any reported dysphagia [5,6]. They advocate that further investigation such as videofluoroscopy of swallow (VF) be considered as an adjunct to a full case history and clinical bedside assessment (CBA) of the PwP, in particular if there is concern regarding possible silent aspiration [5,6].

VF allows detailed and accurate real time review of the anatomy and physiology of the oropharyngeal swallow mechanism, and facilitates the testing of different swallow techniques, postures and food and fluid consistencies. The outcome of the VF allows the SLT to give the PwP and their carers the safest advice regarding food texture and fluid consistency, as well as general safer eating practices to minimise risk of aspiration [6,7].

There are relatively little published data available regarding the clinical outcomes of this investigation in particular on change to advice regarding food and fluid consistency. The objective of this study was to document the additional clinical information yielded from the VF in particular dietary and fluid consistency change recommendations from CBA.

Methodology

This was a pragmatic observational study of all PwP attending North East Glasgow Movement Disorder Service who had at least 1 VF during the period 2010 - 2016 as either an outpatient or inpatient. All VF were performed by one of two SLTs and results directly discussed with PwP and their carers as well as with the referring SLT. Demographic data was noted including: age at VF, duration of PD at VF, Hoehn and Yahr score [11] and mortality data. We also noted the presenting complaint to the SLT, any current dietary and fluid modifications and whether as a result of the VF there was a documented recommendation to modify food and/or fluid consistency from previous CBA recommendation.

Results

A total of 68 VF were carried out on 60 PwP between February 2010 and July 2016.

Among these patients two had 3 VF carried out, and four had 2 VF. Two thirds of patients were male (40/60; 66%) and the mean age was 76 years (range 51 - 93). The majority of VF were performed on an outpatient basis (55/68, 80.9%). At the time of VF, the mean disease duration was 4.8 years (range 0 - 28 years), furthermore 23/68 were in stage 1-2.5, 22/68 stage 3 and 23/68 were in stage 4 - 5 according to Hoehn and Yahr score. A quarter (15/60) of the patients died over the study period at a mean of 14 months (range 0 - 34 months) following their VF. Mean disease duration was 7.5 years (range 1 - 24) at death. All but one had been advised to modify food and/or fluid consistencies following VF (14/15 93%), and were compared with 32/45 (71%) of survivors. Of those who died aspiration pneumonia (9/15), pneumonia (2/15) or PD (2/15) was listed as the primary cause of death in 11/15 (73%). This group also had more severe disease with 9/16 being in Hoehn and Yahr stage 4 - 5.

The presenting complaint/s documented for the PwP undergoing a VF are illustrated in table 1. A change in diet and/or fluid consistency was noted in 32/68 (47%) of VF reports. Changes were advised to current diet texture in over one third of VF (26/68; 38.2%). Following VF 14/68 (20.6%) were advised a change to softer food, on the other hand 12/68 (17.6%) were advised a less modified diet i.e. a more normal diet than they were currently taking. Fluid consistency changes were recommended in 12/68 (17.6%) with half advising a change to thicker consistencies, and half upgraded to more normal fluids (Figure 1).

Reason	Number of Videofluoroscopies	(%)
Food/tablets sticking	43	(63.2%)
Coughing after food/fluid	18	(26.5%)
Recurrent chest infections	17	(25%)
Choking episodes	14	(20.6%)
Acute stroke	1	(1.5%)

Table 1: Presenting complaint/s to the Speech and Language Therapist.

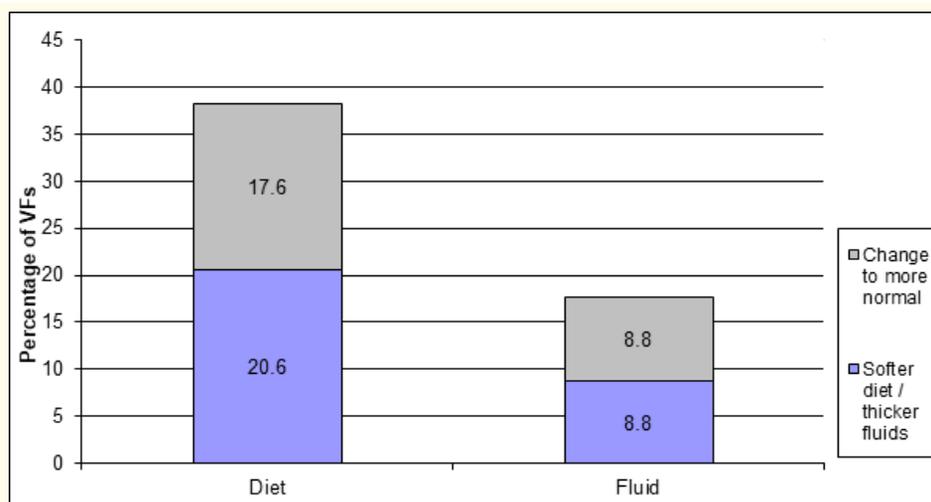


Figure 1: Percentage of video fluoroscopies leading to dietary and fluid change.

6/68 (8.8%) VF reports advised changes to both food and fluid consistencies. All VF reports note individualised recommendation given to PwP and or their carers about safer swallowing practices. Four PwP were referred back to the Movement Disorder Specialist with the recommendation that an upper gastrointestinal endoscopy be considered to exclude oesophageal pathology as the cause for dysphagia. No significant pathology was found.

Discussion

Our study shows a yield in terms of advised dietary texture and/or fluid consistency change of 47%. This evidences the value of VF as an adjunct and indeed the gold standard to simple CBA [8]. VF also allowed a further opportunity to advise and educate on safer eating and drinking practices with the added value of demonstrating and reinforcing these recommendations in real time [9]. A significant proportion on PwP in this study had their diets and or fluids downgraded to a safer consistency to reduce the risk of aspiration. However our study demonstrates that following a VF many were also changed to more normal diet and or fluids with possible associated quality of life benefits for PwP and their carers.

Our study supports the evidence base for oropharyngeal dysphagia occurring at all stages of the disease [1]. We note however that in our study population the Hoehn and Yahr scores are evenly distributed across the stages. This may reflect the dichotomy in the literature with some studies finding a significant relationship between dysphagia, disease duration and severity and others not [1,3,4].

Several PwP had more than 1 VF over the study period. This reflects the progressive nature of the disease and the recognition that swallowing abilities can change over time [1,4]. It also supports best practice guidance which advocates the need for ongoing vigilance, early referral and frequent follow-up [1,2,5,6]. This study also highlights that pathologies other than Parkinson's disease may cause dysphagia – such as stroke disease in one case, and that direct visualisation at endoscopy may be necessary to exclude oesophageal pathology.

Conclusion

In conclusion this observational study highlights the additional clinical utility of VF in our movement disorder service, not only to advise on a safer diet to reduce the risk of aspiration, but also potentially improving quality of life by having a more normal diet. To the best of our knowledge this is the first study reporting on change in dietary and fluid recommendation in a Parkinson's population. We recognise however that our methodology has limitations in particular not capturing the detail of the CBA that led to the therapist recommend-

ing VF. Data regarding quality of life and importantly concordance with SLT advice and would also be informative, as would population demographics for all PwP attending the service for comparison. We suggest these could further be evaluated in a larger prospective study.

Bibliography

1. Kalf JG., *et al.* "Prevalence of oropharyngeal dysphagia in Parkinson's disease: a meta-analysis". *Parkinsonism and Related Disorders* 18.4 (2012): 311-315.
2. Bird MR., *et al.* "Asymptomatic swallowing disorders in elderly patients with Parkinson's disease: a description of findings on clinical examination and videofluoroscopy in sixteen patients". *Age Ageing* 23.3 (1994): 251-254.
3. Miller N., *et al.* "Hard to swallow: dysphagia in Parkinson's disease". *Age Ageing* 35.6 (2006): 614-618.
4. Heijnen BJ., *et al.* "Neuromuscular electrical stimulation versus traditional therapy in patients with Parkinson's disease and oropharyngeal dysphagia: effects on quality of life". *Dysphagia* 27.3 (2012): 336-345.
5. NICE (National Institute for Clinical Excellence). "Parkinson's Disease: diagnosis and management in primary and secondary care". National Collaborating Centre for Chronic Conditions, Royal College of Physicians (2006).
6. Kalf JG., *et al.* Guidelines for speech-language therapy in Parkinson's disease. Nijmegen, The Netherlands/Miami (FL), U.S.A.: ParkinsonNet/NPF.
7. Van Hooren MRA., *et al.* "Treatment effects for dysphagia in Parkinson's disease: A systematic review". *Parkinsonism and Related Disorders* 20.8 (2014): 800-807.
8. Argolo N., *et al.* "Videofluoroscopic predictors of penetration-aspiration in Parkinson's disease patients". *Dysphagia* 30.6 (2015): 751-758.
9. Manor Y., *et al.* "Video-assisted swallowing therapy for patients with Parkinson's disease". *Parkinsonism and Related Disorders* 19.2 (2013): 207-211.
10. Plowman-Prine EK., *et al.* "The relationship between quality of life and swallowing in Parkinson's disease". *Movement Disorders* 24.9 (2009): 1352-1358.
11. Hoehn MM and Yahr MD. "Parkinsonism: onset, progression and mortality". *Neurology* 17.5 (1967): 427-442.

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