Abstract OC-062 Table 1

Before			After			p value ADR
Quartile	N	ADR (%)	N	ADR (%)	Difference ratio	
Upper	785	27.4	2508	21.5	0.78	<0.001
Upper middle	1116	17.5	3119	19.2	1.10	0.20
Lower middle	785	13.3	2539	19.3	1.45	<0.001
Lower	936	7.3	2405	13.9	1.90	<0.001

N = number of colonoscopies

≥25 procedures during the period before were ranked according to ADR and quartiles constructed. Change in Buscopan use was used as a surrogate marker for intervention uptake. A corrected Chi Squared test was used to check for significant change.

Results One hundred and eighteen and 68 colonoscopists were included in the global and quartile analyses. The study included 17508 colonoscopies, 4351 and 13157 in the pre and post intervention periods respectively. There was a significant global increase in buscopan use (15.8 vs. 54.4%, $p < 0.001$), also seen in each quartile, and ADR (16.0 vs. 18.1%, $p = 0.002$), Table 1.

Conclusion Our evidence based educational intervention resulted in a significant change in behaviour, evidenced by increased Buscopan use. A significant increase in ADR occurred globally and in the two lower quartiles. A fall was seen in the upper quartile, but the ADR in this group remained above that in the other groups and the global mean of 18.1%. This study demonstrates that simple evidence based educational interventions with support can significantly change practice and ADR, particularly amongst the poorest performers.

REFERENCE

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Disclosure of Interest None Declared.

Joint neuro-gastroenterology/motility and AGIP section free papers

OC-063 PHARYNGEAL ELECTRICAL STIMULATION (PES) IN DYSPHAGIA POST-ACUTE STROKE: A DOUBLE-BLIND, RANDOMISED TRIAL

¹DH Vasant*, ¹E Michou, ²P Tyrrell, ¹V Jayasekaran, ¹S Mistry, ³N O'Leary, ³A Vail, ²S Anwar, ²E Gamble, ¹S Hamdy on behalf of North West Stroke Research Network. ¹Gastrointestinal Centre, The University of Manchester, Salford Royal NHS Foundation Trust; ²Stroke Medicine, The University of Manchester, Manchester; ³Biostatistics, The University of Manchester, Salford Royal NHS Foundation Trust, UK

10.1136/gutjnl-2014-307263.63

Introduction Pharyngeal Electrical Stimulation (PES) is known to activate pharyngeal motor pathways. It has shown promise in acute stroke pilot studies, having improved swallowing function at 2-weeks.^{1,2}

Methods We aimed to recruit 100 hospitalised patients with new-onset dysphagia within 6 weeks of stroke at three Greater Manchester centres. Participants were randomised to either Active or Sham PES. Both interventions were delivered via an intraluminal pharyngeal catheter, left *in situ* for 10 min, once-daily for 3 days. Active intervention was delivered at optimal parameters (5Hz, at 75% maximum-tolerated intensity). The primary outcome measure was intended to be penetration-aspiration scores on

videofluoroscopic assessment at 2-weeks. Owing to logistic difficulties with videofluoroscopy, prior to unblinding and analysis of data, we upgraded the dichotomised Dysphagia Severity Rating (DSR) scale,² assessed by independent, blinded speech therapists, to be the primary outcome: mild/no dysphagia (scores 0–3) or moderate-severe dysphagia (scores 4–12). We analysed under the intention to treat principle using logistic regression with an odds ratio (OR)/ Hazards ratio (HR) >1 indicating a favourable outcome for the active group.

Results We recruited 36 participants: median age 71y; 61% male, 92% moderate-severe dysphagia; 58% with enteral feeding tubes in-situ. At 2-weeks, 11/18 (61%) in the active group had DSR <4 compared with 9/18 (50%) in the sham group: OR (95% CI) = 2.53 (0.52 to 14.56). Patients in the active group also had shorter times to hospital discharge (39 vs. 52 days, HR (95% CI) of 1.19 (0.55, 2.57)) and removal of nasogastric feeding tubes (8 vs. 14 days, HR (95% CI) of 2.01 (0.51, 7.93)). By 3 months, all but 3 patients in each group had DSR <4: OR (95% CI) = 1.0 (0.13 to 7.02).

Conclusion The observed differences are consistent with the hypothesised effect of PES in accelerating recovery of swallowing over the first 2-weeks following treatment. Lower than desired recruitment prevents definitive answers from this study but study design experience and outcome data reported here are essential to inform a definitive, multi-centre randomised trial.

REFERENCES

- 1 Fraser, *et al.* 2002
- 2 Jayasekaran, *et al.* 2010

Disclosure of Interest None Declared.

OC-064 PSYCHOPHYSIOLOGICAL AND CORTICAL RESPONSES TO VISUALLY INDUCED MOTION SICKNESS

¹AD Farmer*, ²VF Ban, ³V Giampietro, ⁴P Andrews, ¹Q Aziz. ¹Wingate Institute of Neurogastroenterology, Barts and the London, UK; ²Wingate Institute of Neurogastroenterology, Barts and the London, UK; ³Institute of Psychiatry, Kings College London, London, UK; ⁴Biomedical Sciences, St George's Hospital Medical School, London, UK

10.1136/gutjnl-2014-307263.64

Introduction Nausea is an aversive experience, which negatively impacts on quality of life, adherence to treatment and is a cause for discontinuation of the development of novel compounds. Significant knowledge gaps remain in our understanding of the cortical and psychophysiological mechanisms involved in the genesis and maintenance of nausea. We aimed to develop and validate a readily administered a visually induced motion sickness (VIMS) stimulus to examine the psychophysiological changes induced by the stimulus and characterise the changes in cortical activity using functional magnetic resonance imaging (fMRI).

Methods A 10-min video of motion and a control video of a still image were presented to 98 healthy volunteers (mean age

26 years, range 19–58 years, 53 male) in a randomised cross-over design. Validated questionnaires and visual analogue scales (VAS) were used for anxiety and nausea assessment. We monitored validated measures of autonomic and electrogastric activity at baseline and continuously thereafter. Subjects were stratified into quartiles based on nausea VAS scores with the upper and lower quartiles considered to be nausea sensitive and resistant respectively. Of these, 28 subjects of the 50 (mean age 25 years, range 20–49 years, 16 males, 11 nausea resistant) were exposed to the motion video during fMRI.

Results All subjects completed the studies without vomiting. The motion video induced nausea in 57/98 subjects (57%) associated with elevation of median nausea VAS scores (2.0 (IRQ 1–3) vs. 1.0 (IRQ 1–1), $p = 0.003$). Nausea sensitive subjects had lower normogastria:tachygastria ($p = 0.048$), increased sympathetic ($p = 0.002$) and decreased parasympathetic tone ($p = 0.03$) during the motion video in comparison to the control video. The motion video resulted in heightened neuronal activity in the left and right cerebrum, temporal lobe, middle temporal gyrus and occipital lobe ($p < 0.004$). Compared to nausea resistant subjects, the nausea sensitive group showed a paucity of activity in the left cerebrum, limbic areas and anterior cingulate cortex ($p < 0.001$).

Conclusion This study provides evidence to validate the motion video as a VIMS stimulus. Additionally, it demonstrates the cortical and psychophysiological changes induced by VIMS. These changes are as a result of the activation of a broad central network, reflecting the multi-dimensional nature of nausea. Sensitivity to VIMS may therefore be as a consequence of failure of, rather than excessive, activation of cortical areas concerned with the interoceptive and affective aspects of nausea.

Disclosure of Interest None Declared.

OC-065 FUNCTIONAL CORTICAL SWALLOWING ACTIVITY AND NEUROTRANSMITTERS CONCENTRATIONS ARE ALTERED FOLLOWING NEUROSTIMULATION OF PHARYNGEAL MOTOR CORTEX: AN FMRI AND RESONANCE SPECTROSCOPY (MRS) STUDY

¹E Michou*, ¹S Mistry, ²R Vidyasagar, ³D Downey, ²S Williams, ¹S Hamdy. ¹Gastrointestinal Sciences, University of Manchester, Manchester, UK; ²Centre for Imaging Sciences, University of Manchester, Manchester, UK; ³Institute of Brain, Behaviour and Mental Health, University of Manchester, Manchester, UK

10.1136/gutjnl-2014-307263.65

Introduction Combined pharyngeal electrical and transcranial-magnetic-stimulation or paired associative stimulation (PAS) is shown to induce beneficial neurophysiological and behavioural effects on swallowing in health and dysphagic stroke patients (Michou *et al.*, *Gastroenterology* 2012). Here, we investigate brain changes during swallowing following application of PAS, using fMRI and MR spectroscopy to measure neural activity and GABA concentrations in the motor cortices.

Methods Healthy adults ($n = 11$, 38 ± 9 yoa) were randomised to receive real and sham PAS on 2 separate visits. Event-related fMRI was performed to assess changes in brain activations in response to water and saliva swallowing and during rest. Data were analysed (SPM8), applying $p < 0.001$ uncorrected thresholds with contrasts of ‘water swallowing-rest’ and ‘saliva swallowing-rest’. MRS data were acquired before and after the fMRI on both visits and GABA concentrations were measured (AMARES, jMRUI).

Results Following real PAS, group analyses of ‘water swallowing-rest’ and ‘saliva swallowing-rest’ showed increased activation

Abstract OC-065 Figure 1

in motor and premotor areas bilaterally. Moreover, real PAS increased activations prominently in premotor areas contralateral to PAS (Figure 1 group mean brain activations following real PAS). Following real PAS, GABA concentrations in motor cortex decreased significantly both ipsilateral ($P = 0.008$) and contralateral ($P = 0.013$) to PAS.

Conclusion Targeted neurostimulation applied to the human pharyngeal motor cortex induces local and remote changes in both primary and non-primary areas for water and saliva tasks. Moreover, stimulation leads to reduction of the inhibitory neurotransmitter GABA, when associated with swallowing. These findings allow us to understand the mechanisms underlying the beneficial effects of neurostimulation in modulating the brain swallowing network.

Disclosure of Interest None Declared.

OC-066 INFLUENCE OF EXTRAVERSION ON BRAIN ACTIVITY AT BASELINE, PAIN ANTICIPATION AND VISCERAL PAIN PROCESSING

¹JK Ruffle*, ¹SJ Coen, ¹AD Farmer, ²M Kano, ³V Giampietro, ³S Williams, ¹Q Aziz. ¹Wingate Institute of Neurogastroenterology, Centre for Gastroenterology, Blizard Institute, Barts and the London School of Medicine and Dentistry, Queen Mary University of London, UK, London, UK; ²Behavioural Medicine, Tohoku University, Sendai, Japan; ³Department of Neuroimaging, Institute of Psychiatry, Kings College London, London, UK

10.1136/gutjnl-2014-307263.66

Introduction Eysenck proposed ‘trait theory’ of personality, where the dimensions extraversion (degree of optimism and sociability) and neuroticism (degree of anxiety and fear) encompass numerous individual qualities. Whilst the influence of neuroticism on the brain processing of pain is well studied, the role of extraversion in pain processing remains to be investigated and thus this was the aim of our study using functional magnetic resonance imaging (fMRI).

Methods 33 healthy volunteers participated in the study, all of whom consented in writing (17 male; mean age 29, range 20–53, all right handed). Extraversion was measured using the Eysenck Personality Questionnaire. fMRI data was acquired using a 3T GE MRI scanner during rest, anticipation of pain, and painful distal