237 A new endoscopic short test for exocrine pancreatic function in cystic fibrosis

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Objectives: Exocrine pancreatic failure has been reported to affect 73–90% of cystic fibrosis (CF) patients. Fecal elastase test (FE) is the most widespread tool for assessing exocrine pancreatic function, but has limitations regarding sensitivity and specificity. Secretin stimulated short endoscopic tests (EST) are currently being validated as a test for exocrine pancreatic function in other pancreatic diseases. We aimed to validate EST as a direct pancreatic function test in CF-patients, and to assess the levels of HCO_3- and pancreatic enzymes in duodenal juice obtained by EST.
Methods: 33 cystic fibrosis patients and 24 healthy controls (HC) were examined. 30 minutes after secretin stimulation, the tip of an endoscope was placed in the descending duodenum and duodenal juice was aspirated during a 15-minute sampling-period. Duodenal juice was analyzed for HCO_3- and lipase-, amylase-, chymotrypsin- and elastase-concentrations. All subjects had stool analyzed for FE. Using the FE cutoff of 200 μg/g patients were classified as exocrine pancreatic sufficient (CFS, n = 18) or insufficient (CFI n = 15).
Conclusion: Pancreatic exocrine insufficient CF patients could be differentiated from exocrine sufficient patients and healthy controls using this new test. EST supplied detailed information on duodenal peak concentration of HCO_3- and pancreatic enzymes. Both bicarbonate- and pancreatic enzyme-concentrations were significantly reduced in CFI group compared to CFS and HC groups ($p < 0.001$).

238 Faecal calprotectin is increased in CF patients with pancreatic insufficiency

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Objectives: Intestinal inflammation may contribute to abdominal symptoms and nutritional problems in CF. We wanted to find out how faecal calprotectin, a marker of intestinal inflammation, correlated with abdominal symptoms, nutritional status and dosage of pancreatic enzymes.
Methods: Patients attending the Gothenburg CF centre were asked to leave a stool sample for analysis at the yearly assessment. Enzyme dosage and abdominal symptoms were recorded. Adult patients were also asked to complete the CF-QUEST gastrointestinal (GI) module (Tullis et al). There were 73 patients [66% males, 42% <18 years, 15% pancreatic sufficient (PS)] included. The mean value of faecal calprotectin was 186±404 mg/kg (median 70, range 0–2400), with values above the upper normal limit of 50 mg/kg in 44 (60%) patients. PS patients had lower calprotectin levels (only 1/11 >50 mg/kg) compared to pancreatic insufficient (PI) patients while there was no difference for gender or age group. There was no correlation between calprotectin and CF-QUEST GI symptom score. Calprotectin >1000 mg/kg was detected in four patients; one newly diagnosed infant, one adult with significant GERD, one 10-year-old boy and one adult – both with recurrent abdominal pain and discomfort.
Conclusion: Increased faecal calprotectin is common in pancreatic insufficient CF and is detected also in patients with minor symptoms. Further research regarding the clinical use of this test is needed.

239 Parenchymal and functional ultrasonographic imaging of the pancreas in cystic fibrosis correlates with exocrine pancreatic function

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Objectives: The majority of cystic fibrosis (CF) patients develop pancreatic damage and exocrine pancreatic insufficiency. Characteristic morphological features include marked acinar atrophy, fibrosis and fatty replacement. Parenchymal and functional aspects in ultrasound (US) imaging of the CF pancreas related to exocrine pancreatic function is however, scarcely reported.
Methods: CF patients were examined by secretin stimulated US and a detailed pancreatic US. We also examined 2 groups of healthy controls (HC1 and HC2) with the respective methods. Secretin US: Measurements of diameter of the Wirsung duct and the descending duodenum were done before and during 15 minutes after secretin stimulation. The US examination was followed by an endoscopic short test (EST) for exocrine pancreatic function. Pancreatic US: Ductal and parenchymal criteria according to Rosemont and echo level measurements of liver and pancreas were registered. CF patients and HC1 also had stool analyzed for fecal elastase (FE). CF patients were classified as exocrine pancreatic insufficient (CFI) or sufficient (CFS) according to EST and FE.
Conclusion: Lipomatosis was the main finding in CF patients with higher grade and frequency in CFI ($p < 0.001$). Typical signs of chronic pancreatitis according to Rosemont were not present in CF. Ultrasonographic measures of Wirsung duct dilatation and fluid filling of the duodenum after secretin stimulation discriminated CFI from CFS. Ultrasonography adds useful information of pancreatic function in CF.

240 Is gastric emptying delayed in children with cystic fibrosis?

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Objectives: Gastric emptying (GE) can be normal, decreased or increased in children with cystic fibrosis (CF) according to the literature. We showed in a previous study that 47.4% of children with CF with gastro-intestinal and/or respiratory symptoms suggestive for gastro-oesophageal reflux had delayed GE. We studied now GE in children with CF without chronic gastrointestinal symptoms.
Methods: Nineteen children with CF (12 boys and 7 girls, mean age 9 years and range 5–13 years) without chronic gastrointestinal symptoms were studied. A ^{13}C-octanoic acid breath test was performed to measure GE of solids (pancake) using Non Dispersive Infrared Spectrometry (Wagner Analysen Technik, Bremen, Germany). Gastric half emptying time (t1/2) was calculated and compared with t1/2 obtained in healthy subjects (Hauser, unpublished data). GE was considered as delayed if t1/2 was above the 95 th percentile. Two of the 19 children (10.5%, 1 boy and 1 girl) had delayed GE.
Conclusions: Delayed GE is present in only a minority of children with CF without chronic gastrointestinal symptoms.