



NSW Speech Pathology Evidence Based Practice Interest Group

Critically Appraised Paper (CAP)

CLINICAL BOTTOM LINE: The use of pulse oximetry in the evaluation of dysphagia is useful as a tool to identify compromised pulmonary functioning in dysphagia. It doesn't indicate aspiration but does indicate compromised pulmonary functioning.

Clinical Question: In patients with neurogenic dysphagia, is pulse oximetry a reliable assessment tool in identifying episodes of aspiration?

Citation:

Colodny N, *Effects of Age, Gender, Disease and Multisystem Involvement on Oxygen Saturation levels in Dysphagic Persons* *Dysphagia* 16: 48-57 (2001)

Design/Method:

Baseline measures of SpO₂ and heart rate taken for 10 min, then taken every minute during the procedure and for 10 minutes after. The procedure involved fiberoptic endoscopic evaluation of swallow (FEES). Dysphagic subjects were given 5-150mls of liquid or puree as tolerated until aspiration via FEES. SPs were blinded to SpO₂ levels throughout FEES.

Average length of feeding = 12minutes (range: Aspiration on 1st bolus – 30min).

FEES were videorecorded & time of aspiration matched to corresponding SpO₂ printouts. A third SLP looked at FEES with SpO₂ printouts.

Controls were given approx 150mls of a liquid, puree, chewable solid while being monitored via pulse oximetry.

Participants:

N = 181. 117 female, 64 male

Experimental Group: 104 subjects aged 62-102 yrs from large nursing home identified as having significant signs of pharyngeal dysphagia from clinical bedside examination by SLP. Also referred for FEES. 52.9% CVA, 25.9% Dementia, 14.4% COPD and 6.7% other diagnosis. No patients were oxygen dependent.

Control Group: 77 without dysphagia (control) aged 23-93 from community. Nil history of dysphagia or neurological disease or head and neck cancer and eating a regular diet.

Results: SpO₂ levels significant between dysphagia groups i.e. penetrators, liquid and solid aspirators. Solid aspirators had lower SPO₂ following feeding. Multi-system involvement not significant. Gender not a factor in SpO₂ levels but interacted with age and diagnosis. Older subjects more likely to have lower SPO₂ levels however likely to be lower again if also dysphagic. Lower SPO₂ levels also detected pre-feeding and after in subjects who had COPD .

Comments – Strengths/weaknesses of paper:

1/ Controls did not undergo FEES examination; 2/ Trial amounts were small (5mls); 3/ 30 normal controls aged younger than 65 were disregarded at results stage, so age effects unable to be analysed; 4/ Detailed design; 5/ Different aetiologies were grouped together; 6/ Control group smaller and younger than experimental group; 7/Control group did not have FEES; 8/ Procedure was not matched between control and experimental groups.

Level of Evidence (NH&MRC): III (2) Cohort study – design flaws (2 groups of patients only 1 having the full experimental intervention)

Appraised By: Adult Communication and Swallowing

Date: 15 May 2006

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