PTU-095 BIFIDOBACTERIUM SPECIES REDUCE LIPOPOLYSACCHARIDE-INDUCED SMALL INTESTINAL EPITHELIAL CELL SHEDDING *IN VIVO* IN A MYD88-DEPENDENT MANNER AND PROTECT AGAINST DSS-INDUCED COLITIS

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10.1136/gutjnl-2014-307263.169

Introduction Cell shedding, the process by which intestinal epithelial cells (IECs) are extruded from the small intestinal (SI) villus is known to be elevated in patients with inflammatory bowel disease (IBD) and is correlated with disease relapse. Importantly, there is evidence that the gut bacterial communities (microbiota) influences intestinal epithelial function including gene expression, cell division and energy balance. We thus sought to determine whether specific members of the microbiota, 'probiotic' bifidobacterial species, modulate rates of cell shedding and progression of Dextran sodium sulphate (DSS)-mediated colitis.

Methods C57BL/6 mice (WT) or mice deficient in epithelial Myd88 (Vil-Cre +; Myd88 -/-) (Myd88 KO) were orally gavaged with 1 × 10^9*Bifidobacterium breve UCC2003*, *B. longum* NCIMB8809 or PBS (control) in 3x daily doses. To induce SI cell shedding, mice were injected with 1.25 mg kg-1 Lipopolysaccharide (LPS) intrapertioneally. Animals were euthanized 1.5 hr post-LPS and SI tissue sections analysed for cleaved caspase 3 (CC3) by immunohistochemistry to score shedding along the first 50 cell positions from the villus tip. For colitis studies, control mice or mice colonised with *B. breve* were administered 2% DSS in drinking water for 6 days and euthanized 8 days post-DSS. Disease activity index (DAI) was recorded daily and histology performed on formalin-fixed tissue sections including periodic acid/Schiff (PAS) stain (goblet cell stain).

Results Mice receiving *B. breve* and *B. longum* showed less CC3 +ve shedding cells (3.6% +/-0.6, $p < 0.001$ and 7.6% +/-2.9, ns, respectively) compared to WT mice (10.6%+/-1.3). Interestingly, the protective effect of *B. breve* was lost in Myd88 KO mice receiving LPS as numbers of CC3 +ve IECs were the same in mice receiving *B. breve* or vehicle control (13.3%+/-1.7 vs 10.4%+/1.3; ns), indicating that the protective effect may be mediated by Toll-like receptors. In our colitis model, mice colonised with *B. breve* had reduced DAI compared to control mice, coupled with a significant increase in numbers of PAS +ve goblet cells per crypt (8.2%+/1.6 vs 16.0%+/-0.6; $p = 0.05$).

Conclusion Bifidobacterial species modulate a reduction in rates of cell shedding from the SI villus, potentially via the Myd88 signalling pathway. *B. breve* is also able to partially ameliorate the adverse effects of DSS-induced colitis through induction of goblet cells. In summary, bifidobacteria, particularly *B. breve*, may be beneficial as a therapeutic agent for IBD.

Disclosure of Interest None Declared.

PTU-096 COST EFFICIENCY OF FAECAL CALPROTECTIN IN ASSESSING NEW REFERRALS WITH ALTERED BOWEL HABIT

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10.1136/gutjnl-2014-307263.170

Introduction Altered bowel habits (ABH) is one of the commonest reasons for referral to the gastroenterology clinic. The spectrum of organic and functional bowel symptoms provides a diagnostic dilemma. Functional bowel disorders are common, occurring in 15–20% of Western populations.[1] Therefore, it is important not to create an economic burden by over-investigation.

Faecal calprotectin (FC) is a protein released from neutrophilic leucocytes into the intestinal lumen in response to mucosal inflammation. It is a well-validated, non-invasive test that can differentiate between organic and functional bowel disease with 93% sensitivity and 96% specificity.[2] These features make FC measurement a useful objective test in guiding further investigations.

Methods Over a 2 year period, all FC data was collected in new patients referred to the outpatient clinic for further assessment of ABH and where a diagnostic dilemma existed. Results were recorded as normal (<50 μg/g), borderline (50–100 μg/g) or positive (>100 μg/g) and correlated with the use of further endoscopic or radiological assessment. Department of Health (DoH) tariffs were used to assess cost burden and potential savings.

Results 275 FC measurements were performed in new referrals where there was a dilemma about diagnosis or need for further investigation. Colonoscopy was spared in 71% (196/275), including 139/164 normals, 16/22 borderline and 35/89 positives.

Despite a normal FC result, 25 patients underwent endoscopic investigation after initial assessment. Of these, 16 procedures were normal, 4 had diverticular disease and 2 had low grade dysplastic polyps. Some patients underwent CT colonography with positive findings in 4/17 of the normal FC group (3 diverticular disease, 1 incidental gastric malignancy), 0/2 with borderline FC and 8/15 with positive FC measurement (5 diverticular disease, 1 suspected ileal ulcer, 2 cancers).

If all 275 patients had undergone colonoscopy the cost for the Clinical Commissioning Group (CCG) would be £154275. Risk stratifying with FC assessment reduced this to £44319, saving £109956.

Conclusion Faecal calprotectin assessment saved 71% of possible colonoscopies in those new patients assessed for ABH where there was a dilemma as to whether endoscopic investigation was necessary. This provided clinicians with the confidence to diagnose and manage functional bowel symptoms earlier. FC testing also saved our CCG £109956 of potentially unnecessary colonoscopy with the simultaneous advantage of reducing endoscopy waiting times.

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Disclosure of Interest None Declared.

PTU-097 THE BENEFITS OF USING FAECAL CALPROTECTIN AS A MONITORING TOOL TO ASSESS INFLAMMATORY BOWEL DISEASE AND PRE-EMPTIVELY UPREGULATE TREATMENT IN ASYMPTOMATIC PATIENTS

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10.1136/gutjnl-2014-307263.171

Introduction Calprotectin is an abundant neutrophil protein that is released during inflammation. The level of faecal calprotectin

(FC) is useful in differentiating inflammatory bowel disease (IBD) from non-organic functional bowel disorders. FC may also be useful in monitoring patients with IBD to identify acute flares in disease, long before the patient becomes symptomatic. This allows appropriate treatment to be given in situations where disease activity is objectively measured to be greater than any perceived deterioration in symptoms.

Methods Faecal calprotectin data was collected over a 2 year period from 110 patients with IBD, who underwent regular outpatient assessment. Results were recorded as normal (<50 μg/g), borderline (50–100 μg/g) and elevated (>100 μg/g). A retrospective analysis of management outcome was made from reviewing patient records on the local clinical correspondence store and the new National IBD-Registry.

Results 44, 5 and 61 patients had normal, borderline and elevated FC levels, respectively. Three patients with normal FC (6.8%), compared to 29 (47.5%) with elevated FC, required upregulation of their management for symptom control. FC returned to normal levels in those selected for treatment escalation. In total, 104/110 (94.5%) of patients avoided investigative colonoscopy. Six patients did require colonoscopic assessment, 1 had normal FC, 1 was borderline and 4 had elevated FC. Three of these 6 colonoscopic examinations were performed as part of surveillance and 2 were carried out in FC +ive patient, 1 for planned therapeutic dilatation of a known stricture and the other to confirm the severe and extent of their disease prior to referral for surgical intervention.

Conclusion FC is a useful monitoring tool in IBD and in identifying those who have developed or are about to suffer an acute flare in their disease. This allows adjustment of treatment without having to subject patients to colonoscopic investigation. A positive result directs the need to upregulate management, whilst a negative one can be reassuring, allowing physician to concentrate on treating functional aspects if the patient is symptomatic.

Disclosure of Interest None Declared.

PTU-098 HIGH LEVELS OF EMOTIONAL AND PHYSICAL DISTRESS AMONG FAMILY CAREGIVERS OF INDIVIDUALS WITH INFLAMMATORY BOWEL DISEASE (IBD)

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10.1136/gutjnl-2014-307263.172

Introduction In chronic debilitating disorders, caregiving can be stressful and may contribute to serious illness and depression. However, in less debilitating disorders, such as IBD, limited data are available about the impact of the disease on caregiver's well-being. Our aim was to identify the emotional and physical distress among family caregivers of IBD patients in order to provide preventive services to an at-risk but hidden population.

Methods Over a 19 month period, in the tertiary referral centre for IBD in Central Greece, we interviewed 44 family caregivers of Crohn's Disease (CD) and 41 of Ulcerative Colitis (UC) patients. Caregiver's distress was assessed by using the caregiver self-assessment questionnaire "How Are You ?" of the American Medical Association. Disease activity was assessed using the Harvey-Bradshaw index for CD and Simple Colitis Activity Index for UC. A card with the sociodemographic and clinical characteristics of the population were also collected. The impact of each characteristic on caregiver's well-being was studied with one and two way ANOVA.

Results 84,7% of the caregivers showed high levels of emotional and physical distress with the majority of them to be middle-aged women (61.2%) with basic educational level (61,2%)and full-time employment (65,9%) at the time of the study. No significant difference found on the level of distress between caregivers of CD and those of UC patients. Factor analysis identified that female gender, active disease, disease related complications and long lasting disease had significant impact on the caregiver's level of distress.

Conclusion

1. Family caregivers of IBD patients experience high levels of emotional and physical distress.
2. Active disease, disease related complications, long lasting disease and female gender have significant impact on caregiver's level of distress.
3. It is necessary to organise a network to provide psychosocial services for the caregivers of IBD patients.

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Disclosure of Interest None Declared.

PTU-099 SURVEILLANCE COLONOSCOPY IN INFLAMMATORY BOWEL DISEASE IN A DISTRICT GENERAL HOSPITAL – ARE WE IMPROVING?

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10.1136/gutjnl-2014-307263.173

Introduction Patients with inflammatory bowel disease (IBD) have an increased risk of colorectal cancer. In 2009 the British Society of Gastroenterology updated guidelines recommending chromoendoscopy with targeted biopsies of suspicious areas, Grade A; or 2–4 biopsies every 10cm, Grade C. A local audit in Forth Valley Royal Hospital (FVRH) looking at adherence to guidelines was carried out in 2009 showing adherence to guidelines in 27% (12/44) of cases. Subsequent to this, information regarding the current guidelines was disseminated to clinicians and three medical consultants took responsibility for performing chromoendoscopy. Practice was then re-audited.

Methods FVRH is a district general hospital with a catchment area of 300,000. The endosocpy reporting tool Unisoft was used to identify patients undergoing colonoscopy with the indication "follow up - colitis surveillance" during a 1 year period from 01/01/2012. The endoscopy report was reviewed noting the endoscopist, completeness of procedure, and adherence to a surveillance guideline. The pathology reports were accessed via the SCI store computer system.

Results 87 patients were identified (44 identified over 6 months during the previous audit) as having colitis surveillance colonoscopy. 60 (69%) procedures adhered to one of the recognised surveillance strategies (37 dye-spray, 23 biopsy protocol) compared to 27% (12/44) in 2009. There has also been a marked increase in the number of patients who had chromoendoscopy; 43% (37/87) versus 4.5% (2/44) in 2009. The other main difference in this audit was the type of endoscopist performing the procedure (medical 70% v 32%, nurse 22% v 43%, surgeon 25% v 8%). Medical gastroenterologists performed 34 of the 37 chromoendoscopic