PWE-143 HIDDEN ACHALASIA IN ABSENT CONTRACTILITY

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Introduction Absolute absent contractility (AAC) of the oesophagus has been affiliated with failed peristalsis.¹ and pathological reflux.² However, a group of patients showed minimal to no reflux in AAC which is a compatible feature of non-relaxing lower oesophageal sphincter (LOS). A group of these patients may indeed have achalasia but such a diagnosis is not catered to Chicago Classification (CC).³ when the LOS basal tone is <15 mmHg. This study aims to identify achalasia in patients not fulfilling the CC criteria.

Method AAC patients were selected between September 2014 and December 2017. The patients underwent the following inclusion and exclusion criteria.

Inclusion criteria: a) LOS relaxation pressure $\geq$ LOS basal tone (=non relaxing LOS), b) No remanence of peristalsis (defined by DCI $\geq$ 10–99 mmHgscm) or features sequential contraction waveform on line tracing.

Exclusion criteria a) Relevant surgical or endoscopic therapy, b) LOS basal tone outside of 5–15 mmHg range.

The control group was selected in the same period within the same population of AAC patients that fulfil the exclusion criteria but having remanences of peristalsis and relaxation pressures to be less than LOS basal tone during swallows.

Reflux parameters were compared between the two groups as a confirmation of non-relaxing LOS.

Reflux Disease Questionnaire (RDQ) and Hospital Odynophagia Dysphagia Questionnaire (HODQ) scores were also compared between groups.

Statistical method used was *t*-test.

Results 14 patients (F:M $\geq$ 9:5, age 28–73 years) and 9 controls (F:M $\geq$ 6:2, age 15–77 years) were found.

In the patient group, significantly reduced acid exposure time was observed (1.6 *vs.* 71.2, $p\geq 0.0002$), lower number of acid reflux events occurred (1.5 *vs.* 21, $p\geq 0.035$) and decreased RDQ scores were found (2 *vs.* 4.1, $p\geq 0.0047$).

Conclusion A group of patients with AAC demonstrate characteristics of achalasia which explains the absence of pathological reflux and also not meeting CC criteria for achalasia. Considering relative relaxation pressure and remanences of peristalsis can further distinguish these hidden achalasia patients. This study was limited by the sample size and requires larger population to confirm the findings.

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PWE-144 SUSCEPTIBILITY TO NAUSEA IS CONCURRENTLY ASSOCIATED WITH SUBCORTICAL MORPHOLOGY AND AUTONOMIC TONE

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Introduction Nausea is an unpleasant experience characterised by a range of gastric, cardiac, psychological and sopite symptoms. The brain processing of nausea is poorly understood. A number of factors have been proposed to influence an individual's experience of nausea, including age, gender, autonomic nervous system (ANS) and neuroanatomy; including how these factors interact at the brain level. Moreover, some individuals are significantly more susceptible to nausea than others, which we hypothesised could be attributed to differences in brain structure. We aimed to address this knowledge gap by studying subcortical brain morphology in subjects of varying sensitivities to nausea induced by motion sickness.

Methods 28 healthy subjects were included in this analysis (15 males; mean age 24 years), all of whom had resting parasympathetic cardiac vagal tone (CVT) and sympathetic cardiac sympathetic index (CSI) quantified. Subjects were exposed to a validated 10 min motion video, during which they rated their severity of nausea. All underwent high-resolution structural MRI and Bayesian vertex analysis was performed to segment subcortical nuclei and investigate shape changes associated with nausea susceptibility.

Results Increasing nausea scores were positively correlated with shape alterations of the left amygdala, right caudate and bilateral putamen, when regressed for CVT, age, and gender (Figure 1) (all FWER-corrected $p<0.05$). Interestingly however, with alternate regression analysis for CSI, age and gender, these morphological deformation changes became non-significant, suggestive that the aforementioned significant results are sympathetic-driven nausea-susceptibility changes.

Abstract PWE-144 Figure 1 Subcortical morphology differs in subjects susceptible to nausea. Green overlay shows aspects of nuclei positively correlated to nausea severity.

Conclusion Susceptibility to nausea is associated with subcortical nuclei morphology. We illustrate a strong association between the ANS and these structural differences. Given these morphological changes are arguably sympathetic-driven, future research should investigate methods to modulate autonomic tone via these nuclei, in order to establish therapies to diminish nausea susceptibility.

PWE-145 THE ROLE OF A GLUTEN FREE DIET IN 'LIFESTYLERS'? THE FIRST DOUBLE BLIND RANDOMISED STUDY

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Introduction A gluten free diet (GFD) is essential in the management of coeliac disease, as well as several studies demonstrating its utility as a dietary therapy in patients with irritable bowel syndrome. The aim of this double-blind placebo-controlled study was to assess the role of a GFD in a healthy population who take a GFD as a lifestyle choice ('lifestylers').

Methods Subjects were recruited via an advert, following exclusion criteria including coeliac disease. Following selection, subjects were commenced on a 2 week GFD following evaluation by a dietitian. Participants were then randomised to receive either organic gluten (Group A, Vital Gluten 14 g gluten protein/day) or gluten free flour (Group B) in pre-made bags, over a 2 week period. These were sprinkled on their food twice daily. Gastrointestinal Symptom Rating Scale (GSRS) scores were assessed at baseline (following 2 weeks GFD) and after 2 weeks of randomization. Data was analysed using SPSS version 22.

Results 45 subjects were identified with 28 participants recruited into the trial (Group A; $n \geq 14$, Group B; $n \geq 14$) following exclusion criteria. Median age was 36.5 years (range: 19–63) and 21 (75%) were female. There was no significant difference in baseline demographics between both groups ($p \geq 0.54$). Over a 2 week period there was no significant difference in gastrointestinal symptoms or fatigue in either group, as seen in table 1.

Abstract PWE-145 Table 1

GSRS	Group A (Baseline)	Group A (End of Intervention)		Group B (Baseline)	Group B (End of Intervention)	
	Mean +/- SD	Mean +/- SD	Difference from Baseline (Paired T-test), p-value	Mean +/- SD	Mean +/- SD	Difference from Baseline (Paired T-test), p-value
Abdo Pain	2.50 +/- 1.40	2.14 +/- 1.70	0.504	2.35 +/- 1.33	2.07 +/- 0.99	0.486
Reflux	1.71 +/- 1.13	1.64 +/- 1.15	0.72	2.50 +/- 2.20	2.57 +/- 1.95	0.895
Indigestion	2.14 +/- 1.35	2.07 +/- 1.32	0.876	2.14 +/- 1.35	1.79 +/- 0.97	0.336
Diarrhoea	2.71 +/- 1.93	1.64 +/- 0.92	0.03	1.85 +/- 1.46	1.86 +/- 1.35	1
Constipation	2.50 +/- 1.82	2.46 +/- 1.81	0.697	1.92 +/- 1.54	2.50 +/- 1.65	0.179
Fatigue Score	6.61 +/- 2.36	6.00 +/- 2.98	0.585	6.57 +/- 2.44	5.36 +/- 2.27	0.232

Conclusion This study demonstrates that gluten is unlikely to be the culprit agent for gastrointestinal symptoms or fatigue in healthy individuals. A GFD has no evidence base in individuals who do not have coeliac disease or IBS. The public should be discouraged from considering a GFD of their own volition.

PWE-146 PAIN ENDOPHENOTYPES DISPLAY COMPLEX SUBCORTICAL BRAIN MORPHOLOGICAL DIFFERENCES INFLUENCED BY AUTONOMIC NEUROPHYSIOLOGY OR PERSONALITY TRAITS

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Introduction Visceral pain is influenced by an array of individual factors. We have previously coalesced many of these, reporting that two major endophenotypic 'pain clusters' exist: Pain Cluster 1 (PC1), in comparison to Pain Cluster 2 (PC2), had higher neuroticism and anxiety scores, higher baseline sympathetic tone and serum cortisol, but during acute pain had a lower stimulus tolerance and increased parasympathetic tone. Meanwhile, PC2 had the converse profile at baseline and during pain. Endophenotypes were reproducible if reassessed annually, and the two most influential factors in allocating PCs were personality trait neuroticism and autonomic tone. We therefore hypothesised that PCs could be linked to altered subcortical morphology.

Methods Endophenotype were determined in 27 healthy subjects (14 male; mean age 30 years, PC1 ($n \geq 11$) and PC2 ($n \geq 16$), and all underwent structural neuroimaging. Subcortical morphological changes were studied contingent on PC. By alternate regression of PC factors, autonomic and personality traits, we analysed if PC associated brain morphology was affected by autonomic or personality-driven effects.

Results Neuroticism-driven effect PC1 subjects exhibited morphological deformation differences localised to the right amygdala and pallidum, when contrasted to PC2 subjects with effect of autonomic tone regressed. **Autonomic-driven effect:** Sympathetic tone (cardiac sympathetic index), with regression of personality trait neuroticism, was positively linearly associated with structural deformation changes at the left pallidum, right nucleus accumbens and right putamen (figure 1).

Abstract PWE-146 Figure 1 Subcortical morphology is associated with endophenotypic pain clusters. Sympathetic-driven effects (blue) [L pallidum, R accumbens and R putamen] in addition to neuroticism-driven effects (red) [R amygdala and R pallidum].