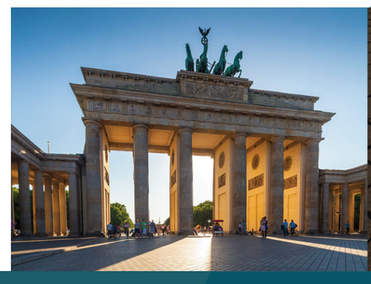
UNIVERSITÄT ZU LÜBECK
CBBM | CENTER OF BRAIN, BEHAVIOR AND METABOLISM



20th International Congress of Parkinson's Disease and Movement Disorders
JUNE 19-23 2016
BERLIN, GERMANY

Reliability of a newly developed protocol for fiberoptic endoscopic evaluation of swallowing in Parkinson's patients (PARK-FEES)

Janine A Simons [1], Stefan von Clarmann [2], Tobias Warnecke [3]
[1] Department of Neurology, Center of Brain, Behavior and Metabolism, Universität zu Lübeck, Germany [2] Center for Geriatric Medicine, CNS Diseases and Mobility, Mühlendorf a. Inn District Clinics, Haag, OB, Germany [3] Department of Neurology, University Hospital of Muenster, Germany

BACKGROUND

- Dysphagia as a frequent and clinically relevant symptom of Parkinson's disease (PD) is leading to various threats to health and reduction in quality of life.
- Although the penetration-aspiration scale has become a standard for fiberoptic endoscopic evaluation of swallowing (FEES), it fails to identify beginning oropharyngeal symptoms.

OBJECTIVE

- A new protocol for FEES specified for dysphagia diagnosis among PD patients was recently developed in a prior study among 142 PD patients Ref 1, which is now aimed to be investigated for inter-coder agreement. Tab 1

Table 1 PARK-FEES study phases

Phase I – Development PARK-FEES
Part 1 – FEES protocol construction, N=20* Step 1 – Parameter generation for symptom scales, incl. gold standard Step 2 – Modification of generically scales / scales for other diseases, and specification on PD
Part 2 – Pilot study, N=45** Step 1 – Feasibility of preliminary PARK-FEES protocol Step 2 – Scales modification (19 parameters)
Part 3 – Main study, N=77** Step 1 – Application of final PARK-FEES protocol Step 2 – Content and construct validity test Step 3 – German to English translation
Phase II – Re-evaluation PARK-FEES
Part 1 – Inter-coder agreement study, N=77*** Step 1 – Independent offline evaluation of FEES video recordings from main study using PARK-FEES by two FEES experts Step 2 – Interrater reliability analyses (all three coders & two a posteriori evaluations only)
Part 2 – Result evaluation (in progress) Step 1 – Definition of overall severity classification (score algorithm)
*healthy relatives of PD patients, comparison with standard values **patients diagnosed with PD, according to UK Brain Bank criteria ***video records of PD patients from main study

METHODS

- FEES video recordings from 77 PD patients at a German Movement Disorder Center (aged 70.47 +/- 8.40 (mean, SD), disease duration 11.19 +/- 6.27 y., median Hoehn & Yahr stage 3) previously evaluated with the new PARK-FEES protocol were re-evaluated independently from 2 experts.
- PARK-FEES contains 10 ordinal parameters to describe early and advanced dysphagia symptoms typically occurring in PD. Tab 2

Table 2 Parameters of PARK-FEES protocol

	Parameters *(inspection of structure, sensory–reflex–analyses, functional exam, swallowing tests)**	Scale **[1]
1.	Secretion management	0–4 (0=normal)
2.	Vocal cord motility ([i:] phonation)	0–2 (0=normal)
3.	Glottal closure (tightly breath-holding)	0–2 (0=normal)
4.	Voluntary cough impact	0–2 (0=normal)
5.	Bolus leakage (H2O, BREAD, COOKIE)	0–4 (0=normal) each
6.	Residues (H2O, BREAD, COOKIE, TABBLET, PILL)	0–3 (0=normal) each
7.	Clearance effectiveness (H2O, BREAD, COOKIE, TABLET, PILL)	0–4 (0=normal) each
8.	Leakage afterwards (H2O, BREAD, COOKIE)	0–4 (0=normal) each
9.	Penetration aspiration scale (PAS) (H2O, BREAD, COOKIE)	1–8 (1=normal) each
10.	Type of penetration/aspiration: pre–, intra–, post-deglutitive (H2O, BREAD, COOKIE)	0–3 (0=normal) each

* Test instructions were standardized and performed in medication on state condition. Swallowing samples: 90ml spring water (dyed blue), half slice of bread with crust and spread (approx. 8*7*1 cm), German butter chocolate cookie (diameter 5 cm), divisible uncoated ProLife VitaFit tablet (approx. 19*8*7 mm), uncoated HepaLichtenstein placebo pill (diameter 8 mm)
** Underlying verbal symptom explanations to describe the severity level for each item.

- Examination order was performed in a standardized procedure incl. anatomic-physiological exam, nutrition ingestion of 3 diff. consistencies, and medication samples.
- Score assessment was done twice in order o distinguish typical swallowing performance from possible outliners (maximum values).
- Interrater reliability was calculated for all parameters, and separately for each consistency using Krippendorff's Alpha (95% CI; bootstrapping 10k).

RESULTS

- 73% of patients presented with swallowing disabilities (44% oropharyngeal, 29% penetration/aspiration).
- 11 of the 26 estimations achieved a Kalpha above the threshold of .60 indicating good inter-coder agreements when tested in all 3 observers' evaluations (original examination situation and both a posteriori ratings).
- Highest values resulted for "Clearance effectiveness PILL" (Kalpha= .89, CI .78-97), "Residues PILL" (.88; .73-1.00), and "Leakage afterwards BREADmax" (.81, .64-.96).
- Even more parameters can be outlined with excellent interrater reliability by comparing both posteriori observed evaluations pairwise.

CONCLUSIONS

- Using PARK-FEES enables clinicians to accurately characterize dysphagia symptoms and supports to differentiate early oropharyngeal from clinically advanced stages.
- Furthermore, it demonstrates a high level of interrater reliability.
- The next step is to define a score classification algorithm for overall assessment of dysphagia severity in order to facilitate interprofessional communication and appropriate treatment strategies.

REFERENCE 1 Simons JA, et al. Development and validation of a new screening questionnaire for dysphagia in early stages of Parkinson's disease. Parkinsonism Relat Disord 2014; 20(9): 992 – 998

DISCLOSURE Nothing to report.

CONTACT Dr. phil. Janine Simons Janine.Simons@neuro.uni-luebeck.de www.neuro.uni-luebeck.de **Poster-PDF:** www.janine-simons.de &

IM FOCUS DAS LEBEN
* FOCUS ON LIFE