therapy had no change in their daily bowel frequency (7.0 vs 5.35, p = 0.40). The main reason for discontinuing medical therapy in this group was poor tolerability of the prescribed bile acid sequestrant (Colestyramine/ Colestipol). Crohn's disease was the only alternative diagnosis established in 10% (2/20), accounting for potential persisting symptoms.

Conclusion This is the first longitudinal study to assess patients with BAM and identifies factors predictive of this condition. Our findings suggest BAM is a chronic condition, which best improves with bile acid sequestrants. Given the problems with tolerability of older bile acid sequestrants, consideration should be given to Colsevalam, which may have a better tolerability profile.

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Disclosure of Interest None Declared.

PTH-111 "NON CELIAC GLUTEN SENSITIVITY" (NCGS) IS UNCOMMON IN PATIENTS SPONTANEOUSLY ADHERING TO GLUTEN FREE DIET (GFD), AND IS OUTNUMBERED BY "FODMAPS SENSITIVITY"

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Introduction It is controversial whether symptoms in patients fulfilling the clinical criteria for NCGS[1] are specifically triggered by gluten or by cereal components other than gluten and specifically FODMAPs, or are attributable to a nocebo effect[2]. Our aim was to test assess gluten or FODMAPs dependence of symptoms in patients diagnosed as NCGS.

Methods NCGS patients referred to our Clinic were randomised to a double blind cross over study involving challenge with 10 g gluten Vs 10 g gluten free flour containing FODMAPs for 10 days each with 2 weeks wash-out in between (challenge stage). Patients were subsequently kept on a low FODMAPs diet for 8 weeks (low FODMAPs stage) Endpoints: patients were asked to indicate by symptom recurrence the gluten phase of challenge; correct identification was taken to indicate NCGS and incorrect identification accompanied by reduction of GSRS score during the low FODMAPs diet were taken to indicate FODMAPs sensitivity.

Results Twenty-five patients without celiac disease (age 42+9 years, M/F = 2/23, 10 HLA DQ2/8 positive, 13 negative, 2 unknown) on strict GFD entered the study. During the challenge stage, the gluten phase was correctly identified by 8 patients thus fulfilling criteria for NCGS (4 with HLA DQ2/8). Scores for the 3 dimensions of GSRS (pain p = 0.03; indigestion p = 0.02; and diarrhoea p = 0.02) were higher in NCGS patients during the gluten than gluten free flour challenge. Twelve patients thought they were challenged gluten while on gluten free flour indicating gluten independent symptom recurrence (gluten insensitive). GSRS scores in these patients were higher (pain p = 0.004; reflux p = 0.013; indigestion p = 0.014, constipation p = 0.014) during challenge with gluten free flour than with gluten. Five patients reported mild symptoms during both phases suggesting a nocebo effect. During the low FODMAPs stage the score of indigestion dimension (comprising borborygmus, bloating, eructation, flatus) was significantly reduced (p = 0.011) in the gluten insensitive patients suggesting FODMAPs sensitivity. There was no significant change in the 5 dimensions of the GSRS in NCGS patients.

Conclusion We conclude that the population of patients reporting intolerance to gluten containing diet is a mixed population of NCGS and of FODMAPs sensitive patients. NCGS is uncommon and is outnumbered by FODMAPs sensitivity in patients spontaneously adhering to GFD. Distinction between these 2 conditions is clinically relevant in relation to dietary counselling.

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Disclosure of Interest None Declared.

PTH-112 A SINGLE CENTRE EXPERIENCE OF TREATMENT OF REFRACTORY CELIAC DISEASE TYPE 2

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Introduction Refractory celiac disease (RCD) is a persistent malabsorption and villous atrophy despite adhering to a strict gluten-free diet (GFD) for at least 6–12 months in the absence of other cause [1]. It is a rare complication of celiac disease (CD). RCD is classified based on the T-cells in the intraepithelial lymphocyte (IEL) morphology into type 1 with normal IEL and type 2 with aberrant IEL. RCD1 is managed with strict nutritional and pharmacological management. RCD2 can be complicated by ulcerative jejunitis or enteropathy associated lymphoma (EATL), the latter having a 5-year mortality of 8–20%. It is therefore necessary to investigate and manage RCD2 which has a less predicted response and has a poor prognosis due to the associated complications. Treatment options vary due to the low incidence of RCD2 and hence the small numbers of randomised control trials.

We present a single centre's experience in the treatment of RCD2.

Methods We performed a single centre retrospective study of all cases of RCD2 using the celiac database in a single centre between 2000 and 2013. Case notes, biological and histological data were reviewed for patients with a diagnosis of RCD2 diagnosed between 2000 and 2013. All patients were treated with prednisolone, 20 mg, and azathioprine, 2 mg/kg/day with repeat small bowel biopsy and T cell receptor analysis by PCR at 4 monthly intervals.

Results Fourteen out of twenty patients with RCD2 were successfully treated with prednisolone and azathioprine to become either type 1 refractory celiac disease, in 12 patients, or celiac disease, in 2 patients, with a better 5-year survival. None of the type 2 refractory patients developed lymphoma on this treatment.

Conclusion Prednisolone combined with azathioprine can be used successfully to treat RCD2. Our experience shows it is a safe and successful approach to improve prognosis. We successfully treated 7 out of 10 patients with RCD2 with this regimen.

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Disclosure of Interest None Declared.

PTH-113 CHANGE IN AWARENESS OF GLUTEN RELATED DISORDERS AMONGST CHEFS AND THE GENERAL PUBLIC IN THE UNITED KINGDOM: A 10 YEAR FOLLOW-ON STUDY

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Introduction For individuals with gluten-related disorders (GRD) eating out has traditionally been difficult, and socially impacting, due to concern over the lack of public awareness regarding GRD and a gluten-free diet (GFD). However, the recent rise in media coverage highlighting these conditions may have altered knowledge amongst community members.
Aims To assess whether there has been a change in awareness of GRD, and a GFD, amongst the general public and chefs over a ten year period.
Methods A face-to-face questionnaire survey about coeliac disease (CD) and gluten sensitivity (GS) was performed on the general public and chefs based in Sheffield, United Kingdom. The assessment was first conducted in 2003 and repeated in 2013. Chefs were also asked about their workplace (takeaway or restaurant) and whether or not they had formal qualifications. Additional questions for the 2013 cohort included correct recognition of the cross-grain symbol to identify gluten-free products and whether they displayed a notice/sign for gluten-free products.
Results *Public survey:* 513 public members in year 2003 (mean age 49.2, 62% female) were compared to 575 public members in year 2013 (mean age 37.8, 57% female). Adjusting for age and sex, there was a significant rise in the awareness of GRD from the years 2003 to 2013; CD (44.2 to 74.4%, OR 3.94 [CI: 2.99–5.19]) and GS (58.2 to 89%, OR 7.09 [CI: 5–9.98]), p value < 0.0001.

Chef Survey: 322 chefs in year 2003 (mean age 37.6, 15.2% female, qualified 51.2%, restaurant chefs 50%) were compared to 265 chefs in year 2013 (mean age 27.1, 38.1% female, qualified 93.2%, restaurant chefs 83%), p < 0.0001. Adjusting for age, sex, workplace and qualifications, there was a significant rise in the awareness of GRD from the years 2003 to 2013; CD (17.1 to 78.1%, OR 12.5 [CI: 7.9–19.6]) and GS (9.3 to 87.5%, OR 65.7 CI: [35.4–122]), p < 0.001.

Whereas in 2003 the public were significantly more aware of GRD than chefs, by 2013 there was a similar prevalence of awareness in both groups. In addition, the correct recognition of the gluten-free symbol was 44% for the public and 40% for chefs (p 0.28). Furthermore, in the year 2013, 41% of restaurants and 27% of takeaways displayed selling gluten-free products (p 0.07).
Conclusion There has been a dramatic rise in both the public and chefs awareness of GRD. This suggests that individuals with GRD can take greater confidence discussing and ordering a GFD whilst eating out.
Disclosure of Interest None Declared.

PTH-114 ASSESSING OSTEOPOROSIS IN COELIAC DISEASE: IS THE WHO FRAX TOOL A GOOD SCREENER?

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Introduction Osteoporosis is a well-recognised complication of intestinal malabsorption related to Coeliac Disease. It is diagnosed by dual energy x-ray absorptiometry (DXA). While referral for DXA scanning in other conditions is widely based on 10-year fracture risk calculated by the FRAX tool designed by the WHO, the 2007 BSG guidelines advise screening patients with a higher risk of osteoporosis with a DXA scan, irrespective of 10-year fracture risk as calculated by FRAX.
Methods Aim: We aimed to establish whether the FRAX and linked NOGG tool was a good screener to determine the need for DXA scan in patients with coeliac disease who are at risk of osteoporosis.

Methods: We used the Hospital Nuclear Medicine database to retrieve the records of 50 patients with a diagnosis of coeliac disease who had been investigated with a DXA scan to assess osteoporosis. Using their medical records, we then calculated their FRAX score for risk of major osteoporotic fracture and hip fracture, and the corresponding NOGG guidance. A 10-year fracture risk of 10% or the linked NOGG guidance was considered to be significant to have a DXA scan.
Results Of the 50 patients with Coeliac disease who had DXA scans, 10 had osteoporosis and 40 had either a normal result or osteopaenia. Of these 10 cases, 9 would have also been referred on the basis of a calculated FRAX score and only one case would have been falsely reassured. Of the 40 cases with either a normal DXA scan or osteopaenia, 31 would have been referred for DXA on the basis of the FRAX score, resulting in an unnecessary test. We concluded that a positive FRAX score does not accurately predict osteoporosis in Coeliac disease. The positive predictive value of the FRAX tool to detect osteoporosis in Coeliac disease is low at 22.5%; however the negative predictive value is high, 90%.
Conclusion The use of FRAX to identify patients with Coeliac disease at risk of osteoporosis has a high negative predictive value. It therefore has merit as a screening tool but has little value as a diagnostic test. Although the sample size was too small to show statistical significance, we suggest that FRAX tool could potentially be adopted as a screener in the context of celiac disease to prevent unnecessary DXA scanning. A osteoporosis risk of <10% or a NOGG guidance of reassurance is likely to be associated with a normal DXA scan. Further large studies are needed to validate this hypothesis and also to determine cost benefit of a FRAX driven strategy for osteoporosis in Coeliac Disease.
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PTH-115 PREVALENCE RATES AND RISK FACTORS FOR OSTEOPOROSIS IN PATIENTS WITH COELIAC DISEASE

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Introduction The optimal timing for performing a baseline bone mineral density (BMD) in Coeliac disease (CD) patients is controversial. European guidelines published in 1998 recommended a baseline BMD at diagnosis. One study in 2005 demonstrated a low incidence of BMD abnormalities amongst