

Introduction Double balloon enteroscopy (DBE) offers the ability for diagnostic and therapeutic intervention in the small bowel. The procedure takes an average of an hour to carry out and can be uncomfortable for the patient. It also has an associated learning curve for the endoscopist. The depth of insertion is a subjective estimation of the total number of passes into the small bowel. The success/diagnostic yield of the procedure relies upon patient tolerability and locating the target lesion or bleeding point. The aim of this study was to assess the technical success rate for routine DBE over time in comparison to sedation dose used.

Methods A prospective review of the 290 DBE procedures done since the start of the service was conducted. The majority of patients underwent a capsule endoscopy either locally or at our centre prior to DBE which helped to guide the chosen route. Data was collected for sedation/analgesia used, procedure length, number of passes into the small bowel and diagnostic yield between the initial 145 (group 1) and latter 145 procedures (group 2). Similar comparisons were also done between the oral and anal routes of DBE.

Results The DBE procedures were performed from July 2006 to Nov 2012 by two endoscopists. Whilst the median doses of midazolam used between the two groups were similar (median 5 mg versus 6mg, $p = 0.8$), a greater amount of fentanyl was used in group 2 (median 50mcg versus 100mcg, $p < 0.001$). There was no difference in the procedure length or the number of passes recorded by the endoscopists. However there was a significant increase in the diagnostic yield in the latter group (32% versus 58%, $p < 0.001$).

A total of 165 oral DBE procedures were done. Whilst there were no differences in the procedures length or number of passes into the small bowel, a greater amount of fentanyl was used in the latter half of the procedures. The diagnostic yield improved significantly in the latter half of the oral DBE procedures (41% versus 61%, $p = 0.01$). There were 125 anal DBE procedures. There was no difference in procedure characteristics or diagnostic yield for the anal route over time despite higher doses of fentanyl.

Conclusion This study demonstrates an improved diagnostic yield for DBE over time particularly with the oral route and with a greater amount of fentanyl used. The absence of improvement in yield for the anal route in this study is consistent with the literature to date. The anal route remains a challenge for endoscopists due to difficulty achieving a stable platform in the terminal ileum to progress. More education on retrograde techniques would help overcome this limitation.

Disclosure of Interest None Declared.

PTH-191 CASE SERIES OF 162 VIDEO CAPSULE ENDOSCOPIES FROM A SINGLE UK TERTIARY REFERRAL CENTRE

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Introduction Video capsule endoscopy (VCE) is now a routine procedure for investigating the small bowel. It is not apparent whether the yield and utility of the procedure is the same when used in routine practise, compared to earlier studies¹⁻³. The yield of the procedure is important when planning local provision of enteroscopy services.

Methods We retrospectively audited 162 consecutive procedures in a single UK centre. In our analysis we defined diagnostic yield as confirming or establishing a diagnosis or definitively refuting a diagnosis previously suggested by other investigations. Patients were fasted for at least 8 hours and not given bowel preparation. Equipment was from Olympus UK. Studies were initially read by a non-medically qualified healthcare worker before approval by the senior author, after a learning phase when the initial 50 examinations were dual read. Patency capsules were used in patients with obstructive type symptoms or known Crohn's disease.

Results The overall diagnostic yield was 35% which is slightly lower but comparable to early studies³. The yield for overt GI bleeding (OGIB) was 43%, lower than the often reported yield of approximately 60%. Of the 162 patients 14 were referred on for enteroscopy (8.6%) which is lower than many early reports. Of the 14 referred, 10 were for anaemia and 4 for OGIB. 11 had successful therapy with balloon enteroscopy and 1 was diagnosed and a tattoo placed for lesion resection. In 9/162 studies (5.5%) pathology was found within reach of gastroscopy or colonoscopy and had been missed on previous examination. One retained capsule required surgical removal (0.6%). Four capsules were retained in the stomach (2.4%) and 30 were seen to enter the small bowel but did not reach the caecum (18.5%). 16 studies were deemed inadequate due to food debris (9.8%). 2 failed due to equipment malfunction. Total incomplete examination rate was therefore 30%. Average small bowel transit time was 281 minutes (range 90–710). Anaemia ($n = 87$) was the most common indication with a diagnostic yield of 33%. OGIB ($n = 37$) was the next most common indication yielding 43%. Query Crohn's ($n = 22$) had a yield of 14%. Malabsorption query Coeliac ($n = 5$) yielded 40%. Unsurprisingly known Coeliac ($n = 2$) gave a complete yield of 100%. Abnormal Imaging ($n = 4$) returned a 75% yield. Weight loss ($n = 1$) gave 0% yield. Abdo pain ($n = 4$) had a 25% yield.

Conclusion In routine practise VCE is a useful technique to diagnose patients with small bowel disorders. Yield seems slightly lower than previous studies but is still significant. Incomplete examination rate was high, mostly due to inadequate battery life. Only 8.6% of patients required enteroscopy which has implications for service provision.

Disclosure of Interest None Declared.

REFERENCES

1. Triester *et al.* 2005
2. Marmo *et al.* 2005
3. Hartmann *et al.* 2005

PTH-192 ONCE NEGATIVE ALWAYS NEGATIVE? – THE CLINICAL UTILITY OF REPEATING TTG

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Introduction Patients with chronic or recurrent abdominal symptoms, or anaemia, often undergo repeated rounds of investigations including tissue transglutaminase (TTG) antibody testing. The aim of this study was to investigate a) the number of patients having multiple TTG tests b) the risk of having a positive TTG after a past negative test.

Methods A list of all TTG requests between 01/01/02–15/07/12 at our laboratory was created. Patients with an initial negative result, but subsequent positive result, were identified, and their hospital and GP records reviewed. Our institution employed the Aesku (Grifols) test prior to 2007 and then the Orgentec test (Launch Diagnostics) and has not used these tests to monitor patients with known Coeliac disease.

Results 44,985 unique patients (65.8% female, 13.5% under 18 years old) had at least one TTG test carried out over the 10.5-year study period. Use of the TTG test has increased (4 new patient tests in 2002 vs. 11,466 in 2011). 2.0% of first TTG tests were positive (2.2% of the total children and 2.0% of the total adults). 5,872 patients (69.6% female, 16.6% of the total children and 12.5% of the total adults) had more than 1 test, of which 4,813 patients (10.7%) had 2 tests and 1059 (2.3%) had 3–10 tests. The median interval between the first and the last test was 21 months (range 1 day - 12.6 yrs). Of the patients with more than one test 17 (7 children), without a prior diagnosis of coeliac disease (CD), had a negative TTG test (whilst taking a normal diet) followed by a positive test. These

included 0.7% of the multiply tested children and 0.2% of the multiply tested adults. Reasons for re-testing included persistence or worsening of initial symptoms (53%) or development of new symptoms (76%). There were more women (ratio 3:1). 14/17 (82%) patients had 1 initial negative then a subsequent positive test, with a median time between the tests of 20 months (range 3 – 71 months). 3 (18%) had 2 negative tests then a subsequent positive test with a median time between the first negative test and the positive test of 36 months (range 30 – 41 months). No patients had a positive test after 3 or more negative tests. Of the 17 patients with a negative followed by positive test, 3 had a family history of CD and 2 children had Down's Syndrome.

Conclusion Clinicians often repeat TTG tests in adults and children when the initial test is negative. The chances of having a positive TTG test after a negative test, even if symptomatic, is low after a median interval of 21 months - in adults this risk is 0.2% and in children 0.7%. In patients with a low pre-test probability of coeliac disease repeat TTG testing following a negative test is not necessary.

Disclosure of Interest None Declared.

PTH-193 MALIGNANT TUMOURS OF THE SMALL INTESTINE: A 7 YEAR STUDY AT A DISTRICT GENERAL HOSPITAL

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Introduction Malignant tumours involving the small intestine are among the rarest types of cancer. They present difficulties in early diagnosis and management. We analysed the records of all such patients at our hospital over the last 7 years to address the challenge in early recognition and diagnosis.

Methods We retrospectively reviewed the case notes of all patients with operated small intestine tumours identified from histopathology records from 2004 to 2011. Clinical records, discharge summaries and imaging reports were reviewed for demographics, presenting symptoms, diagnostic workup, histopathology and outcome.

Results 255 patients were identified of which 32 (13%) were malignant tumours. Mean age was 71 years (range 59 to 88). Male to female ratio was 3:5. There were 15 (47%) metastatic tumours involving the small intestine (14 adenocarcinomas). Of the 17 primary tumours, there were 4 (13%) adenocarcinomas, 5 (16%) carcinoid, 4 (13%) gastrointestinal stromal tumour (GIST), 3 (9%) lymphomas and 1 (2%) sarcoma.

Of the patients with metastases, 9 presented with bowel obstruction, 4 with perforations and 2 with chronic abdominal pain. Of the 17 patients with primary tumours, the presenting symptoms were chronic abdominal pain (5 patients), systemic symptoms (5), bowel obstruction (3), small bowel perforation (2), gastro-intestinal bleeding (1) and 1 patient was diagnosed at surgery. In the metastases group, 6 were diagnosed on computerised tomography (CT) and 1 on magnetic resonance imaging (MRI). 2 of the 6 diagnosed on CT had recent normal abdominal ultrasound (US). The remaining 8 patients were diagnosed at the time of surgery. 7 of the 8 patients had recent cross sectional imaging which did not pick up the tumour. In the primary tumour group, 1 case was diagnosed on US and 7 on CT (2 of these patients had previous US which did not reveal the tumour). The remaining 9 patients were diagnosed at the time of surgery. 7 of these 9 patients had recent imaging (including CT, Barium meal, US and MRI) which did not pick up the tumour.

In the metastases group, 9 were treated with palliative surgery, 4 had surgery with adjuvant chemotherapy and 2 had curative surgery. In the primary tumours group, 8 had curative surgery, 4 had surgery with adjuvant chemotherapy, 2 patients had neoadjuvant chemotherapy and surgery, 1 had surgery with adjuvant

chemotherapy and radiotherapy and 2 were treated with palliative intent. 60% of those with metastases to the small bowel died within 2 years of diagnosis and 18% with primary tumours died within 2 years.

Conclusion Most patients with metastatic disease present as emergencies while those with primary tumours present with more non-specific symptoms. We require a high index of suspicion and various imaging and endoscopic modalities (including wireless capsule endoscopy) for early diagnosis.

Disclosure of Interest None Declared.

PTH-194 A RETROSPECTIVE ANALYSIS OF GLUCOSE-HYDROGEN BREATH TEST FOR SMALL INTESTINE BACTERIAL OVERGROWTH IN A TEACHING HOSPITAL

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Introduction Small intestine bacterial overgrowth (SIBO) is characterised by diarrhoea and malabsorption. Identifying those at risk is key to diagnosis and treatment. We reviewed all glucose-hydrogen breath tests (GHBTs) performed for suspected SIBO, over a 6-year period in a single teaching hospital to identify associated risk factors and assessed the effectiveness of antibiotic treatment among those with a positive test.

Methods We collected data retrospectively for all GHBTs performed to investigate possible SIBO from 2006 to 2011. Demographic data and information concerning potential risk factors for SIBO were collected by review of clinic letters. A positive GHBT was defined as a rise of post-glucose end-tidal hydrogen reading > 20 parts per million from pre-dose baseline during the 2-hour 20 minute test period. Frequency of potential risk factors for SIBO among those with a positive GHBT compared to those with a negative GHBT were assessed using an odds ratio (OR) along with a 95% confidence interval (CI). Success of treatment with antibiotics for confirmed SIBO was judged according to patient report.

Results 316 patients underwent GHBT during the 6-year period. Of these, 17 were tertiary referrals and were excluded. Among the remaining 299 patients median age was 52 years (range:17–91) and 201 (66.9%) were female. 59 (19.7%) patients had a positive GHBT, 232 were negative, and 8 had equivocal results. Among these 59 patients median age was 61 years (range:20–91) and 39 (66.1%) were female. Of those with a positive test the principal indications for GHBT were diarrhoea in 35 (63.6%), diarrhoea and bloating in 9 (16.4%), high stoma output in 4, bloating alone in 3, abdominal pain in 3, and weight loss in 1. Presence of type II diabetes (OR 2.71; 95% CI 1.08–6.54) and previous intestinal surgery (OR 2.44; 95% CI 1.31–4.56) were significantly associated with a positive GHBT. Proton pump inhibitor (PPI) use (OR 0.98; 95% CI 0.49–1.88), previous radiotherapy (OR 0.84; 95% CI 0.30–2.09), presence of scleroderma (OR 1.27; 95% CI 0.39–3.51), opiate-use (OR 1.21; 95% CI 0.55–2.52), and presence of Crohn's disease (OR 1.35; 95% CI 0.65–2.70) were not significantly associated with a positive GHBT.

In total, 43 patients with a positive GHBT received antibiotic treatment. Of these 21 (48.8%) improved, 18 (41.8%) had no improvement and in 4 the response to therapy could not be ascertained.

Conclusion Almost 20% of patients undergoing GHBT tested positive. Risk factors among our series of patients included type II diabetes and previous surgery. Interestingly, despite assertions from others, PPI use was not significantly associated with a positive GHBT. Almost 50% of patients with a positive GHBT responded to antibiotic treatment on clinical grounds.

Disclosure of Interest None Declared.