

P343 EFFECTS OF UNILATERAL AND BILATERAL CEREBELLAR MAGNETO-ELECTRIC STIMULATION ON PHARYNGEAL CORTICAL ACTIVITY AND SWALLOWING BEHAVIOUR

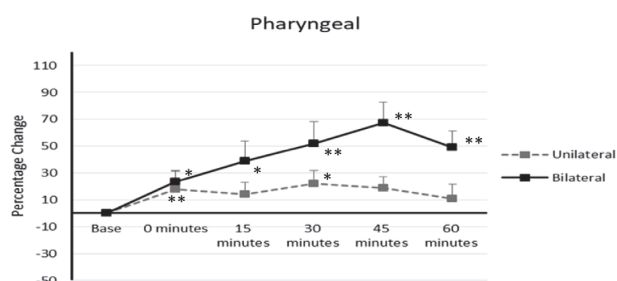
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Background The cerebellum is recognised to bilaterally modulate sensorimotor function and has recently been shown to play a role in swallowing. Indeed, we have previously shown that unilateral cerebellar repetitive trans-cranial magnetic stimulation (rTMS) can excite corticobulbar motor pathways to the pharynx. However, the comparative effects of bilateral versus unilateral cerebellar rTMS on these pathways remain unknown.

Method In this cross-over study, healthy participants (n=13) were randomly allocated to receive unilateral or bilateral 10 Hertz cerebellar rTMS. Participants were intubated with pharyngeal electromyography and/or manometry catheters to acquire motor evoked potentials (MEPs) and pressure recordings. The first part of the study involved using single pulse TMS to measure baseline motor cortex pharyngeal MEP amplitudes, before either unilateral or bilateral cerebellar rTMS was administered. Repeat measures of PMEP amplitude were performed at 15-minute intervals for an hour following in interventions. Thereafter, in further studies, a cortical 'virtual lesion' (V/L) was applied prior to cerebellar rTMS with pre and post PMEPs and measurements of swallowing accuracy using a behavioural task.

Results Across the study arms, bilateral cerebellar rTMS was significantly more effective than unilateral (Unilateral vs bilateral MEP P=0.0005 *figure 1*; V/L MEP and behaviour P=0.0005 and 0.0005 respectively).



Abstract P343 Figure 1

Conclusion Bilateral cerebellar rTMS shows greater facilitatory brain and behavioural swallowing effects than unilateral stimulation with the potential to be a more powerful clinical therapy for neurogenic dysphagia.

P344 TOWARDS A DATA-DRIVEN APPROACH TO THE IMPLEMENTATION OF THE LOW-FODMAP DIET IN IBS

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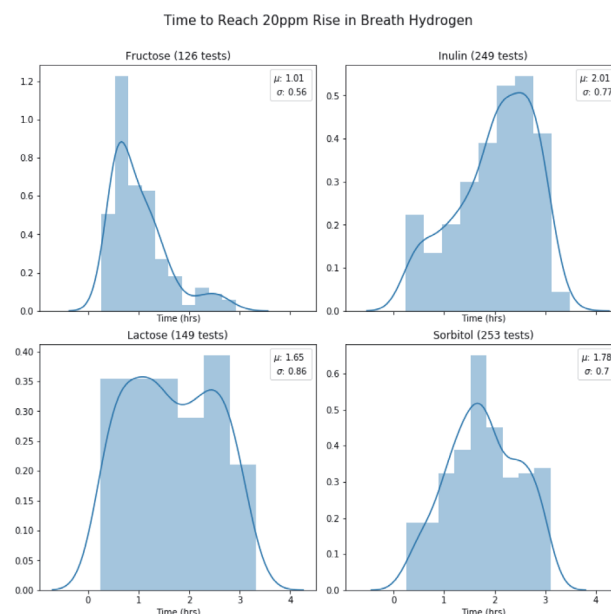
Introduction The low-FODMAP diet (LFD) is now frequently used in the management of Irritable Bowel Syndrome (IBS).

However, the process can be lengthy, has no standardised protocol and relies exclusively on self-reported symptoms, which are subjective and can be unreliable, in particular when they are reported retrospectively.

Methods A total of 2423 carbohydrate challenges (695 lactose 25 g, 531 fructose 25 g, 460 sorbitol 10 g & 737 inulin 10 g) were performed by 1349 participants using a portable app-connected breath analysis device from April 2018 until February 2020. The substrate was administered in a fasting state to minimise the likelihood of symptom generation. Upon ingestion of the substrate, breath tests were performed every 15 minutes for 3 hours. The criterion for a positive challenge was a rise in breath hydrogen of 20 ppm or greater from the lowest preceding breath hydrogen measurement.

Results It was found that 21% of lactose, 24% of fructose, 55% of sorbitol, and 34% of inulin challenges reached the positive test criterion. The mean time taken to reach this criterion was respectively 1.7 h, 1.0 h, 1.8 h and 2.0 h illustrating some of the temporal dynamics of carbohydrate malabsorption and potential metabolism by the gut microflora (figure 1). The area-under-the-curve (AUC) was 88.6 ppm.h, 87.5 ppm.h, 82.4 ppm.h and 68.8 ppm.h for lactose, fructose, sorbitol and inulin respectively.

Conclusions Less than a quarter of lactose or fructose challenges were positive. Despite sorbitol being only passively absorbed (Beaugerie et al, *Gastroenterology*. 99 (1990): 717–723), 45% of participants yielded a negative challenge. Similarly, for inulin, which is entirely non-absorbable, 66% of participants did not reach the positive test criterion. It is likely that some participants would have eventually reached the criterion for inulin. It is also likely that only some participants are host to the species of colonic bacteria with the capability to cleave inulin's $\beta(2,1)$ bonds. It was seen that the chain length greatly affects mean time to reach the positive criterion, despite the AUC being similar for each FODMAP, except inulin. This offers evidence that significant amounts of hydrogen may have continued to be produced in the case of inulin had the challenge duration been extended.



Abstract P344 Figure 1 Distributions of the time taken to meet positive challenge criterion