

variability in thermal sensitivity between healthy subjects, we could not find a significant correlation between impedance and perception parameters in the proximal or distal oesophagus.

#### Abstract PTU-131 Table 1

	Temperature at PDT (°C)	AUC (°C*s)	Time to PDT (s)
Distal Oesophagus	53.7 ± 2.7	698.8 ± 241.3	85.1 ± 15.5
Proximal Oesophagus	54.3 ± 2.3	743.5 ± 201.9	87.8 ± 11.7

**Conclusion** A novel Peltier-based thermal stimulator device can accurately and reproducibly determine oesophageal thermal sensitivity. In healthy subjects we could not demonstrate a correlation between basal impedance and sensitivity to heating. Current experiments are assessing this correlation in NERD patients with hyper-sensitivity to acid.

**Disclosure of Interest** None Declared

#### PTU-132 CARBONATED SOLUTIONS ARE SUPERIOR TO SOUR SOLUTIONS IN MODIFYING HUMAN SWALLOWING REACTION TIME PERFORMANCE

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<sup>1</sup>O Elshukri, <sup>1</sup>E Michou, <sup>1</sup>S Mistry, <sup>1</sup>S Hamdy. <sup>1</sup>Gastrointestinal Sciences, Institute of Inflammation and Repair, University of Manchester, Manchester, UK

**Introduction Background/Aims** Clinical evidence supports a role for carbonated liquids in reducing aspiration in dysphagic patients compared to simple water (Bulow *et al* Acta Radiologica, 2003). However, there are limited data on how carbonation modulates swallowing performance. Here, we investigate the effects of equi-pH carbonated and sour (citric acid) water solutions on swallowing performance using a reaction time task (Mistry *et al* J Physiol.2007), in healthy volunteers.

**Methods** Twelve healthy participants (6 male, 33±4 years, mean±SEM) visited the laboratory on three separate occasions. Subjects were asked to perform 5 consecutive measurements of swallowing behaviour with 10 normal, 10 fast and 10 challenged swallows per measurement (within a pre-determined time-window). For each task, subjects swallowed each of three solutions: carbonated, sour/citric acid and still water solutions with each attendance in a randomised order. The 5 blocks of 30 swallows were repeated over a 1 hour period at 0, 15, 30, 45 and 60 minutes to control for fatigue and practise confounding variables. Measurements were performed through an intra-pharyngeal catheter with built-in pressure transducers to record change in pharyngeal pressure. A pair of electrodes on the back of subject's hand was used to deliver an electrical pulse to cue the subject when to swallow. Subjects were invited for an additional visit to complete a 'taste intensity' questionnaire. Data were analysed with non-parametric Wilcoxon's test in SPSS16.

**Results** Mean swallowing latencies of both normal and fast swallows were not significantly different across the three different sessions. However, for the challenged swallowing task, compared to still water, carbonated water significantly improved the number of correct swallows ( $Z = -2.044$ ,  $p = 0.041$ ). By contrast, sour (citric acid) solutions had no effects on challenged swallowing compared to still water [citric acid\*water ( $Z = -0.045$ ,  $P = 0.9640$ )], despite being similar to carbonated water [citric acid\*carbonated ( $Z = -1.293$ ,  $p = 0.196$ )]. Carbonated solutions also had the highest intensity score being greater than both sour and still water [carbonated\*water ( $Z = -3.517$ ,  $P = 0.000$ ), carbonated \*citric acid ( $Z = -3.520$ ,  $p = 0.000$ )].

**Conclusion** Carbonation appears to alter swallowing performance compared to other liquids by improvement in complex tasks and showed greatest perceived taste intensity. These data support the using of carbonation as treatment option for dysphagic patients in

preventing aspiration and lay the basis for further clinical research with carbonation on swallowing function.

**Disclosure of Interest** None Declared

#### REFERENCES

1. Bulow *et al*. Acta Radiologica., 2003
2. Mistry *et al*. J Physiol., 2007

#### PTU-133 GOBLET CELL CARCINOMA OF THE APPENDIX: ACUTE VS CHRONIC PRESENTATIONS

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<sup>1</sup>R Basuroy, <sup>1</sup>A Ngu, <sup>2</sup>L Mills, <sup>3</sup>H El-Mahallawi, <sup>4</sup>T Cecil, <sup>1,2</sup>J K Ramage. <sup>1</sup>Department of Gastroenterology, Hampshire Hospitals NHS Trust, Basingstoke; <sup>2</sup>Neuroendocrine Tumour Service, Institute of Liver Studies, Kings College Hospital, London; <sup>3</sup>Department of Pathology; <sup>4</sup>Pseudomyxoma peritonei Service, Hampshire Hospitals NHS Trust, Basingstoke, UK

**Introduction** Goblet Cell Carcinomas (GCC) are a rare neuroendocrine tumour (NET) of the appendix. The experience of a National Specialist Centre's for pseudomyxoma peritonei (cytoreductive surgery) and two regional NET services with patients with GCC are presented.

**Methods** A retrospective audit was performed of patients with histologically proven GCC collated from histology, NET and cytoreductive surgery databases. Mortality rates (%) for subgroups were calculated.

**Results** 16 patients (female = 9) were included for analysis with median age at diagnosis of 58 years (range, 25.5–71.8). The mortality rate was 25% (n = 4) associated with median survival of 22 months (range, 9–72) following diagnosis. The most common symptoms were acute appendicitis-like (62.5%), chronic abdominal pain (50%), bowel obstruction (25%) and chronic diarrhoea (12.5%). Patients presenting with acute appendicitis-like symptoms had the lowest mortality rate at 10%. Bowel obstruction, chronic abdominal pain and chronic diarrhoea were associated with mortality rates of 50%, 38% and 50% respectively. Completion right hemicolectomy (n = 10) was associated with decreased mortality (22% vs 40%). Bilateral salphingo-oophrectomy (n = 5) was associated with increased mortality (66% vs 0%). The mortality rate associated with chemotherapy (n = 6) and cytoreductive surgery (n = 4) was 17% and 50% respectively.

**Conclusion** Patients with GCC who present acutely have better outcomes than those with chronic symptoms suggesting different disease processes. Performing a completion right hemicolectomy is associated with benefit, while the role of BSO is less clear.

**Disclosure of Interest** None Declared

#### PTU-134 PREVALENCE AND INVESTIGATIONAL PATHWAYS OF PATIENTS WITH CONSTIPATION PREDOMINANT IRRITABLE BOWEL SYNDROME

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<sup>1</sup>S Lin, <sup>1</sup>M Kurien, <sup>1</sup>I Aziz, <sup>1</sup>S Winfield, <sup>1</sup>N Rugg, <sup>1</sup>A Kelsall, <sup>1</sup>J S Leeds, <sup>1</sup>D S Sanders. <sup>1</sup>Department of Gastroenterology, Royal Hallamshire Hospital, Sheffield, UK

**Introduction** Our group has previously described investigational pathways that occur in patients with diarrhoea predominant irritable bowel syndrome (IBS-D). Currently, there is a paucity of work undertaken in either primary or secondary evaluating patients with constipation predominant irritable bowel syndrome (IBS-C). This study evaluates the population prevalence of IBS-C, determining also the investigational pathways that occur in these patients.

**Methods** We prospectively collected data from 3 groups of patients between April 2005 and November 2012. Group 1 (n = 1002) were healthy volunteers, Group 2 (n = 64) were patients fulfilling Rome III criteria for IBS-C, with Group 3 (n = 403) being patients fulfilling

Rome III criteria for IBS-D. In Group 1 the prevalence of IBS and its differing subtypes (IBS-D, IBS-C, mixed IBS (IBS-M) and unspecified IBS) were determined using the Rome III Diagnostic Questionnaire. In groups 2 and 3, demographic data and diagnostic yield of any investigations undertaken as part of the diagnostic workup were evaluated. Statistical analysis was performed using SPSS version 17.0 (SPSS Inc, Chicago, IL) with Fisher's exact test used to compare categorical data, and an unpaired T-test used to compare continuous data

**Results** IBS prevalence in healthy volunteers (Group 1) was 6% (60/1002), with 80% being female ( $p < 0.0001$ ). Mixed IBS was the most common IBS subtype (Table 1), with IBS-C patients being significantly older than other patients with IBS (mean age 45 vs 30 years,  $p = 0.027$ ). When comparing Groups 2 and 3, patients with IBS-C underwent a total of 56 additional investigations (including radiological, endoscopic investigations, breath tests, SeHCAT scan, faecal pancreatic elastase), significantly lower than the number of investigations undertaken in the IBS-D group of 885 ( $p < 0.001$ ). Whilst further investigations in Group 3 identified an alternative diagnosis to IBS-D in 25%, the 56 additional tests undertaken in Group 2 did not help establish an alternative diagnosis to IBS-C in any of the patients.

**Abstract PTU-134 Table 1** Prevalence rates of differing types of IBS in Group 1 ( $n = 1002$ )

Subtype of IBS	Number of Patients	Prevalence (%)	Sex (F:M)	Mean Age	Standard Deviation
IBS-D	14	1.4	7:7	32	18
IBS-C	7	0.7	6:1	45	21
IBS-M	27	2.7	24:3	32	15
Unspecified IBS	12	1.2	11:1	25	7

**Conclusion** This is the first study to evaluate the population prevalence of differing IBS subtypes within a UK population. Whilst, further investigation of IBS-D patients may lead to an alternative diagnoses and instigation of an appropriate management strategy, the merits of further investigation in IBS-C patients is to be questioned.

**Disclosure of Interest** None Declared

#### PTU-135 MECHANISM OF ACTION FOR LINALOTIDE-INDUCED ABDOMINAL PAIN RELIEF

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<sup>1</sup>S M Brierley, <sup>1</sup>J Castro, <sup>1</sup>A Harrington, <sup>1</sup>P Hughes, <sup>1</sup>C Martin, <sup>2</sup>A Silos-Santiago, <sup>2</sup>C Kurtz, <sup>3</sup>A Blackshaw. <sup>1</sup>Medicine, University of Adelaide, Adelaide, Australia; <sup>2</sup>Ironwood Pharmaceuticals, Cambridge, United States; <sup>3</sup>Wingate Institute for Neurogastroenterology, London, UK

**Introduction** Cyclic GMP (cGMP) is a 2nd messenger produced in intestinal epithelial cells in response to guanylate cyclase C receptor (GCC) activation. Linaclotide (LIN), an investigational GCC agonist (GCCA), improved constipation and reduced abdominal pain in patients with irritable bowel syndrome with constipation (IBS-C) in clinical trials. We have shown that exogenous extracellular cGMP has contrasting effects on colorectal (CR) afferent mechanosensitivity.<sup>1</sup> Here we assessed the effects of GCCAs on CR afferent mechanosensitivity in healthy and chronic visceral hypersensitivity (CVH) mouse models

**Methods** We investigated CVH in healthy mice and CVH 28 days post-TNBS administration, when inflammation had resolved and nociceptors were mechanically hypersensitive. Mechanosensory responses of CR splanchnic nociceptors and pelvic mucosal afferents were compared *in vitro*  $\pm$  GCCAs STc (1, 50, 250, 1000nM) and LIN (1, 30, 100, 300, 1000nM), which were applied individually to the CR mucosal surface. GCC expression in the CR mucosa was determined via qRT-PCR

**Results** In healthy mice, STc dose-dependently (50, 250, 1000nM) reduced nociceptor mechanosensitivity (max. effect at 1000nM [ $n = 10$ ],  $-38\%$ ;  $p < 0.001$ ). This effect was more potent in CVH, with various doses of STc (1, 50, 250, 1000nM) all significantly reducing mechanosensitivity (max. effect at 1000nM [ $n = 10$ ],  $-53\%$ ;  $p < 0.001$ ). In healthy mice, LIN significantly reduced nociceptor mechanosensitivity at doses of 300nM and 1000nM (max. effect at 1000nM [ $n = 7$ ],  $-48\%$ ;  $p < 0.01$ ). In CVH this effect was dose-dependent and more potent, with LIN (100, 300, 1000nM) significantly reducing nociceptor mechanosensitivity (max. effect at 1000nM [ $n = 5$ ],  $-59\%$ ;  $p < 0.001$ ). By contrast, in pelvic nerves STc increased low-threshold pelvic mucosal afferent mechanosensitivity in healthy mice ( $n = 7$ ;  $p < 0.001$ ), an effect completely lost in CVH ( $n = 7$ ;  $p > 0.05$ ). qRT-PCR analysis revealed abundant GCC expression in CR mucosa of both healthy and CVH mice

**Conclusion** STc and LIN significantly reduced colonic nociceptor mechanosensitivity, with greatest effect in CVH. Although these overall effects mirror those of exogenously applied cGMP, GCCAs are more potent at inhibiting nociceptors. Overall, LIN induced the greatest inhibitory effects on nociceptors, particularly in CVH. Reducing colonic nociceptive input would help to reduce pain, which supports LIN clinical data showing a significant reduction in abdominal pain in humans with IBS-C. Increased mucosal afferent sensitivity may help coordinate defecation.

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#### REFERENCE

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#### PTU-136 PREVALENCE OF FUNCTIONAL GASTROINTESTINAL DISORDERS IN CONSECUTIVE NEW PATIENT REFERRALS TO A GASTROENTEROLOGY CLINIC

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<sup>1</sup>U Shivaji, <sup>1</sup>D Gracie, <sup>1</sup>A Sainsbury, <sup>1</sup>A C Ford. <sup>1</sup>Gastroenterology, Leeds Teaching Hospitals, Leeds, UK

**Introduction** Functional gastrointestinal disorders (FGIDs), such as irritable bowel syndrome (IBS) and functional dyspepsia (FD), are common in the community. However, the amount of time that a Gastroenterologist spends dealing with these conditions in the outpatient department has not been well-described. We aimed to examine this issue.

**Methods** Review of consecutive unselected new patient referrals to a single Gastroenterologist's outpatient clinic during a 2-year period, from January 2010 to December 2011. All clinic letters were reviewed retrospectively, and symptoms reported by the patient at the initial consultation were recorded. Radiology, endoscopy, chemical pathology, and histopathology databases were then cross-examined in order to ascertain the final diagnosis following full investigation, to the level deemed appropriate by the consulting physician.

**Results** There were 397 consecutive unselected new patient referrals (mean age 53.2 years, 231 (58.2%) female) to a single Gastroenterologist between January 2010 and December 2011. Of these, 155 (39.0%) were judged as being entirely due to an FGID after investigation, and another 12 (3.0%) were deemed as being partially related to FGIDs, meaning that 167 (42.0%) patients reported symptoms compatible with an FGID. The final diagnoses are listed in Table 1, with some patients reporting symptoms consistent with