Results The biopsies of the eight sequential patients had been reported by one of four centres within the West Midlands. All, except one, of these local reports were normal. However, subsequent review of all eight biopsies by the national expert identified pathological changes in all. Diagnoses established included two cases of polyglucosan body myopathy, confirmation of NSAID enteropathy and differing forms of inflammation (eg, lymphocytic plexitis). Establishing these diagnoses enabled accurate prognoses and implementation of subsequent management, including continuation of home parenteral nutrition (HPN, n=6) and consideration for small intestinal transplantation (SIT, n=3). Patients questioned reported additional benefits.

Conclusion Gut dysmotility can be highly symptomatic and debilitating leading to intestinal failure (IF), HPN and SIT. Clinical decisions for consideration for HPN and SIT are complex. Decisions must consider the potential for morbidity and mortality against the potential for improvement in nutritional status, quality of life and survival. A full thickness small bowel biopsy, while invasive, offers opportunity for a definitive diagnosis, and thus a prognosis. Published series report an 81% diagnostic yield for small bowel biopsies in patients with suspected gastrointestinal neuromuscular disorders, when using routine and immunohisto-chemical techniques.[1] However, standard histopathological reporting, which is often based on H&E staining alone, has less potential for achieving a diagnosis. This is shown by our study in which a diagnosis was achieved in only 13%. Thus, our study highlights the importance of expert review and demonstrates the importance of achieving a diagnosis for patient and clinician.

Competing interests None declared.

REFERENCE

1. **Knowles CH**, Veress B, Tornblom H, *et al.* Safety and diagnostic yield of laparoscopically assisted full-thickness bowel biopsy. *Neurogastroenterol Motil* 2008;**20**:774–9.

PWE-048 GASTRIC VOLUME RESPONSE AND EMPTYING AFTER A LARGE LIQUID NUTRIENT MEAL IN FUNCTIONAL DYSPEPSIA AND HEALTH ASSESSED BY NON-INVASIVE GASTRIC SCINTIGRAPHY (GS) AND MRI: A PILOT STUDY TO IDENTIFY CANDIDATE BIOMARKERS

doi:10.1136/gutjnl-2012-302514d.48

[1]E Tucker,* [1]H Parker, [2]C Hoad, [1]N Hudders, [3]A Perkins, [3]P E Blackshaw, [1]L Marciani, [2]C Costigan, [2]P Gowland, [1]M Fox. *[1]NIHR Biomedical Research Unit, University of Nottingham, Nottingham, UK; [2]Sir Peter Mansfield Magnetic Resonance Centre, University of Nottingham, Nottingham, UK; [3]Division of Radiology and Imaging Sciences, University of Nottingham, Nottingham, UK*

Introduction Dyspeptic symptoms are common but investigations rarely explain them. This lack of information may be because: (1) Current test meals are small (~200 ml) and don't trigger symptoms (2) gastric emptying half time (T50) and/or retention at 2 or 4 h may not elicit underlying pathophysiology. By contrast, MRI studies suggest that gastric volume change after a meal may identify impaired accommodation in functional dyspepsia (FDs).

Aim GS and MRI with a 400 ml liquid test meal were applied to identify candidate biomarkers that distinguish FDs from healthy volunteers (HVs).

Methods FDs with postprandial distress by Rome III criteria and normal endoscopy or 24 h pH-studies were recruited. Results were compared to age and sex matched HVs. Sensation at 400 ml and Maximum Tolerated Volume (MTV) was assessed by nutrient drink test (0.75 kcal/ml@40 ml/min). Participants were then randomised to GS and MRI with 400 ml liquid test meal (0.75 kcal/ml@40 ml/min) on two separate days. Directly comparable measurements of gastric content volume were analysed: Gastric contents volume after meal ingestion (GCV0), GE half-time [T50], and GErate@T50 [ml/min].

Results FDs (n=8; 7 female) were each compared to those of three matched HVs (n=24). HVs weighed more than FDs ($p<0.018$) fullness at 400ml was similar ($p=0.21$) but dyspeptic sensations were lower (bloating, nausea, pain, $p<0.01$) and MTV was greater (median 960 (IQR 750–1330) vs 480 (±400–760) ml, $p=0.015$). With GS, HVs had higher GCV0 than FDs (345 (333–358) vs 325 (310–350) ml; $p=0.052$), T50 (48 (39–56) vs 52 (44–54) min; $p=0.710$) was similar but GErate@T50 was faster (3.5 (3.0–4.2) ml/min vs 2.7 (2.1–3.1) ml/min; $p=0.012$). With MRI, compared to GS, measurements of GCV and T50 were larger ($p<0.001$), and GErate was slower ($p=0.012$); but no significant differences between groups.

Conclusion FD patients are characterised by abnormal gastric sensorimotor response to a large, liquid nutrient meal. Rapid early emptying (reduced GCV0) is followed by slow late emptying (slow GErate@T50). These GS measurements, with dyspeptic symptoms at 400 ml, are biomarkers in FD. MRI measurements of GCV, residual volume, meal and secretions do not provide the same clarity. These findings are consistent with the hypothesis that impaired accommodation in gastric filling in FD leads to rapid nutrient delivery to small bowel triggering powerful neuro-hormonal feedback that slows subsequent emptying.

Competing interests None declared.

PWE-049 EFFECTS OF AGE, SEX AND OBESITY ON SATIATION ASSESSED BY NUTRIENT DRINK TEST AND GASTRIC EMPTYING (GE) ASSESSED BY NON-INVASIVE GASTRIC SCINTIGRAPHY (GS) AND MRI: ANALYSIS AND COMPARISON OF METHODS

doi:10.1136/gutjnl-2012-302514d.49

[1]H Parker,* [2]C Hoad, [1]N Hudders, [1]E Tucker, [3]A Perkins, [3]P E Blackshaw, [1]L Marciani, [2]C Costigan, [2]P Gowland, [1]M Fox. *[1]NIHR Biomedical Research Unit, University of Nottingham, Nottingham, UK; [2]Sir Peter Mansfield Magnetic Resonance Centre, University of Nottingham, Nottingham, UK; [3]Division of Radiology and Imaging Sciences, University of Nottingham, Nottingham, UK*

Introduction The relationship of demographic and anthropometric factors on satiation and gastric functions is incompletely understood. Optimal methodology to assess meal intake factors and postprandial GE has not been established. Current test meals are small and may not be sufficient to assess satiation and postprandial responses. GS measures gastric meal retention only. MRI measures gastric content volume (meal and secretions).

Aim This study assessed the effects of age, sex and obesity on maximum tolerated volume (MTV) assessed by nutrient drink test (NDT) in healthy volunteers (HVs). GS and MRI assessed gastric function and GE after ingestion of a 400 ml liquid test meal (same nutrient drink) that triggered sensation of fullness in >90% HVs.

Methods Adult HVs were recruited and stratified by sex and age aiming to study 10 men and women in age groups <40, 40–60, >60 yrs. Exclusions included history of GI surgery and obesity (BMI>30 kg/m^2). MTV was assessed at screening by NDT (0.75 kcal/ml at 40 ml/min), all HVs ingested >400 ml. Eligible participants were randomised to gastric imaging by GS and MRI on two separate days. HVs ingested 400 ml liquid nutrient at 40 ml/min. Gastric content volume was monitored over 4 h. GS and MRI measured GE half-time [T50], GErate maximum and GErate@T50 [ml/min]. Univariate and multiple linear regression models assessed the effects of demographic and anthropometric parameters on gastric function.

Results 53 HVs completed the study (6–10 in each group). MTV associated with male sex (R^2=20%, $p<0.001$), height (R^2=9%,