

**PTU-160** **SUCCESSFUL CLEARANCE OF CHRONIC NOROVIRAL INFECTION BY RIBAVIRIN IN A PATIENT WITH COMMON VARIABLE IMMUNODEFICIENCY-ASSOCIATED ENTEROPATHY RESULTS IN COMPLETE SYMPTOMATIC AND HISTOPATHOLOGICAL RESOLUTION**

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**Introduction** We have recently demonstrated an association between chronic Noroviral infection and Common Variable Immunodeficiency-associated (CVID) enteropathy. Here we describe a patient with CVID enteropathy treated with Ribavirin.

**Methods** A 33-year-old lady with known CVID presented to our service in 2003 with 20% weight loss, nausea and profuse diarrhoea. Investigations revealed classical appearances of CVID enteropathy with subtotal duodenal villous atrophy, but no evidence of bacterial, enteroviral or parasitic infection. Treatment with gluten withdrawal, elemental diet, and budesonide were largely ineffective and she required parenteral nutrition for malabsorption and anti-TNF $\alpha$  therapy with Infliximab and subsequently Humira for symptom relief. No therapy changed the degree of villous atrophy. Following 6 years of symptoms, stool was noted to be positive on PCR for Norovirus RNA. Retrospective analysis of archived duodenal biopsies revealed the presence of Noroviral RNA in all biopsies from 2003 to 2009 and RNA sequencing showed this to be the same strain of virus throughout. In view of reported in vitro activity of Ribavirin against Norovirus, this agent was commenced with therapeutic level monitoring and quantitative stool PCR for Norovirus excretion.

**Results** Once Ribavirin levels were >1000 ng/ml, quantitative PCR demonstrated a reduction in Noroviral excretion which then became undetectable. Simultaneously, the patient reported dramatic symptomatic relief with a change from profuse diarrhoea to two formed motions a day, no nausea and return of appetite. Parenteral nutrition and Humira were stopped. Duodenal biopsies after 3 months showed complete resolution of villous morphology and were negative for Norovirus on PCR. Stool remained negative for Noroviral RNA. After 6 months Ribavirin therapy was stopped. The patient has remained asymptomatic for the subsequent 9 months with no evidence of recurrent Noroviral excretion.

**Conclusion** Complete resolution of symptoms and duodenal villous atrophy with clearance of the Norovirus suggests that the association of Norovirus infection with CVID enteropathy is causal. Ribavirin may have activity against Norovirus in vivo and this first ever demonstration of a cure for this condition requires confirmation in other cases.

**Competing interests** None declared.

**PTU-161** **CHRONIC NOROVIRUS INFECTION AS A CAUSE OF COMMON VARIABLE IMMUNODEFICIENCY-ASSOCIATED ENTEROPATHY**

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**Introduction** A severe enteropathy with villous atrophy occurs in up to 15% of patients with common variable immunodeficiency

(CVID). This study set out to determine the role of Norovirus infection in this condition.

**Methods** Stool and archived small intestinal biopsies from patients with CVID enteropathy were analysed by PCR for the presence of Norovirus RNA. PCR products were sequenced to determine the relationship of viral isolates. Stool samples from ten asymptomatic patients with CVID served as controls.

**Results** All seven patients in our CVID cohort with enteropathy and villous atrophy showed persistent faecal norovirus excretion. No other entero- or parechovirus infection was apparent in any patient. Analysis of archived duodenal biopsies demonstrated the presence of the same viral strain (genotype II.4) in individuals over periods of up to 8 years. The presence of norovirus was strongly associated with villous atrophy in all our cases. Asymptomatic CVID patients showed no evidence of norovirus excretion.

**Conclusion** Chronic norovirus infection occurs in patients with common variable immunodeficiency-associated enteropathy and is strongly associated with villous atrophy and symptomatic malabsorption in all patients with CVID in this cohort. Chronic Norovirus is implicated as a major cause of CVID enteropathy.

**Competing interests** None declared.

**PTU-162** **CAPSULE ENDOSCOPY: DIAGNOSTIC YIELD AND CLINICAL OUTCOMES IN NORTH-EAST LINCOLNSHIRE**

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**Introduction** Capsule Endoscopy (CE) has become a very important non-invasive tool for the investigation of small bowel pathology. This study examines the patient pathway to CE, from initial referral to final clinical outcome, within our newly established service.

**Methods** Medical notes for patients who underwent CE in North East Lincolnshire from 2009 to 2011 were reviewed retrospectively. Information analysed included demographics, previous investigation, diagnosis and subsequent treatment.

**Results** 123 patients underwent CE in the 2-year study period. 22 notes were unobtainable, so 101 were analysed. The study population characteristics include a median age of 59 (16–76 yrs), an equal gender spread (53% female and 47% male) with a 99% white ethnic majority. 95% of referrals were as an outpatient and 92% were made by physicians. The median waiting time was 115 days. The main indications were: recurrent iron deficiency anaemia (48.5%), inflammatory bowel disease (IBD) (33.7%), overt gastrointestinal (GI) bleeding (15%). Patients had commonly undergone previous investigations: majority had gastroscopy, colonoscopy (82.3%), CT abdomen (22.8%), Barium meal (21.8%), small bowel MRI (18.8%) and flexi-sigmoidoscopy (9.9%). 6.9% (7 patients) had undergone a previous CE. CE detected abnormality in 97% of this cohort, although some were insignificant. The most common pathology was: erosions (54.5%), evidence of blood (41.6%), angiodysplastic lesions (32.6%), ulceration (28.7%), focal inflammation (26.7%) and upper GI inflammation (19.8%). 72.2% of pathology was in the small bowel. Procedural complications included capsule retention (2), and suboptimal views in four patients. CE reporting confirmed diagnoses of angiodysplasia (25.7%), IBD (16.8%), drug induced small bowel erosions (6.9%), duodenitis/gastritis/oesophagitis (5.9%) and ulceration (4.9%). Rarer diagnoses included small bowel tumour and Meckel's Diverticulum. Median reporting time was 35 days. CE significantly contributed to the management of the patients examined: 78% had changes to their medications (eg, stop NSAIDs, start IBD drugs), 62% underwent further