*i*CAHE JC Critical Appraisal Summary

Journal Club Details

Journal Club location	Flinders Medical Centre
JC Facilitator	Pamela Hewavasam
JC Discipline	Speech Pathology
CAT completed by:	Matt Ransom

Question

What are the differences in swallow physiology in patients with left and right hemispheric strokes?

Review Question/PICO/PACO

P: Patients with left and right hemispheric strokes

I: Lesion lateralization and lesion volume

O: Swallowing impairment

Article/Paper

Wilmskoetter, J., Martin-Harris, B., Pearson Jr, W.G., Bonilha, L., Elm, J.J., Horn, J. and Bonilha, H.S., 2018. Differences in swallow physiology in patients with left and right hemispheric strokes. Physiology & behavior, 194, pp.144-152.

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Article Methodology:　　　　Retrospective cohort study

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Ques No.	Yes	Can't Tell	No	Comments
1	√			**Did the study address a clearly focused issue?** The goal of the study was to systematically compare the swallow physiology of patients with left and right unilateral strokes at the group- and the patient-level by using a broad array of swallow physiology measures to provide detailed insights into differences in swallow impairment.
2	√			**Did the authors use an appropriate method to answer their question?** Retrospective, observational, cross-sectional study **Is it worth continuing?** Yes
3		√		**Was the cohort recruited in an acceptable way?** - Could also be yes. Not heaps of detail. We selected patients from a larger study of 68 patients with first ever acute ischemic strokes admitted to the Medical University of South Carolina. Selection criteria were unilateral stroke and brain MRI followed by MBSS during the acute hospital stay. We excluded patients with a history of diseases with a high risk to affect swallow physiology, patients with documented neurological worsening between the MRI and MBSS, and patients younger than 21 years.
4	√			**Was the exposure accurately measured to minimize bias?** All enrolled patients received a diffusion weighted MRI (DW-MRI) during their hospital stay on a Siemens 1.5 T Intera scanner using a 12- channel head coil located at the Medical University of South Carolina. One rater (JW), trained in reading DW-MRIs of patients with strokes, manually drew all lesions using the software MRIcron and determined lesion locations and sides for all patients. A second rater (LB), a neurologist with special expertise in lesion symptom mapping analyses, checked all lesion maps for accuracy. The lesion maps were normalized into standard space and co-registered to the MNI 152 1mm atlas to allow for comparisons of lesion locations across patients by creating a lesion overlay. We calculated the volume of the stroke lesion based on the number of voxels being outlined. Each voxel had a size of 1mm×1mm×1mm and, therefore, the lesion volume was the number of lesioned voxels in cubic mm.
5	√			**Was the outcome accurately measured to minimize bias?** Measured swallow physiology using the Modified Barium Swallow Impairment Profile (MBSImP™©), Penetration-Aspiration Scale (PAS), swallow timing, distance, area, and speed measures
6	√			**Have the authors identified all important confounding factors?** See table 1 **Have they taken account of the confounding factors in the design and/or analysis?** Yes
7			√	**Was the follow up of subjects complete enough?** Acute only during first hospital stay

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8				**What are the results of this study?** At the group-level, there were no differences in MBSImP oral swallow impairment scores between patients with left and right hemisphere stroke. In adjusted analyses, patients with right hemisphere strokes showed significantly worse MBSImP pharyngeal total scores (p=0.02), worse MBSImP component specific scores for laryngeal vestibular closure (Bonferroni adjusted alpha p≤0.0029), and worse PAS scores (p=0.03). Patients with right hemisphere strokes showed worse timing, distance, area, and speed measures. Lesion volume was significantly associated with MBSImP pharyngeal residue (p=0.03) and pharyngeal total scores (p=0.04). At the patient-level, 24% of patients (4 left, 7 right) showed opposite patterns of MBSImP oral and pharyngeal swallow impairment than seen at group-level. Authors concluded that the study showed differences in swallow physiology between patients with right and left unilateral strokes with patients with right hemisphere strokes showing worse pharyngeal impairment. Lesion lateralization seems to be a valuable marker for the severity of swallowing impairment at the group-level but less informative at the patient-level.
9				**How precise are the results?** P values and 95% Confidence intervals are reported. Confidence intervals demonstrated a range of precision across conditions.
10				**Do you believe the results?**
11	Journal Club to discuss			**Can the results be applied to the local population? Choose relevant context issues. The following are only suggestions to prompt discussion.** **CONTEXT ASSESSMENT** – *Infrastructure* – *Available workforce (? Need for substitute workforce?)* – *Patient characteristics* – *Training and upskilling, accreditation, recognition* – *Ready access to information sources* – *Legislative, financial & systems support* – *Health service system, referral processes and decision-makers* – *Communication* – *Best ways of presenting information to different end-users* – *Availability of relevant equipment* – *Cultural acceptability of recommendations* – *Others*
12				**Were all important outcomes considered?**
13				**Are the benefits worth the harms and costs?**
14				**What do the study findings mean to practice (i.e. clinical practice, systems or processes)?**

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15		**What are your next steps?** *ADOPT, CONTEXTUALISE, ADAPT* **And then (e.g. evaluate clinical practice against evidence-based recommendations; organise the next four journal club meetings around this topic to build the evidence base; organize training for staff, etc.)**
16		**What is required to implement these next steps?**