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 electrogastrographic 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

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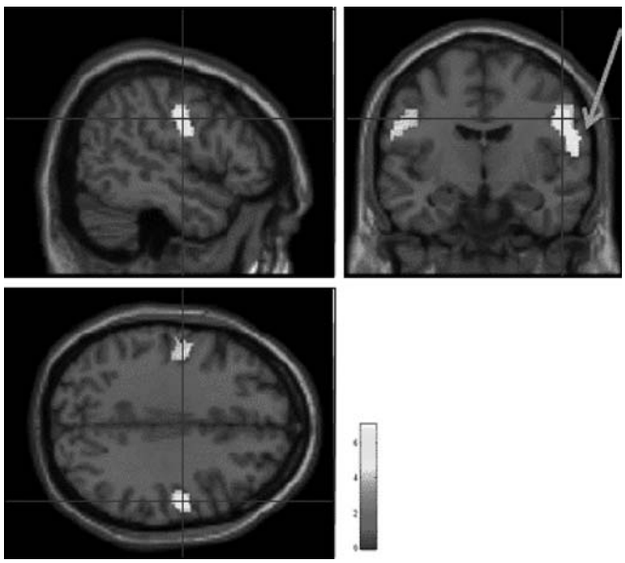
Introduction Combined pharyngeal electrical and transcranial-magnetic-stimulation or paired associative stimulation (PAS) is shown to induce beneficial neurophysiological and behavioural effects on swallowing in health and dysphagic stroke patients (Michou *et al*., *Gastroenterology* 2012). Here, we 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 in motor and premotor areas bilaterally. Moreover, real PAS increased activations prominently in premotor areas contralateral to PAS (Figure1 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.



Abstract OC-065 Figure 1

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

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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