320* Gastroesophageal reflux and aspiration in CF patients

K. Blondeau[1], L.J. Dupont[2,3], V. Mertens[1], G. Verleden[3], A. Malfroot[4], Y. Vandenplas[4], B. Hauser[4], D. Sifrim[1]. *[1]Center for gastroenterological Research, KUleuwen, Leuwen, Belgium; [2]Adult CF center, Division of Respiratory Medicine, University Hospital Gasthuisberg, Leuwen, Belgium; [3]Lung Transplant Unit, Division of Respiratory Medicine, University Hospital Gasthuisberg, Leuwen, Belgium; [4]Unit of Pediatric Pulmonology and Gastroenterology, AZ, VUB, Brussel, Belgium*

It is known that GER is increased in CF patients. However, its prevalence, characteristics, association with aspiration and respiratory impact are not well characterized. We studied acid and weakly acidic (WA) reflux, aspiration and respiratory symptoms/function in adult CF patients.

Methods: 33 CF patients [19men; 29 (18–55) yrs, 10 post-LTx] underwent impedance-pH monitoring for detection of acid (pH < 4) and WA GER (pH 4–7). In 16 patients cough was recorded with oesophageal manometry, and the Symtpom Association Probability (SAP) was calculated to establish the reflux-cough relationship. Saliva and Bronchoalveolair Lavage Fluid (BALF) were tested for bile acids (BA).

Results: 28 patients had increased GER (21 acid, 5 WA and 2 acid+WA) and 10 had a +SAP for reflux-cough. Cough 'inducing' GER was uncommon. 16/38 patients had BA in saliva and 6/10 in BALF. This was almost exclusively found in patients with genotype DF508/DF508. Only 12/28 with increased GER and 9/22 with BA in saliva/BALF had typical GER symptoms. There was a positive correlation ($r = 0.53$, $p = 0.03$) between oesophageal acid exposure and cough. Patients with +SAP had a lower lung function than –SAP patients.

Conclusion: Increased GER is prevalent in CF and is not secondary to cough. Acid GER is most common, but WA GER may also occur. CF patients have a high risk of aspiration and reflux seems associated with more cough and worse lung function. Outcome studies are needed to confirm the deleterious role of GER in the progression of CF.

321* Enteropathy – a new finding in cystic fibrosis

S. Werlin[1], I. Benuri-Silbiger[2], L. Cohen[2], E. Kerem[2], M. Aviram[3], L. Bentur[4], H. Mussaffi[5], I. Bjarnasson[6], M. Wilschanski[2]. *[1]Medical College of Wisconsin, Milwaukee, WI, USA; [2]Hadassah University Hospital, Jerusalem, Israel; [3]Soroka Medical Center, Beer Sheva, Israel; [4]Rambam Medical Center, Haifa, Israel; [5]Schneider Children's Hospital, Petach Tiqva, Israel; [6]King's College Hospital, London, United Kingdom*

Background: Treatment with pancreatic enzymes usually fails to completely correct malabsorption and gastrointestinal symptoms in cystic fibrosis (CF) patients. There have been no detailed studies of the mid and distal small intestine in CF. The aim of this study was to examine the small intestine of CF patients without overt evidence of gastrointestinal disease using capsule endoscopy (CE).

Methods: Patients received the agile patency capsule and, depending on the result of that procedure, then underwent standard CE using the PillCam SB capsule (Given Imaging, Yokneam, Israel). A stool specimen was taken for calprotectin level.

Results: 30 CF (26 PI) patients aged 10–36 years were included. One patient failed to excrete the patency capsule after 36 hours and was withdrawn from the study. FEV1 was 68.5±16% predicted. Most patients had varying degrees of diffuse areas of inflammatory findings in the small bowel including edema, erythema, mucosal breaks and frank ulcerations. Fecal calprotectin levels were markedly high with a mean of 253±97 μg/g (normal <50).

Conclusion: Small bowel mucosal pathology may be detected at CE in most CF patients. The high fecal calprotectin levels found are suggestive of mucosal inflammation which may correlate with the CE findings. Further study is required to examine the possible relationship of this newly identified CF enteropathy with gastroenterological symptoms.

Supported by: North American Cystic Fibrosis Foundation.

322* Constipation in pediatric cystic fibrosis patients: an underestimated medical condition

H.P. van der Doef[1], J.W. Woestenenk[1], R.H. Houwen[1]. *[1]University Medical Center Utrecht, Utrecht, Netherlands*

Objectives: Currently, the role of total fat absorption and dietary intake of fluid and fiber in the development of constipation in Cystic Fibrosis (CF) is unclear. The aims of this study were therefore to determine risk factors for constipation in CF.

Study design: A retrospective cohort study of 230 pediatric CF patients was performed and prevalence numbers and risk factors were determined. Constipation was defined according to the criteria approved by the ESPGHAN in Porto 2005 as (1) abdominal pain and/or distension or (2) reduced frequency and/or increased consistency of the stools, while (3) the symptoms were relieved by the use of laxatives. Sixteen patients with complete DIOS, according the criteria approved by the ESPGHAN in Porto 2005, were excluded as controls.

Results: Hundred-seven out of 230 patients (47%) had a history of constipation, while 46 out of 230 patients (20%) were constipated at January 1st, 2006. A history of meconium ileus was more frequent in constipated patients than in patients without constipation (13% vs. 5%; OR 3.07; 95% CI: 1.07–8.86). Secondly, total fat absorption was lower in patients with constipation than in patients without constipation (0.86±0.09 vs. 0.90±0.07; OR 0.003; 95% CI: 0.000–0.28). Finally, fiber and fluid intake were not associated with constipation in CF (OR 0.92; 95% CI: 0.14–6.27 and OR 1.88; 95% CI: 0.35–10.0).

Conclusion: Constipation is a significant medical issue in CF patients, with a prevalence of 47%. The association between constipation and meconium ileus in CF patients suggest a common defect causing slow transit in the whole intestinal tract. Furthermore, a low total fat absorption is associated with constipation in CF, while fiber and fluid intake were not associated with constipation in CF.

323* Defining DIOS and constipation in cystic fibrosis: a multicenter study on the incidence, characteristics and treatment of DIOS

H. van der Doef[1], R. Houwen[1], I. Sermet[2], A. Munck[3], B. Hauser[4], J. Walkowiak[5], E. Robberecht[6], C. Colombo[7], M. Sinaasappel[8], M. Wilschanski[9]. *[1]University Medical Center, Utrecht, Netherlands; [2]Hôpital Necker, Paris, France; [3]Hôpital Robert Debre, Paris, France; [4]Universitair Ziekenhuis Brussel, Brussels, Belgium; [5]Poznan University of Medical Sciences, Poznan, Poland; [6]University Hospital of Ghent, Ghent, Belgium; [7]University of Milan, Milan, Italy; [8]University Medical Center, Rotterdam, Netherlands; [9]Hadassah University Hospitals, Jerusalem, Israel*

Objectives: Currently, various definitions for distal intestinal obstruction syndrome (DIOS) and constipation in Cystic Fibrosis (CF) are used. The aims of this study were therefore to seek consensus on the definitions for DIOS and constipation in CF and to determine the incidence, characteristics and treatment of children with DIOS.

Methods: The ESPGHAN CF Working Group discussed the definition of DIOS and constipation in CF. Subsequently all patients ⩽18 years with complete DIOS and diagnosed during the years 2001–2005 in 8 CF centers, were studied.

Results: DIOS was defined as an acute complete or incomplete faecal obstruction in the ileo-caecum, while constipation was defined as gradual faecal impaction of the total colon. Fifty-one episodes of DIOS in 39 patients were recorded, giving an incidence of 6.2 episodes per 1000 patient years. Of the 39 DIOS patients, 20% experienced a relapse, 92% were pancreatic insufficient, 44% had a history of meconium ileus at birth and 82% had a severe genotype. Conservative treatment was effective in 49 out of 51 DIOS episodes (96%).

Conclusion: The new definitions of DIOS and constipation in CF are specific and make a clear distinction between these two entities. The incidence of DIOS in the present study was considerably higher than reported previously.