there are discriminatory breath compounds between pathology groups, but analysis of possible influences of the bowel preparation regimen is ongoing.

**Abstract PTU-072 Table 1**

<table>
<thead>
<tr>
<th></th>
<th>H3O+ ionisation (PTR MS)</th>
<th>NO+ ionisation (PTR MS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total samples excluded</td>
<td>62</td>
<td>87</td>
</tr>
<tr>
<td>Instrument fault, inadequate colonscopy, missing clinical data</td>
<td>42</td>
<td>49</td>
</tr>
<tr>
<td>Failure to reach quality control standards</td>
<td>20</td>
<td>38</td>
</tr>
<tr>
<td>Total samples included</td>
<td>344</td>
<td>319</td>
</tr>
<tr>
<td>Male</td>
<td>199</td>
<td>178</td>
</tr>
<tr>
<td>IBS patient</td>
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<td>181</td>
</tr>
<tr>
<td>Median age</td>
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<tr>
<td>Colonoscopy findings:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
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<td>83</td>
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<tr>
<td>Diverticular disease or haemorrhoids</td>
<td>40</td>
<td>37</td>
</tr>
<tr>
<td>Inflammatory bowel disease</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>Low risk polyps</td>
<td>87</td>
<td>85</td>
</tr>
<tr>
<td>Intermediate risk polyps</td>
<td>21</td>
<td>18</td>
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<tr>
<td>High risk polyps</td>
<td>60</td>
<td>51</td>
</tr>
<tr>
<td>Colorectal cancer</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Inherited polyposis (FAP, Lynch, Juvenile polyposis)</td>
<td>7</td>
<td>6</td>
</tr>
</tbody>
</table>

**Conclusions** Findings suggest that large scale breath testing is feasible within clinical practice. Whilst analysis of this preliminary dataset suggests the presence of discriminatory compounds between disease groups, analysis is ongoing. The true diagnostic accuracy of breath testing in this setting is expected to be revealed once all patients have been recruited to this study.

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**OWE-026**

**CONDITIONED PAIN MODULATION IN FUNCTIONAL GASTROINTESTINAL DISORDERS: SYSTEMATIC REVIEW & META-ANALYSIS**

1Ahmed Albouza*, 2Katherine Friss, 3Max Gysan, 4James Ruffle, 5Qasim Aziz, 1,4Adam Farmer. 1Centre for Neuroscience and Trauma, Blizzard Institute, Wingate Institute of Neurogastroenterology, Barts and the London School of Medicine and Dentistry, Queen Mary University of London, London, UK; 2Faculty of Health Sciences, Aarhus University, Aarhus, Denmark; 3School of Medicine, Heidelberg University, Heidelberg, Germany; 4Department of Gastroenterology, University Hospitals Midlands NHS Trust, Stoke on Trent, UK; 5Institute of Applied Clinical Science, University of Keele, Keele, UK

10.1136/gutjnl-2018-BSGAbstracts.409

**Background** Functional gastrointestinal disorders (FGID) are common and characterised by chronic unexplained visceral pain. Conditioned pain modulation (CPM), a bulbar reflex permitting “pain to inhibit pain” by descending inhibition, is a validated measure that interrogates the brain-gut axis. Previous studies variably implicate diminished CPM in the pathophysiology of FGID. We aimed to clarify this relationship by meta-analysis.

**Methods** Pubmed and Web of Science databases were searched until April 2017. Studies that were included comprised of randomised controlled studies investigating CPM in FGID patients with abdominal pain, defined according any iteration of the Rome criteria. We excluded studies if patients had a concomitant pain condition, other than FGIDs. The methodological quality of included studies was evaluated following an adapted scoring system for controlled trials.

**Results** We identified 645 studies, of which 14 were relevant and met the inclusion criteria; 12 included patients with irritable bowel syndrome (IBS), 1 with functional dyspepsia and 1 with functional abdominal pain. CPM was reduced in FGID patients versus healthy controls, odds ratio 3.95 (95% confidence interval 2.06–7.58) (Figure 1). There was significant heterogeneity in effect sizes (Q-test $\chi^2=59.4$, $p<0.001$, $I^2 \geq 78.1\%$) in the absence of publication bias. When including only studies with IBS, the odds ratio increased to 4.83 (Q-test $\chi^2=52$, $p<0.001$, $I^2 = 78.8\%$).

**Conclusion** CPM is significantly reduced in patients with FGID when compared to healthy controls. These data provide evidence that deficiencies in visceral pain bulbar-mediated descending inhibitory pathways is an important pathophysiological facet which could represent a novel treatment target.

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**OWE-027**

**EFFECTS OF PRIOR JEJUNAL FEEDING ON GASTRIC EMPTYING AND SYMPTOMS IN PATIENTS WITH DIABETIC GASTROPARESIS**

1Mark Forre, 2Caroline Hoad, 3Emily Tucker, 4Johnathan White, 5Luca Mariani, 1Helen Parker, 1University Of Zürich, Zurich, Switzerland; 2NIHR Nottingham Digestive Diseases Centre, Nottingham University Hospitals NHS Trust and University of Nottingham, Nottingham, UK; 3Sir Peter Mansfield Imaging Centre, School of Physics and Astronomy, University of Nottingham, Nottingham, UK

10.1136/gutjnl-2018-BSGAbstracts.410

**Introduction** Diabetic gastroparesis (DG) affects up to 20% patients with type I Diabetes Mellitus (DM). Impaired gastric function is thought to be the cause of nausea, vomiting, abdominal pain and impaired glycaemic control. DG does not respond reliably to intensive insulin regimes or prokinetic medications. Jejunal nutrition (JN) prior to a meal improves monolal mechanisms that induces normal gastric function. This study tests the hypothesis that JN feeding tube was placed. Liquid nutrient delivered direct to the jejunum triggering neuro-hormonal mechanisms that induces normal gastric function. This study tests the hypothesis that JN prior to a meal improves postprandial symptoms and gastric function.

**Methods** Diabetic patients with severe symptoms (GSCL >27), diabetic controls (GSCL <14) and healthy controls (HC) entered a randomised, double blind, controlled trial. Glycemia was controlled. NJ feeding tube was placed. Liquid nutrient (2 kcal/min) or water was infused for 60 min. The validated Nottingham Test Meal was then ingested (NTM liquid: 400 mL, 300 kcal; solid: 12 non-nutrient agar beads). Symptoms were documented (VAS), gastric function by MRI and the GI-peptide response was monitored. Mixed model analysis compared response to intervention and between groups.

**Results** 9 DG patients, 9 diabetic and 12 HC were recruited. There was no difference in demographic features between
Abstract OWE-027 Figure 1

Average sensation showing difference between JN and placebo (water) study arms with 95% confidence bands. Negative values demonstrate a reduction in symptoms with JN.

Abstract OWE-028

ACTIB TRIAL (ASSESSING COGNITIVE BEHAVIOURAL THERAPY IN IRRITABLE BOWEL): A MULTICENTRE RANDOMISED CONTROLLED TRIAL

Prof Hazel Everitt**, 1 Sabine Landau, 1 Paul Little, 1 Prof Felicity Bishop, 1 Gillian O’Reilly, 1 Alice Sibell, 1 Rachel Holland, 1 Stephanie Hughes, 1 Sula Wingassen, 1 Paul McCrone, 1 Kim Goldsmith, 2 Nicholas Coleman, 2 Robert Logan, 2 Trudie Chlader, 2 Rona Moss-Morris. 1 University of Southampton, Southampton, UK; 2 Kings College, London; 3 Southampton University Hospital, Southampton; 4 Kings College Hospital, London

10.1136/gutjnl-2018-BSGAbstracts.411

Introduction Irritable Bowel Syndrome (IBS) is a common chronic gastrointestinal condition, characterised by abdominal pain, bloating and change in bowel habit. Medications have limited benefit and many patients experience ongoing symptoms with significant impact on quality of life. Cognitive behavioural therapy (CBT) for IBS is recommended in NICE guidelines but NHS access is very limited. Objective: To determine the clinical effectiveness of therapist telephone delivered CBT and web-based CBT self-management with minimal therapist support compared to treatment as usual in adults with refractory IBS.

Methods ACTIB is a National institute for Health Research (NIHR) multicentre randomised controlled trial. Participants: Adults (≥18 years) with refractory IBS who had been offered first-line therapies (eg, antispasmodics, antidepressants or fibre-based medications) and had continuing IBS symptoms≥12 months, were recruited over 23 months from primary and secondary care in the south of England and London. The interventions were therapist telephone delivered CBT (TCBT) or Web-based CBT self-management with minimal therapist support (WCBT) versus treatment as usual (TAU). Main outcome measures: IBS Symptom Severity Score (IBS SSS) and Work and Social Adjustment Scale (WSAS). Baseline and follow up data was patient reported and collected on-line at 3, 6 and 12 months. Analysis: Intention-to-treat with multiple imputation at 12 months.

Results 558/1452 (38.4%) patients screened for eligibility recruited: 186 randomised to TCBT, 185 WCBT, 187 TAU. Mean baseline IBS SSS 265.0. At 12 months TAU IBS SSS score was 205.6, compared to 61.6 points lower for TCBT (95% CI 89.5; 33.8; p<0.001) and 35.5 lower for WCBT (95% CI 38.0; 13.1; p≥0.002), WSAS score: TAU=10.8 at 12 months and 3.5 lower with TCBT (95% CI 5.1; 1.9; p<0.001), 3.0 points lower with WCBT (95% CI 4.6; 1.3; p<0.001). Secondary outcomes: Subjects Global improvement of symptoms (SGA) 84.8% responders TCBT at 12 months compared to 41.7% TAU OR 6.1 (95% CI 2.5; 15.0; p<0.001) and 75.0% for WCBT OR 3.5 (95% CI 2.0 to 6.1; p<0.001). Patient enablement (PEQ) 78.3% responders TCBT, 23.5% TAU OR 9.2 (95% CI 4.3; 19.4; p<0.001) and 54.8% for WCBT OR 3.6 (95% CI 2.1; 6.1; p<0.001).

Conclusions To date, this is the largest trial of CBT for IBS worldwide. Both CBT arms showed significant improvements in IBS outcomes compared to TAU, sustained at 12 months. TCBT had larger effects than WCBT. CBT for IBS can be effectively delivered to a broad range of patients with refractory IBS.

OWei-029 MAGNETO-ELECTRIC STIMULATION OF THE HUMAN CEREBELLUM PREVENTS SWALLOWING DYSFUNCTION INDUCED BY A CORTICAL VIRTUAL LESION

1 Ayodele Sasegbon**, 2 Andre Simmons, Emilia Michou, Dipesh Vasant, Shaheen Hamdy. 1 University Of Manchester, Manchester,UK; 2 Salford Royal Hospital, Salford, UK

10.1136/gutjnl-2018-BSGAbstracts.412

Introduction Repetitive transcranial magnetic stimulation (rTMS) is a neurostimulatory technique which can be used to alter neuronal activity within targeted regions of the brain. Furthermore, in post stroke dysphagia, recovery of swallowing function is thought to be related to increased activity in the undamaged cortical swallowing hemisphere.1 Here, we wanted to determine if stimulation of the cerebellum, known to be activated during swallowing 2 can enhance swallowing when disrupted by a virtual lesion as a prelude to using cerebellar stimulation therapeutically.

Aim To compare the effects of ipsilateral and contralateral 10 Hz cerebellar rTMS versus sham stimulation on swallowing behaviour following a virtual lesion to the pharyngeal motor cortex.

Method Healthy human participants (n≥10) were intubated with a pharyngeal catheter. Baseline swallowing performance was then measured using a water swallowing reaction time task. Participants received 10 min of 1 Hz rTMS (virtual lesion) to the pharyngeal motor cortex which elicited the largest pharyngeal motor evoked potentials. This causes a disruption of swallowing behaviour. Over 3 separate visits to the laboratory, participants were then randomised to receive 250 pulses of 10 Hz cerebellar rTMS to the ipsilateral side, contralateral side or sham (2). Swallowing performance was measured at 15 min intervals up to an hour after cerebellar rTMS.
A DOSE RANGING STUDY OF TRANS-SPINAL MAGNETIC STIMULATION FOR THE TREATMENT OF FEACAL INCONTINENCE

1Shaheen Hamdy**, 2Xuelian Xiang, 3Amol Sharma, 3Tanisa Patchanatrakul, 2Rachael Parry, 2Patricia Hall, 1Ali Abukardugha, 2Satish Rao. 1University Of Manchester, Salford, UK; 2Augusta University, Augusta, USA

Introduction Current treatments for faecal incontinence (FI) are only modestly effective. FI is characterised by significant anorectal neuropathy, yet treatments for neuropathic FI are limited. In a randomised dose ranging trial, we investigated the plausibility and optimal frequency of a novel neuromodulation therapy by administering repetitive translumbar and transsacral magnetic stimulation (rTLSMS) and transsacral magnetic stimulation (rTMS) in patients with FI

Methods FI patients (≥1 episode/week) were randomised to receive weekly rTLSMS and rTMS treatments with either 1 Hz, 5 Hz, or 15 Hz, over six weeks. Two trains of 300 stimulations each were given at 4 sites (Total ≥2400 pulses), by applying transcutaneous magnetic stimulation via a focal coil to the lumbar and sacral regions. Daily FI episodes and bowel symptoms were assessed with prospective stool diaries and compared before and after treatment. FI severity index (FISI) and subject global assessment (SGA) were also compared. Patients with ≥50% decrease in weekly FI episodes were considered responders.

Results Twenty-six FI patients, F/M=18/8 participated; 9 were randomised to 1 Hz, 8 to 5 Hz and 9 to 15 Hz respectively. Results summarised in Table 1. The weekly FI episodes decreased significantly in the 1 Hz (p=0.004) and 15 Hz group (p=0.023), but not in 5 Hz group (p=0.281) when compared to baseline, but there was no difference between groups (p=0.170). There was a significant difference between responder rates (p=0.024) with the 1 Hz group showing a significantly higher responder rate (88.9%) than the 5 Hz group (25%), but not between other groups. After treatment, the FISI score increased by 34.6%±18.4% in 1 Hz group, 12.0%±4.9% in 5 Hz group, and 17.6%±16.1% in 15 Hz group, but there was no difference between groups (p=0.652). Complete or considerable improvement in FI symptoms was reported by 66.7% in 1 Hz group, 37.5% in 5 Hz group and 44.4% in 15 Hz group (p=0.480). One patient had numbness/tingling in the right arm in 5 Hz group.

Conclusions In this interim analysis, repetitive translumbar and transsacral magnetic stimulation appears safe, and at 1 Hz frequency showed significant superiority when compared to higher frequencies for the treatment of FI. This non-invasive neuromodulation modality offers promise as a novel treatment approach for FI.

<table>
<thead>
<tr>
<th>Abstract OWE-030 Table 1: Summary of results – Bold = p&lt;0.05 vs baseline</th>
<th>No enthr</th>
<th>vs 5Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>FI episodes/Wk</td>
<td>Baseline</td>
<td>Post-Treat</td>
</tr>
<tr>
<td>1 Hz</td>
<td>7.1±2.7</td>
<td>2.0 ±3.3</td>
</tr>
<tr>
<td>5 Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Responder rate (%)</td>
<td>88.9%</td>
<td>No enthr</td>
</tr>
<tr>
<td>FISI score (±%C)</td>
<td>14.6±8.4</td>
<td>12.0±4.9</td>
</tr>
<tr>
<td>Considerable or Complete</td>
<td>66.7%</td>
<td>37.5%</td>
</tr>
<tr>
<td>relief</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild or Unchanged</td>
<td>33.3%</td>
<td>62.5%</td>
</tr>
<tr>
<td>Worse</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Abstracts

disorders (AD), eosinophilic oesophagitis (EoE) or previous oesophageal surgery.

**Results** Among 457 included patients we defined three categories: 183 (40%) had achalasia, 185 (41%) had GORD and 89 (19%) had NANRA.

Of the 89 NANRA patients, 29% had an AD including Systemic Lupus Erythematosus, Scleroderma, Sjögren syndrome and Antisynthetase syndrome (n=25, M:F 3:7, average age ≥48). One had Myotonic Dystrophy (n=1); 11% (n=10) had hypersensitive oesophagus; 6% (n=5) had surgery for atresia, oesophageal spasm, or gastric cancer; 2% (n=2) had EoE and in 2% (n=2) of patients AD screen and EoE screen were normal. The remaining 50% of NANRA patients (n=44) had an unknown cause but incomplete investigations (no screen for AD: 97.7%; no biopsy: 67.4%).

**Conclusions** 1. The principal cause of OA is achalasia; it shouldn’t be dismissed as a cause even if the IRP is <15 mmHg as 6.5% (n=12) of patients with achalasia and OA had IRP <15 mmHg but typical radiological findings.

2. GORD is present in 41% of patients but it is unclear whether it is a cause or effect of OA, therefore the finding of GORD should not stop further investigation.

3. Patients with OA are under investigated for AD and EoE. 50% of patients with NANRA had incomplete investigations potentially losing the opportunity to identify other aetiologies. It is unclear whether NANRA patients should be routinely tested for AD or for EoE, or whether this should be done only in selected cases.

**OWE-032 A RANDOMISED PLACEBO-CONTROLLED TRIAL OF A MULTI-STRAIN PROBIOTIC FORMULATION (BIO-KULT®) IN THE MANAGEMENT OF IBS-D**

Shamsuddin Ishaque*, Sheikh Mohammed Khosruzzaman, Dewan Saffuddin Ahmed, Mukesh Prasad Sah. Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh

10.1136/gutjnl-2018-BSGAbstracts.415

**Introduction** Increasing evidence supports the viewpoint that alterations in the diversity and function of gastrointestinal bacteria contributes to IBS, and that increasing the mass of beneficial species, by consuming probiotics, may lower pathogenic bacteria numbers and help alleviate symptoms.

**Methods** In this double-blind trial, a total of 360 adult patients with moderate-to-severe symptomatic diarrhoea-predominant IBS (IBS-D) were randomised to receive either treatment with the multi-strain probiotic Bio-Kult (14 different bacterial strains) or placebo for 16 weeks. The primary outcome measure was change in abdominal pain. The secondary outcomes included frequency of bowel motions, overall change in IBS-severity scoring system (IBS-SSS) and IBS specific quality of life (IBS-QoL).

**Results** In comparison to placebo, treatment with probiotics significantly alleviated the severity of abdominal pain in patients with IBS-D; 69% reduction for probiotic versus 47% for placebo (p<0.001), equating to a 145 point reduction on the IBS-SSS. The level of patients rating their symptoms as moderate-to-severe was reduced from 100% at baseline to 14% in the multi-strain probiotic group by follow-up (month 5) versus 48% for placebo (p<0.001). In addition, the number of bowel motions per day from month 2 onwards was significantly reduced in the probiotic group compared with the placebo group (p<0.05). In addition to relieving symptoms, the probiotic markedly improved all dimensions of quality of life in the 34-item IBS-QoL questionnaire. No serious adverse events were reported.

**Conclusions** The multi-strain probiotic was associated with significant improvement in symptoms in IBS-D patients, and was well-tolerated. These results indicate that probiotic supplementation confers benefit in IBS-D and deserves further investigation.

**OWE-033 OF FEEDING: A NEW TECHNIQUE**


10.1136/gutjnl-2018-BSGAbstracts.416

**Introduction** Gastrointestinal (GI) dysmotility disorders can be debilitating and their management challenging. Patients often require feeding tubes to support nutrition, which can be complicated by discomfort and/or displacement. Laparoscopically Assisted-Enteroscopically Positioned Jejunostomy Tube (LA-EPJT) insertion is a novel technique not previously described in GI literature. It involves enteroscopic insertion of a jejunostomy tube under direct laparoscopic vision and general anaesthesia. This study reviews the experience of LA-EPJT insertion for GI dysmotility disorders at a district hospital.

**Methods** Endoscopy records were used to identify all patients who had undergone LA-EPJT insertion. Patient notes were reviewed to identify indications, previous tube requirements and outcomes.

**Results** 7 LA-EPJTs were placed between 2014 and 2017 (6 females; age 19–77; median 35; mean 43). Table 1 shows patient symptoms and indications for LA-EPJT insertion.

Abstract WVE-127Table 1

<table>
<thead>
<tr>
<th>Case</th>
<th>Indication</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IGP</td>
<td>weight loss</td>
</tr>
<tr>
<td>2</td>
<td>IGP and SBD</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>IGP</td>
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<tr>
<td>4</td>
<td>IGP and SBD</td>
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<tr>
<td>5</td>
<td>IGP</td>
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<td>6</td>
<td>IGP</td>
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</tr>
<tr>
<td>7</td>
<td>IGP</td>
<td></td>
</tr>
</tbody>
</table>

**Conclusions** The multi-strain probiotic was associated with significant improvement in symptoms in IBS-D patients, and was well-tolerated. These results indicate that probiotic supplementation confers benefit in IBS-D and deserves further investigation.

The lower the score less the pain: *p≤0.002**p≤0.001: NS ≥Not significant
Abstract PWE-127 Table 2

<table>
<thead>
<tr>
<th>Case</th>
<th>NGT</th>
<th>NJT</th>
<th>PEG</th>
<th>PEG-J</th>
<th>S-Jej</th>
<th>Botux</th>
<th>GP</th>
<th>TPN</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>*</td>
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</table>

NGT ≥ Nasogastric tube, NJT ≥ nasojejunal tube, PEG ≥ percutaneous endoscopic gastrostomy, PEG-J ≥ percutaneous endoscopic gastrostomy with jejunal extension, S-Jej ≥ surgical jejunalostomy, LOS ≥ lower oesophageal sphincter, GP ≥ gastric pacemaker, TPN ≥ total parenteral nutrition

No tubes migrated or were dislodged after insertion. 1/7 patients (14.3%) had early bleeding and tube-site infection. Perforation rates were 0%. 5/7 (71.4%) had initial pain with feeding after LA-EPJT insertion although this universally subsided, 1/7 (14.3%) had ongoing vomiting. 5/7 (71.4%) tubes remained in situ. 1 was replaced with a PEG-J to allow venting of intestinal contents, and 1 was removed and TPN commenced (psychological factors precluded continued tube-feeding).

Conclusions This study suggests that LA-EPJTs are useful nutritional adjuncts for patients with GI dysmotility disorders. They are a more permanent solution, with little risk of migration. They appear to better control symptoms such as pain and vomiting than traditional tubes, and are simple to change. The procedure benefits from direct laparoscopic vision of the sphincter, and is more permanent, with little risk of migration. No tubes migrated or were dislodged after insertion. 1/7 patients (14.3%) had early bleeding and tube-site infection. Perforation rates were 0%. 5/7 (71.4%) had initial pain with feeding after LA-EPJT insertion although this universally subsided, 1/7 (14.3%) had ongoing vomiting. 5/7 (71.4%) tubes remained in situ. 1 was replaced with a PEG-J to allow venting of intestinal contents, and 1 was removed and TPN commenced (psychological factors precluded continued tube-feeding).

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Conclusions This study suggests that LA-EPJTs are useful nutritional adjuncts for patients with GI dysmotility disorders. They are a more permanent solution, with little risk of migration. They appear to better control symptoms such as pain and vomiting than traditional tubes, and are simple to change. The procedure benefits from direct laparoscopic vision of the sphincter, and therefore carries low perforation rates.

Further studies are needed to assess long-term complications and efficacy of LA-EPJTs for symptom control and nutrition. However, this data is promising and GI centres could consider adoption of this novel technique for patients with GI dysmotility disorders.

Hypnotherapy For Irritable Bowel Syndrome

PWE-128 THE PATIENT’S PERCEPTION

Anne-sophie Donnet*, Shariq Hasan, Vivien Miller, Peter Whorwell. Wythenshawe Hospital, Manchester, UK
10.1136/gutjnl-2018-BSGAbstracts.417

Hypnotherapy (HT) improves the symptoms of irritable bowel syndrome (IBS) using clinical outcome measures. In light of the increasing interest in capturing the patient’s perception of their illness and treatment, it was felt it would be helpful to record how patients perceive the hypnotherapeutic process, on which there is currently little evidence.

Aims In addition to measuring symptom change, we have recently started to record the patient’s perception of hypnotherapy for their IBS, including their expectations, and now report the results for the first 50 patients.

Methods 50 consecutive IBS patients (38 females and 12 males, age range 18–76) attending for hypnotherapy were asked to complete questionnaires recording their IBS symptom severity (IBS SSS), quality of life, non-colonic symptoms, anxiety and depression before and after treatment. In addition, they completed questionnaires detailing their perception of HT, other people’s perception of HT and their expectations about the efficacy of HT. Their perceptions about the hypnotherapeutic process were assessed both quantitatively and also qualitatively using patient descriptions. Furthermore, the analysis compared the characteristics of responders and non-responders.

Results 39 out of 50 patients (78%, p<0.001) responded to treatment (50 point or more reduction in IBS SSS), which is exactly consistent with our previously published data. Pain scores, non-colonic symptoms, quality of life, anxiety and depression also significantly improved after HT (all p<0.001). When asked how patients felt before treatment, 52% of responses portrayed hypnotherapy negatively compared to 3% after treatment. The relatives and doctors of patients were generally supportive of HT although one cognitive behavioural therapist opposed it against it. In responders, 19 patients (48.7%) expected hypnotherapy to be effective prior to starting it, whereas in non-responders, 7 (64%) expected treatment to be successful. Interestingly, 9 of 11 non-responders (82%) considered treatment worthwhile despite no significant effect on their symptoms. This may be because 46 patients (92% of all patients) had found HT helped them with other issues, such as dealing with stressful situations or poor sleep.

Conclusion Although initially being perceived negatively, hypnotherapy significantly improved symptoms and resulted in other benefits not related to the gastrointestinal system. Interestingly, those with greater expectation about treatment did not seem to do quite so well, suggesting that high expectations are not necessary for a good outcome.

PWE-129 GENDER DIFFERENCES IN PATIENTS WITH CHRONIC CONSTIPATION IN A TERTIARY REFERRAL CLINIC

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10.1136/gutjnl-2018-BSGAbstracts.418

Introduction Chronic constipation (CC) is a very common symptom, and is more commonly seen in women. This difference is much more pronounced in secondary care. It is possible that the excess prevalence to secondary care is due to greater severity or to differences in healthcare seeking. This study aims to evaluate the differences in the characteristics of constipation seen in male and female patients attending a tertiary referral clinic.

Methods The study was designed as a prospective cohort study running at a single tertiary referral clinic. Data were collected prospectively from eligible patients following informed consent using a standardised proforma, and entered into a study database. Patients were categorised according to...
the Rome III criteria as having Functional Constipation (FC) or Irritable Bowel Syndrome- Constipation type (IBS-C), and were asked to complete PAC-SYM and PAC-QOL questionnaires.

**Results** Data were collected from 827 patients between January 2007 and October 2014; of these, 766 patients were included. Of these, 103 (13%) were male. The mean age at presentation was 42 years; for males this was 49.6 years, compared to 41.1 years for females; a mean difference of 8.4 years (p<0.0001). Women were significantly younger at onset of symptoms, with a mean age of 23 years at onset of symptoms compared to 34 years for men, a mean difference of 11 years (p<0.0001). There was no significant difference in mean duration of symptoms at presentation between the sexes. Women reported significantly higher PAC-SYM and PAC-QOL scores than men. A ratio of QOL:SYM was used as a marker for coping strategies. Women had a higher mean ratio (1.12 vs 0.39) however this was non-statistically significant (p=0.239).

**Conclusions** This study reports a similar male:female ratio to other studies, with far more women than men. It also suggests that women experience symptom onset at a younger age, and that they are also younger when they present. Female patients report significantly more severe symptoms and significantly worse quality of life, with significantly higher mean PAC-SYM and PAC-QOL scores. Although QOL:SYM ratio was higher in women, suggesting greater impact of milder symptoms on QOL, this was not significant. The reasons for these differences are not clear, and further work is needed in this area.

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**PWE-130**

**SIBO CONFRS HEIGHTAINED SYMPTOMS BURDEN IN IBS, IN THE ABSENCE OF CHANGES IN GASTROINTESTINAL TRANSIT**

1Adam Farmer*, 2Anthony Hobson, 3University Hospitals Of North Midlands, Stafford, UK; 4Functional Gut Clinic, London, UK

10.1136/gutjnl-2018-BSGAbstracts.419

**Introduction** Although controversial, small intestinal bacterial overgrowth (SIBO) has been associated with irritable bowel syndrome (IBS) (1). However, little is known regarding the effect of concomitant SIBO in patients with IBS in terms of symptom burden, quality of life or its effect on gastrointestinal (GI) motility. We aimed to compare the effect of SIBO on symptom burden, quality of life and segmental/panenteric motility in IBS.

**Methods** 27 patients with Rome III defined IBS-mixed bowel habit (IBS-M) (3 male, mean age 36.5 years, range 18–65) underwent a wireless motility capsule (WMC) using a standardised protocol. The WMC concurrently measures pH, pressure and temperature as it traverses the GI tract. Segmental transit was derived from measures around known anatomical landmarks as identified by compartmental pH changes. Ileal and colonic motility measures are presented as area under the curve (AUC) derived from contraction amplitude and frequency. Validated questionnaires assessing GI (verbal descriptor anchored visual analogue scale (VDVAS) assessing sensory intensity (VDVAS-I) and unpleasantness (VDVAS-U)), somatic symptoms (Personal Health Questionnaire (PHQ) and quality of life (EQ-5 D) were administered. A standardised lactulose hydrogen breath test was subsequently performed and interpreted according to recently published guidelines (2).

**Results** 14/27 patients (51.8%) were positive for SIBO based on breath testing. Changes in GI motility between SIBO positive and negative patients are shown in Table 1. Patients with concomitant SIBO had higher VDVAS-I and VDVAS-U (147 ±21 vs. 172±0.20, p=0.048 and 135±2.9 vs. 109±6.2, p=0.02) and somatic symptoms (9.8±3.2 vs. 7.3±2.3, p=0.03). SIBO positive patients had reduced quality of life in comparison to those without (43.2±16 vs. 60±15, p=0.008).

**Conclusions** Concomitant SIBO in patients with IBS-M confers a higher gastrointestinal and extra-gastrointestinal symptom burden. Moreover, it is associated with a reduction in quality of life. However, it was not associated with any demonstrable alterations in GI physiology. It is plausible to suggest that such IBS patients with co-existent SIBO may potentially preferentially respond to antimicrobial interventions such as rifaximin. REFERENCES: 1. Aziz et al. Curr Opin Gastro 2017. 2. Rezaie et al. Am J gastro. 2017.

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**PWE-131**

**FODMAP INTAKE AND THE RISK OF IRRITABLE BOWEL SYNDROME IN THE COMMUNITY: A PROSPECTIVE STUDY**

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10.1136/gutjnl-2018-BSGAbstracts.420

**Introduction** The cause of IBS is uncertain; however, food intolerance shares many features with this condition. Consumption of Fermentable Oligo-, Di– and Mono-saccharides And Polyols (FODMAPs) has been shown to induce IBS-type symptoms (Shephard 2008) and clinical trials have shown that a low FODMAP diet can improve symptoms in this patient group (Halmos 2014). However, FODMAP intake is not higher in IBS than in health (Bohn 2013) and the outcome of low FODMAP diet may not be better than standard dietary advice in this condition (Bohn 2015). Previous research has shown that psychological factors are associated with increased symptoms in IBS patients (Zhu 2013, Van Oudenhove 2016).

This population based study tests the hypothesis that high FODMAP intake increases the risk of IBS symptoms more in individuals with psychiatric disease and/or life event stress.
than in members of the community without risk factors for functional gastrointestinal disease.

**Methods** Subjects aged 16–74 were randomly selected from five South-Chinese communities. All subjects completed questionnaires by face-to-face inquiry with investigators including demographic information, gastrointestinal symptoms (Rome III), dietary intake (food frequency chart validated in Chinese community), psychiatric disease (HADS), life event stress (LES) and quality of life (SF-8). Results are presented as odds ratio with 95% confidence intervals.

**Results** From 1999/2115 (94.7%) members of the community that completed study questionnaires, 117 (5.9%) had IBS by Rome III criteria. The IBS group ingested less lactose than the ‘No-IBS’ group (p=0.024). Intake of other FODMAPs was similar in both groups (p=0.346). Compared to the ‘No-IBS’ group, subjects with IBS had a greater likelihood of depression (OR 1.5 (0.97–2.32); p=0.03), anxiety (2.84 (1.84–4.39), p<0.001), recent life event stress (1.5 (1.03–2.20); p=0.03) and medical or surgical comorbidity (OR 2.90 (1.30–5.45), p=0.001). The IBS group also had lower quality of life (RNI entity p=0.001).

Joint risk analysis identified high intake of total FODMAP intake as a risk factor for IBS only in subjects with psychiatric disease and/or life event stress (OR 2.3 (1.14–4.8), p=0.029). Similar effects were seen for individual symptoms, in particular bloating (OR 2.4 (1.3–4.6), p=0.008). Increased risk of IBS was identified with ingestion of high intake of individual FODMAPs (e.g. fructose, fructans, lactose) in combination with psychosocial factors, but not with sucrose (control) in any group.

**Conclusions** Overall FODMAP intake was similar in IBS and No-IBS groups in the community and FODMAP intake alone was not associated with abdominal symptoms. However, consistent with the study hypothesis, joint risk analysis demonstrates that high FODMAP intake does increase the risk of IBS symptoms in subjects with psychiatric disease and/or high levels of psychosocial stress, factors known to increase visceral sensitivity to digestive events. (ClinicalTrials: NCT01286597)

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**PWE-132** THERAPEUTIC OUTCOMES FOLLOWING ENDOTHERAPY FOR REFRACTORY GASTROPARESIS


10.1136/gutjnl-2018-BSGAbstracts.421

**Introduction** The relative merits of endotherapy for refractory gastroparesis remain unclear. We assessed the symptomatic response of patients undergoing non-surgical pyloric intervention at a specialist tertiary centre.

**Methods** 377 patients (21 male, mean age 47, 16–81) with medical refractory gastroparesis (29 idiopathic, 5 diabetic, 23 post-gastric transposition) underwent 117 endoscopic treatments from Sep 2013-Sep 2017: either 100IU units of Botox injected into 4 quadrants of the pylorus (n=66), balloon dilatation to 15–20 mm (EBD, n=13) or combination therapy (n=38). Patients with gastric malignancy, pyloric surgery or no follow-up were excluded. Symptoms were assessed immediately prior to each procedure and at first follow up using a retrospective scoring system based on the presence (1 point) or absence (0 points) of Vomiting, Nausea, Bloating or Early satiety. This formulated a composite symptom score (SS) out of 4; positive response was defined by improvement in SS of at least 1. Statistical analysis was performed using Wilcoxon Signed-Rank Test and Fischer’s Test.

**Results** There were no immediate or late complications. Mean symptom score (SS) improved per-patient from 2.1 points at baseline to 1.2 post initial endotherapy (p=0.001) at median follow-up of 2.1 months. 20 patients required further endotherapy (median 2.5 treatments; range 2–12); mean SS was 1.0 at latest follow-up.

Per-procedure, mean reduction in SS was 0.8 points (p=0.01) with overall positive response rate of 67%. By symptom, vomiting was most responsive to endotherapy (86% pre v 32% post). By treatment type, Botox alone (n≥66) had the highest overall response (78%) compared to EBD (38%, p=0.02) or combination therapy (66%, p=0.3). Response to Botox was greater in patients under 40 (83% v 61%, p=0.04) and females (81% v 33%, p=0.002). By indication, diabetic GP (n=17) were most likely to respond (76%).

Sub-group analysis showed procedures for gastroparesis (diabetic/idiopathic, n≥75) responded significantly more to Botox (mean SS reduction 1, p=0.01) than EBD (mean SS reduction 0.2, p>0.1) or combination therapy (mean SS reduction 0.44, p=0.12). Procedures for gastric transposition (n≥42) showed significant SS reduction post combination therapy (2.1 v 1.2, p=0.01) but not post EBD (1.9 v 1.6, p=0.1) or Botox (1.7 v 1.1, p=0.08).

**Conclusions** Endotherapy is a safe and effective treatment for refractory gastroparesis. We found Botox monotherapy significantly improved symptoms in diabetic or idiopathic gastroparesis, especially younger females; conversely, combination therapy was preferable for delayed gastric emptying post gastric transposition. Careful patient selection may augment therapeutic response.

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**PWE-133** IMPACT OF THE NORTH AMERICAN CONSENSUS ON HYDROGEN AND METHANE-BASED BREATH TESTING FOR CARBOHYDRATE MALABSORPTION

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**Introduction** The acquisition parameters and interpretation of breath testing data for the assessment of carbohydrate malabsorption (CM) varies widely between centres. The North American Consensus (NAC) document on breath testing published in 2017 was a first attempt to standardise this diagnostic test. Two key recommendations were to extend the period of post ingestion breath sampling from 120 to 180 min and that SIBO should be excluded prior to CM testing. We retrospectively assessed our database of CM studies from the previous 12 months to examine the impact of these recommendations on results.

**Methods** Patient data was retrospectively attributed to 120 min and 180 min groups for both lactose and fructose breath tests. All patients provided a baseline sample prior to ingestion of 25 g of either substrate following a 24 hour restrictive diet and 12 hour fast. In total 200 breath tests were analysed (120-lactose and 80-fructose). A rise >20 ppm above baseline was considered positive for CM. The results were compared statistically using Pearson’s chi-squared test.
Results A positive result for CM at 120 min was seen in 27 of 120 (22.5%) subjects for lactose and 33 of 80 (41.3%) subjects for fructose. When extended to 180 min the number of positive CM tests increased to 30% for lactose and 41.3% for fructose, respectively. Within these sub-groups the significant rise in gas levels occurred at ≤60 min after ingestion in 34.3% for lactose and 69.8% for fructose. There was a significant association between patients who had a positive SIBO test (as determined by a separate lactulose test) and a positive breath test for lactose at ≤60 min ($\chi^2 = 5.3$, p=0.02). Findings for fructose were not significant (p>0.05).

Conclusions Around 20% of the positive results for CM occurred after 120 min supporting the NAC position to extend the post ingestion period to 180 min to avoid false negative studies. SIBO may influence results and a lactulose breath test should be performed prior to CM testing to avoid false positive tests and to help interpret CM studies with greater accuracy. Like the first iteration of the Chicago Classification for oesophageal motility testing – the NAC on breath testing represents a positive first step in standardising these diagnostic tests.

PWE-134 MANAGEMENT OF GASTROPARESIS: CURRENT PRACTICE IN A TERTIARY CENTRE


Introduction Gastroparesis is a syndrome characterised by delayed gastric emptying in the absence of mechanical obstruction. The aim of this study was to assess consistency and adherence to guidelines of current practice and to evaluate the effectiveness of routinely implemented interventions in a large London tertiary centre.

Methods A retrospective study was conducted by examining records of all adult patients with delayed gastric emptying, objectively measured by NM scintigraphy, between 2010–2017. Effectiveness was defined as evidence of symptomatic improvement either semi-quantitatively by the Gastrointestinal Symptom Index (GCSI) or by documented qualitative evidence from clinical records, before and after intervention. Our practice was compared to recommendations published by the American College of Gastroenterology in 2013.

Results We identified 91 patients diagnosed with gastroparesis from 655 consecutive scans. Of these, 46 were excluded due to incomplete records. 55 patients were included: median age 48 (range 21–89), 67% female. Diabetes (40%) was the commonest cause; 40% of cases were idiopathic.

Conservative management 34/55 (62%) patients had dietetic input with 16% requiring enteral nutrition. 17/55 (31%) of patients were taking a drug known to delay gastric emptying but stopped in only 12% of patients.

Medical management 48/55 (87%) patients received prokinetics, including metoclopramide 28/55 (51%), domperidone 33/55 (60%) and erythromycin 19/55 (35%) with treatment duration specified in only 30%. No patients had documented GCSI. From qualitative records, 7/48 (15%) of these reported some benefit, while 20/48 (42%) had no effect and in 21/48 (44%) the effect was unknown.

Intrapyloric Botox was administered in 25/55 (45%) of patients but results were not documented by GCSI.

Nevertheless, 11/25 (44%) of patients reported some benefit. Additionally, 2 patients had pyloric dilatation and 1 feeding jejunostomy and venting gastrostomy.

Conclusions The management of gastroparesis showed wide variations in practice in our institution. The lack of semi-quantitative assessment of the results of different interventions hindered evaluation of effectiveness. Conservative measures, including discontinuation of contributing drugs, were adopted only in a minority of patients. Prokinetics are widely used as first choice approach but treatment duration and stopping rules were not clearly established. Intrapyloric Botox injection showed subjective benefit in a proportion of patients, matching results of previous RCTs where placebo had similar benefit. Our study indicates the need for a more consistent and evidence-based management of gastroparesis. Dedicated outpatient clinics and internal protocols may help to achieve this task.

PWE-135 CONSTIPATION IS THE MOST COMMON GASTROINTESTINAL SYMPTOM IN ACROMEGALY

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Introduction Acromegaly is caused by a pituitary somatotroph adenoma resulting in excess secretion of growth hormone which leads to excess secretion of Insulin like growth factor 1 from the liver, causing abnormal soft tissue growth with a variety of symptoms and an increased risk of colorectal cancer. Somatostatin analogues, used in the management of acromegaly are also associated with a range of abdominal symptoms. We collected data from patients with a confirmed diagnosis of acromegaly to evaluate the frequency, type and burden of abdominal symptoms.

Methods Data was collected from patients with confirmed Acromegaly using SF36 RAND and Rome IV Diagnostic questionnaire and compared to a control group, to assess the burden of GI symptoms. Data analysis was carried out using Microsoft Excel and IBM SPSS v 25.

Results 49 acromegalis (23 male and 26 females; age range 23–64 years, mean 43) and 200 controls (92 male and 108 females; age range 18–84, mean 42.4) were recruited. 94% (46 out of 49) of acromegalis reported abdominal symptoms and 79% (39 out of 49) had at least one FGID according to Rome IV. The prevalence of constipation increased with increasing age and was often associated with bloating. No statistically significant difference seen in the prevalence of upper GI, biliary and anorectal symptoms between the acromegaly patients and controls. Acromegalics scored lower on the mean scores of the eight parameters (physical functioning, role limitations due to physical health, role
functional gastrointestinal disorders (FGIDs) in Ehlers-Danlos type III (hypermobile) and Marfan syndrome patients


Introduction Ehlers-Danlos syndrome is a group of inherited heterogeneous multisystem disorders characterised by skin hyperextensibility, atrophic scarring, joint hypermobility and generalised tissue fragility. Hypermobile EDS (hEDS) is the most common type. Marfan syndrome (MS) is also a multisystem disorder caused by a mutation in FBN1 gene which shares some phenotypic features with Hypermobile EDS such as joint hypermobility. Recent studies have suggested an association of Functional Gastrointestinal Disorders with joint hypermobility.

Methods Data was collected from 27 MS patients (10 male and 17 females, age range 19–35 years mean 27) and 33 hEDS patients (3 male and 30 females, age range 19–32 years mean 23) with no organic gastrointestinal diagnosis, using SF36 RAND and Rome IV Diagnostic questionnaire and compared to control group (200 respondents, 92 male and 108 female; age range 18–84, mean 42.4) to assess the burden of GI symptoms in these patients. Data analysis was carried out using Microsoft Excel and SPSS version 25 (IBM Corporation, America).

Results In both groups the majority (78.3%) of respondents were female within the age range of 19–35 years. Both groups of patients showed a higher prevalence of abdominal symptoms as compared to the control group, however the hEDS group not only showed a higher prevalence but more frequent and severe symptoms meeting Rome IV criteria for diagnosis of FGIDs. 16 (49%) of the hEDS patients met the criteria for more than one FGID.

p values were significant (p<0.001) for functional heartburn, functional dyspepsia, functional dysphagia, IBS-D and functional bloating in hEDS patients when comparing the prevalence to controls.

The hEDS group also scored lower on quality of life scores (QOL) in comparison to either of the other groups with a mean score of 48.6 (95%CI 25.3–33.4, p<0.0001) as compared to 54.2 (95%CI 20.9–29.0, p<0.0001) in the Marfan group and 78.6 in the control group.

Conclusions FGIDs are reported in both Marfan syndrome and Hypermobile Ehlers-Danlos syndrome but appear to be more common and severe in hEDS. These patients score lower on quality of life scores as well despite hypermobility being a common feature of both conditions. Further research is needed in this area to see whether there are other factors that can explain this difference.
Abstracts

is expensive and invasive. Our study aimed to identify clinical factors that can predict excessive SGB (>13/day) in GORD patients.

Methods We prospectively analysed patients with a belching visual analogue scale (VAS) score ≥6 and a clinical or endoscopic diagnosis of GORD. All patients underwent 24 hour pH-impedance studies off medications. Patients were given questionnaire on belching symptoms, including belching VAS, belching frequency, repetitive nature of belching and ability to control belching. GORD symptoms were evaluated via Reflux Disease Questionnaire (RDQ), somatization scores via PHQ15 and mood disorders via Hospital Anxiety and Depression Scales (HADS). Statistical analysis via independent t-test and Chi2 test were done for univariate analysis, while logistic regression analysis was used for multivariate analysis of clinical factors most predictive of excessive SGB.

Results We recruited 36 patients between April 2015 and October 2016 (25 women; mean age 45.5±12.7). 32 patients had excessive SGB, while 4 had predominantly gastric belching on pH-impedance studies. Repetitive belching and RDQ regression score ≥2 were significantly more likely in patients with excessive SGB, but only repetitive belching was significant on multivariate analysis. Repetitive belching on questioning has a sensitivity of 93.4% and specificity of 75% for SGB diagnosis, positive predictive value 96.8% and negative predictive value 60.0%.

Conclusions We identified that a simple questioning on the repetitive nature of belching can be used as a screening tool to predict SGB in belching patients, and hence predict response to diaphragmatic breathing exercises.

PWE-139 EFFICACY OF PHARMACOLOGICAL THERAPIES FOR THE TREATMENT OF OPIOID-INDUCED CONSTIPATION: SYSTEMATIC REVIEW AND NETWORK META-ANALYSIS

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Introduction

Opioids are increasingly prescribed in the West, and have deleterious gastrointestinal consequences. Pharmacological therapies to treat opioid-induced constipation (OIC) are available, but their relative efficacy is unclear. We performed a systematic review and network meta-analysis to address this deficit in current knowledge.

Methods We searched MEDLINE, EMBASE, EMBASE Classic, and the Cochrane central register of controlled trials through to December 2017 to identify randomised controlled trials (RCTs) of pharmacological therapies in the treatment of adults with OIC. Trials had to report a dichotomous assessment of overall response to therapy, and data were pooled using a random effects model. Efficacy and safety of pharmacological therapies was reported as a pooled relative risk (RR) with 95% confidence intervals (CIs) to summarise the effect of each comparison tested, and ranked treatments according to their P-score.

Results Twenty-seven eligible RCTs of pharmacological therapies, containing 9149 patients, were identified. In our primary analysis, using failure to achieve an average of ≥3 bowel movements (BMs) per week with an increase of ≥1 BM per week over baseline, or an average of ≥3 BMs per week, to define non-response the network meta-analysis ranked naloxone first in terms of efficacy (RR=0.65; 95% CI 0.52 to 0.80, P-score 0.84), and it was also the safest drug. When non-response to therapy was defined using failure to achieve an average of ≥3 bowel movements (BMs) per week, with an increase of ≥1 BM per week over baseline, naldemidine was ranked first (RR=0.66; 95% CI 0.56 to 0.77, P-score 0.91).

Conclusion In network meta-analysis, naloxone and naldemidine appear to be the most efficacious treatments for OIC. Naloxone was the safest of these agents.

League Table of Results for Failure to Achieve an Average of ≥3 BMs per Week with an Increase of ≥1 BM per Week Over Baseline or an Average of ≥3 BMs per Week

Abstract PWE-139 Table 1 Relative risk with 95% confidence intervals in parentheses.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>RR (95% CI)</th>
<th>P-score</th>
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<tbody>
<tr>
<td>Naloxone</td>
<td>0.97 (0.75; 1.25)</td>
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<tr>
<td>Naldemidine</td>
<td>0.96 (0.73; 1.27)</td>
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<tr>
<td>Alvimopan</td>
<td>0.99 (0.80; 1.24)</td>
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<td>Bevenopran</td>
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<td>Prucalopride</td>
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<tr>
<td>Methylnaltrexone</td>
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Introduction

Rectal sensory tests are not routinely performed on patients undergoing sacral nerve stimulation (SNS). The aim of this study is to determine the rectal sensory function in patients responding to SNS treatment for faecal incontinence (FI) and constipation.

Method

Patients complaining of either FI (group I) or constipation (group II) who underwent rectal sensory testing and SNS treatment between 2003–2013 were selected. Group I (F:M ≥ 113:15, age ≥ 20–74 years) underwent rectal mucosal stimulation using Gaeltec rectal electrosensitivity (RES) bi-polar catheter. Group II (F:M ≥ 39:2, age ≥ 24–50 years) underwent rectal sensitivity to distension using Stericom Ashley2 reflex balloon catheter.

The RES electrodes were placed in contact with the rectal mucosa and stimulus was passed with the current increasing by 0.1 mA/s until patient reported rectal sensation (tingling, buzzing or throbbing) (normal RES thresholds to elicit sensation has been reported [1]). RES testing was repeated 3 times per patient and the lowest current intensity to induce sensation was recorded. RES thresholds were compared between SNS treatment outcomes using t-test. Receiver operating curve

### Table 1

<table>
<thead>
<tr>
<th>Pre-consultation Treatment</th>
<th>Number of patients</th>
<th>Mean duration of treatment (week)</th>
<th>Adequate relief (Clinical)</th>
</tr>
</thead>
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<tr>
<td>Laxatives</td>
<td>81</td>
<td>14.4</td>
<td>42%</td>
</tr>
<tr>
<td>Supps/enema</td>
<td>22</td>
<td>11.8</td>
<td>50%</td>
</tr>
<tr>
<td>Prucalopride</td>
<td>41</td>
<td>8.2</td>
<td>44%</td>
</tr>
<tr>
<td>Lubiprostone</td>
<td>12</td>
<td>7.6</td>
<td>33%</td>
</tr>
<tr>
<td>Biofeedback</td>
<td>97</td>
<td>23.8</td>
<td>54%</td>
</tr>
<tr>
<td>TAI</td>
<td>20</td>
<td>11.1</td>
<td>65%</td>
</tr>
<tr>
<td>SNS/Surgery</td>
<td>3</td>
<td>10.3</td>
<td>33%</td>
</tr>
<tr>
<td>Combination</td>
<td>127</td>
<td>16.1</td>
<td>54%</td>
</tr>
<tr>
<td>Total</td>
<td>403</td>
<td>16.0</td>
<td>203</td>
</tr>
</tbody>
</table>

## Abstract PWE-140 Table 2

<table>
<thead>
<tr>
<th>Adequate relief (Clinical) n=203</th>
<th>Inadequate relief (Clinical) n=200</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>PPV</th>
<th>NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1. Bowel frequency inadequate</td>
<td>5</td>
<td>71</td>
<td>53</td>
<td>98</td>
<td>95</td>
</tr>
<tr>
<td>Q2. Strain most occasions</td>
<td>6</td>
<td>89</td>
<td>67</td>
<td>97</td>
<td>96</td>
</tr>
<tr>
<td>Q3. Stool hardness</td>
<td>3</td>
<td>21</td>
<td>15</td>
<td>99</td>
<td>91</td>
</tr>
<tr>
<td>Q4. Smart other symptom</td>
<td>2</td>
<td>57</td>
<td>42</td>
<td>99</td>
<td>98</td>
</tr>
<tr>
<td>Q5. Current therapy poor tolerable</td>
<td>8</td>
<td>80</td>
<td>59</td>
<td>96</td>
<td>94</td>
</tr>
<tr>
<td>1 FPAR replies</td>
<td>10</td>
<td>41</td>
<td>27</td>
<td>95</td>
<td>84</td>
</tr>
<tr>
<td>2 FPAR replies</td>
<td>4</td>
<td>67</td>
<td>39</td>
<td>98</td>
<td>95</td>
</tr>
<tr>
<td>3 FPAR replies</td>
<td>2</td>
<td>22</td>
<td>14</td>
<td>99</td>
<td>93</td>
</tr>
<tr>
<td>4 FPAR replies</td>
<td>0</td>
<td>8</td>
<td>12</td>
<td>100</td>
<td>100</td>
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<tr>
<td>5 FPAR replies</td>
<td>0</td>
<td>9</td>
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<td>100</td>
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<td>0 FPAR replies</td>
<td>187</td>
<td>1</td>
<td>92</td>
<td>100</td>
<td>99</td>
</tr>
</tbody>
</table>

Conclusion

The F-PAR has excellent specificity, suggesting it is a useful confirmatory test to confirm a clinical suspicion of inadequate relief. Good sensitivity is only seen if there are no positive FPAR replies, implying the F-PAR is only of screening value when there is high likelihood of treatment satisfaction. As such, the F-PAR may have a role in confirming efficacy of treatments in trials of therapy for chronic constipation.

### Abstract PWE-140

**Validation of the ‘Failure to Provide Adequate Relief’ (F-PAR) Scale in a Specialist Clinic Setting**


Gut Physiology Unit, UCLH, London, UK

10.1136/gutjnl-2018-BSGAbstracts.429

Background

Treatment of chronic idiopathic constipation is empiric, based on step-wise approach. If first-line conservative treatment (lifestyle and laxatives) do not relieve symptoms, secondary approaches with prokinetic or secretagogue drugs are used before considering hospital-based care (biofeedback, psychosocial support, transanal irradiation (TAI), surgery). Nevertheless, patients are often unsatisfied with care and fail to progress to adequate levels of therapy. The 5-point Failure to Provide Adequate Relief (F-PAR) scale was developed to facilitate the recognition of when to move from one step to the next. The aim of this study was to validate F-PAR in a tertiary clinic setting.

Methods

We studied 403 consultations of 331 patients (262 women, mean age 41). All fulfilled Rome III/IV diagnostic criteria for chronic constipation. Immediately prior to clinical assessment by one of 2 experienced physicians, participants completed the F-PAR scale; patients were seen blind to the F-PAR result. Consultant clinical assessment was undertaken to identify efficacy of the current management as the gold standard.

Results

Table 1 shows detail of the 403 consultations, in 200 of which clinical assessment identified inadequate relief with current therapy. Neither duration nor type of treatment were correlated with relief. All individual items of the F-PAR had Specificity > 96% but poor sensitivity (15%–67%). Cumulatively, none of the subjects with ≥4 positive responses had adequate relief. By contrast, there was excellent sensitivity and specificity for patients with no positive F-PAR replies.

Conclusion

The F-PAR has excellent specificity, suggesting it is a useful confirmatory test to confirm a clinical suspicion of inadequate relief. Good sensitivity is only seen if there are no positive FPAR replies, implying the F-PAR is only of screening value when there is high likelihood of treatment satisfaction. As such, the F-PAR may have a role in confirming efficacy of treatments in trials of therapy for chronic constipation.

## Abstract PWE-141

**The Rectal Sensory Function in Patients Responding to Sacral Nerve Stimulation Treatment**

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10.1136/gutjnl-2018-BSGAbstracts.430

### Introduction

Rectal sensory tests are not routinely performed on patients undergoing sacral nerve stimulation (SNS). The aim of this study is to determine the rectal sensory function in patients responding to SNS treatment for faecal incontinence (FI) and constipation.

### Method

Patients complaining of either FI (group I) or constipation (group II) who underwent rectal sensory testing and SNS treatment between 2003–2013 were selected. Group I (F: M ≥ 113:15, age ≥ 20–74 years) underwent rectal mucosal stimulation using Gaeltec rectal electrosensitivity (RES) bi-polar catheter. Group II (F: M ≥ 39:2, age ≥ 24–50 years) underwent rectal sensitivity to distension using Stericom Ashley2 reflex balloon catheter.

The RES electrodes were placed in contact with the rectal mucosa and stimulus was passed with the current increasing by 0.1 mA/s until patient reported rectal sensation (tingling, buzzing or throbbing) (normal RES thresholds to elicit sensation has been reported [1]). RES testing was repeated 3 times per patient and the lowest current intensity to induce sensation was recorded. RES thresholds were compared between SNS treatment outcomes using t-test. Receiver operating curve
(ROC) was used to find the optimal RES threshold for successful SNS outcome. Odd ratio (OR) and positive predictive value (PPV) were calculated at the optimal RES threshold.

The balloon catheter was inserted into the rectum, inflated at 1–3 mls and patient’s sensory perceptions to threshold volume (TV), urge volume (UV) and maximum tolerated volume (MTV) were recorded.1 These sensory markers were used to ascertain normal and hypo rectal sensitivities in patients with successful SNS outcome. t-test was used to compare TV, UV, and MTV sensory markers in the SNS outcomes.

**Results**

All patients in group I respond within normal RES thresholds. RES thresholds in the successful SNS group were statistically significantly higher (p>0.029) suggesting patients responding to lower RES thresholds have increased sensitivity and do not find SNS treatment beneficial. The optimal RES response condition for successful SNS outcome was when>18 mA which has significantly higher success rate (OR>3.1, PPV>72%) and p<0.015).

68.3% of patients in group II respond to SNS. Surprisingly, the sensory markers were either all normal or abnormally elevated (hyposensitive) in each patient without crossover. Normal rectal sensory markers are generally found in patients with successful SNS outcome (TV, p>0.0458; UV, p>0.0150; MTV, p>0.0033). 83% of patients with normal rectal sensory responded to SNS and 62% of patients with rectal hyposensitivity did not respond to SNS (p<0.0036).

**Conclusion**

This study shows normal rectal sensory function plays a role in successfully treating patients with SNS.

**REFERENCES**

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**PWE-142 THE REFLUX PATHOLOGY IN INEFFECTIVE OESOPHAGEAL MOTILITY**

Ismail Miah*, 1Terry Wong, 1Jeremy Sanderson, 1Musa Miah, 1Jafar Jafari. 1Guy’s and St Thomas’ NHS Foundation Trust, London, UK; 2King’s College London, London, UK; 3Homerton University Hospital, London, UK

10.1136/gutjnl-2018-BSGAbstracts.431

**Introduction**

Ineffective oesophageal motility (IOM) is considered as a minor oesophageal motility disorder without clear relevance to significant oesophageal diseases. IOM incorporates a composite of failed, weak and segmented peristalsis during water swallows. In this study we hypothesise that severe IOM has significant impact on patients’ health.

**Method**

Patients diagnosed with IOM based on Chicago Classification (CC)(version 3)1 between July 2017 to December 2017 were selected. All patients underwent high-resolution manometry (HRM) and 24 hour impedance-pH monitoring. Patients were classified into 2 groups based on distal contractile integral (DCI) outcome of swallows: group I with failed peristalsis >50% (DCI<100 Hgscm) and group II with weak peristalsis >50% (DCI>100–450 Hgscm). Statistical t-test, χ2 test and odd ratio (OR) were used to compare reflux parameters and HRM findings between groups I and II.

**Results**

259 patients were found having reflux monitoring: group I (F:M=59:32, age 20–83 years) and group II (F:M=116:52, age 18–79 years). The acid exposure time was significantly higher in group I in the daytime (p<0.037) and nocturnal periods (p=0.006). The total pathological acid exposure was also significantly higher (p<0.036, OR >1.75).

The mean acid clearance time was significantly higher demonstrating poor clearance in group I (p<0.011). The DeMeester score was significantly elevated in the group I (p<0.009) and showed higher prevalence of abnormal DeMeester score (p<0.01, OR >1.9). RDQ score between groups I and II were not statistically significant (2.2 vs 2.0, p>0.190).

Other findings of interest from HRM, in the total of 364 IOM patients, 65.9% patients dominantly had failed peristalsis (group I) and notably 69.2% IOM patients were female. Group I showed significantly higher prevalence of hypotensive LOS compared to group II (p<0.001, OR >2.1). There were no statistical differences in the incidence of hiatus hernia between the groups (OR >0.8, p>0.415) nor in the hiatus hernia size (p>0.118).

**Conclusion**

Two subset reflux pathology states exists in IOM and patients with dominantly failed peristalsis (group I) have greater prevalence of pathological reflux exposure and having incompetent antireflux barrier. Based on this study, a great number of patients with IOM should not be considered as having a minor oesophageal disease and this needs to be reflected on the clinical management. Further investigation is required to investigate whether patients with dominantly failed peristalsis are at greater risk of developing oesophagitis and precancerous Barrett’s oesophagus.

**REFERENCE**

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**PWE-143 HIDDEN ACHALASIA IN ABSENT CONTRACTILITY**

Ismail Miah**, 1Terry Wong, 1Jeremy Sanderson, 1Jafar Jafari. 1Oesophageal Laboratory, Guy’s and St Thomas’ NHS Foundation Trust, London, UK; 2Gastroenterology, Guy’s and St Thomas’ NHS Foundation Trust, London, UK; 3Faculty of Life Science and Medicine, King’s College London, London, UK

10.1136/gutjnl-2018-BSGAbstracts.432

**Introduction**

Absolute absent contractility (AAC) of the oesophagus has been affiliated with failed peristalsis, 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 ≥LOS basal tone (=non relaxing LOS), b) No remanence of peristalsis (defined by DCI≥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.
Reflex 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>9:5, age 28–73 years) and 9 controls (F:M>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≥0.0002), lower number of acid reflux events occurred (1.5 vs. 21, p≥0.035) and decreased RDQ scores were found (2 vs. 4.1, p≥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.

REFERENCE

Gut 2018(X(Suppl X):A1–A284

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.

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

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

INTRODUCTION Nausea is an unpleasant experience characterised by a range of gastric, cardiac, psychological and somatic 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 para-sympathetic 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.

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

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 (‘lifestyle’).

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 dietician. Participants were then randomised to receive either organic gluten (Group A, Vital Gluten 14 g gluten/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≥14, Group B; n≥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≥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.

Gut 2018(X(Suppl X):A1–A284

Abstract PWE-145 Figure 1 Subcortical morphology differs in subjects susceptible to nausea. Green overlay shows aspects of nuclei positively correlated to nausea severity.

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

1 Anupam Rej*, 1 Matthew Kurien, 2 Paola Tosi, 3 Nick Trott, 1 David Sanders. 1 Academic Unit of Gastroenterology, Royal Hallamshire Hospital, Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, UK; 2 School of Agriculture Policy and Development, University of Reading, Reading, UK

10.1136/gutjnl-2018-BSGAbstracts.434
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.

Abstract 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 linked to altered subcortical morphology.

Methods Endophenotype were determined in 27 healthy subjects (14 male; mean age 30 years, PC1 (n=11) and PC2 (n=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).

Conclusions Personality and autonomic neurophysiology influences subcortical morphological changes identified in PCs. Future research should investigate associations of endophenotypic characteristics to brain structure and function in health and chronic visceral pain to establish biomarkers for personalised medicine-based approaches.
Introduction

The ‘CF gut’ is a novel term encompassing the range of gastrointestinal (GI) symptoms recognised in patients with cystic fibrosis (CF). There are no accepted or validated assessment tools and neither the range nor the frequency of symptoms has been described. Evidence from our CF-GI clinic demonstrated that symptoms were not accounted for by pancreatic insufficiency (PI) and appeared to correspond to those seen in IBS. These symptoms will impact quality of life (QOL) outside of pulmonary morbidity, therefore it is not clear whether current CF-related QOL tools are sufficient.

Methods

Consecutive patients attending specialist CF clinics were asked to complete questionnaires: Patient Health (PHQ-9); Generalised Anxiety (GAD-7); GI symptom rating scale (GSRS); IBS symptom severity score (IBS-SSS); CF-related quality of life (CFQR). Demographics, BMI, CF genotype, PI status and enzyme replacement therapy (PERT) were recorded. Patients with pre-existing coeliac disease or inflammatory bowel disease were excluded. Questionnaires were altered to remove the term ‘IBS’ and patients were asked about ‘GI symptoms’ instead.

Results

Results from the total cohort of 176 patients will be forthcoming, but we present interim data from 107 (mean age 27.8±9.6 y; 60 F; 94 PI (88%) of whom 2 were not taking PERT; mean BMI 22.1 kg/m², FEV159% predicted). 53 (49.5%) were DF508 homozygous.

69/107 (65%) met Rome IV criteria for IBS, with 47 (44%) reporting significant symptoms (IBS-SSS >80). Using the GSRS we created a ‘heatmap’ to describe the range and severity of symptoms as IBS-SSS increased (figure: ‘traffic light’ colour chart for mild-moderate-severe, columns 1–11 are each descriptor in the GSRS; rows are individual patients with IBS-SSS increasing down left-most column).

With patients grouped as IBS-SSS <80 or>80, significant differences were observed in anxiety and depression as well as across all domains of the CFQR. There was no correlation between IBS-SSS and any CFQR domain (particularly that relating to GI symptoms), suggesting that the latter is insufficient to describe the CF gut.

Conclusion

This is the first ever systematic study using validated symptom scores to describe the range of GI symptoms in CF. These do not correlate with PERT or genotype and appear to be captured well by the IBS-SSS, but not the CFQR. Further work will be aimed at establishing accurate screening and assessment tools for this phenotype. Therapeutic trials in CF may use these already validated tools to demonstrate a positive impact on ‘non-respiratory’ symptoms and QOL.

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