**Oesophagitis, gastritis, duodenitis, hiatus hernia and Barrett’s oesophagus in adults with cystic fibrosis**


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As adults with CF are living into their 40s and beyond other common adult diseases must be considered, diagnosed and treated in order to optimize quality of life and longevity.

**Aim:** to determine the incidence of common gastro-intestinal (GI) problems in adults with CF using endoscopy.

**Method:** A retrospective review of the endoscopy database between Dec 1995 and Feb 2006 was undertaken.

**Results:** Of the 266 patients on the Alfred CF Data Registry 64 (24%) had undergone endoscopy during the 10 year period; 49 of the 64 patients (77%) had not undergone lung transplant while 15 of the 64 (23%) had. The most common indications for endoscopy included: symptoms suggesting gastro-oesophageal reflux (GOR), nausea, vomiting, nocturnal cough, atypical abdominal pain, chest pain, weight loss, haematemesis, insertion or change of PEG feeding tube, liver disease, atypical dyspepsia, oesophageal varices follow-up, anaemia, Barrett’s oesophagus screen. The following numbers and percentages of patients had the following problems: oesophagitis: 24 of 64 patients (39%); gastritis: 22 (34%); duodenitis: 14 (22%); hiatus hernia: 15 (23%); Barrett’s esophagus: 5 (8%).

Discussion: Oesophagitis caused by GOR occurred in more than a third of patients studied and had a significantly higher fundoplication rate (23%).

**Conclusions:** For endoscopy indications for adult patients with CF, the most common indications were gastrointestinal.

**Delayed gastric emptying is associated with lower BMI in adults with CF**


1 Center of gastroenterological research, KUL, Leuven, Belgium; 2 Respiratory Medicine, KUL, Leuven, Belgium; 3 Pediatrieks, VUB, Brussel, Belgium

**Background:** GER has been associated with several respiratory disorders & pathologically increased esophageal acid exposure is a frequent finding in pts with CF. It has now been described that not only acid but also weakly acidic GER can be associated with respiratory symptoms. Therefore, we aimed to study the presence of weakly acidic reflux and gastric aspiration in CF.

**Methods:** Fifteen CF pts (11 men (age 30 (19−51)) underwent 24 hrs pH-impedance recording for detection of attack (pH < 4) and weakly acidic (pH 4 – 7) GER. 8/15 pts were studied after Lung transplantation (LTx). BAL samples were collected of all 8 post-LTx pts and were evaluated for pepsin (ELISA).

**Results:** 8/15 pts had an increased esophageal acid exposure of which 2 only during the night. The total number of reflux events 24 hrs was 67 (55–86) of which 48 (25–57) were acid and 19 (17–36) were weak acid. 8 pts had an increased numeric reflux events (5 total reflux, 2 only acid and 1 only weakly acidic). 7 pts had an increased proximal extent of reflux. 2 pts with a normal esophageal acid exposure had an increased esophageal volume exposure and 1 pt an increased number of non-acid reflux events. All reflux parameters were similar in transplanted and non-transplanted subjects. There was no correlation between FEV1 and reflux parameters. All post-LTX pts had increased BAL pepsin levels (805 (584–918) ng/ml) of which 4 pts had a normal acid exposure.

**Conclusion:** Weakly acidic reflux is found in CF both before and after LTx. Aspiration of gastric contents, as measured by pepsin levels in BAL fluid, occurred in all CF patients after LTx, independent of the degree and acidity of GER. Supported by: CF Trust (BVSM), Belgium and FWO, Vlaanderen.

**Does fundoplication reduce the decline in lung function and frequency of IV antibiotics in CF adults?**

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**Background:** Gastro-oesophageal reflux (GOR) is common in CF and its symptoms may be treated medically, though reflux and micro-aspiration may continue; leading to recurrent pulmonary exacerbations and more rapid decrease in lung function. However, it is not known whether repair by fundoplication actually reduces exacerbations and preserves lung function.

**Aims:** To assess the effect of fundoplication on lung function and antibiotic use in adults with CF patient.

**Methods:** A retrospective case note review and literature study.

**Results:** From February to November 2005, 4 patients (1 female) median age 21 (range 16−34) received fundoplication (3 laparoscopic Lind, 1 endoscopic). In the year prior to operation the median FEV1% predicted was 78% (59−118.2), with a median BMI of 19.7 (17.9–28.9) and median weight of 54.2 kg (50–78.6).

Reflex was confirmed using a pH probe and 24 hour manometry with a mean fraction time pH < 4.5 cm above lower oesophageal sphincter of 19.6% (SDDev 7.7). All patients had remained symptom free and discontinued anti-reflux treatments, however despite prophylactic antibiotics two developed post-operative pneumonias, and one of these had pulmonary emboli. Antibiotic use (excluding those commenced at the time of the procedure) was not reduced. To date none has experienced significant loss of lung function and none has lost weight.

**Conclusions:** Our patients had substantial relief of symptoms of GOR following fundoplication. Significant complications occurred and need to be guarded against in the future. There was no deleterious effect on the chest but equally no significant objective evidence of reduction in exacerbations. It is not clear therefore whether prophylactic fundoplication protects lung function in CF.

**Presence of weakly acidic reflux and gastric aspiration in adult patients with CF**


1 Center of gastroenterological research, KUL, Leuven, Belgium; 2 Respiratory Medicine, KUL, Leuven, Belgium; 3 Pediatrieks, VUB, Brussel, Belgium

**Background:** GER has been associated with several respiratory disorders & pathologically increased esophageal acid exposure is a frequent finding in pts with CF. It has now been described that not only acid but also weakly acidic GER can be associated with respiratory symptoms. Therefore, we aimed to study the presence of weakly acidic reflux and gastric aspiration in CF.

**Methods:** Fifteen CF pts (11 men (age 30 (19−51)) underwent 24 hrs pH-impedance recording for detection of attack (pH < 4) and weakly acidic (pH 4 – 7) GER. 8/15 pts were studied after Lung transplantation (LTx). BAL samples were collected of all 8 post-LTx pts and were evaluated for pepsin (ELISA).

**Results:** 8/15 pts had an increased esophageal acid exposure of which 2 only during the night. The total number of reflux events 24 hrs was 67 (55–86) of which 48 (25–57) were acid and 19 (17–36) were weak acid. 8 pts had an increased numeric reflux events (5 total reflux, 2 only acid and 1 only weakly acidic). 7 pts had an increased proximal extent of reflux. 2 pts with a normal esophageal acid exposure had an increased esophageal volume exposure and 1 pt an increased number of non-acid reflux events. All reflux parameters were similar in transplanted and non-transplanted subjects. There was no correlation between FEV1 and reflux parameters. All post-LTX pts had increased BAL pepsin levels (805 (584–918) ng/ml) of which 4 pts had a normal acid exposure.

**Conclusion:** Weakly acidic reflux is found in CF both before and after LTx. Aspiration of gastric contents, as measured by pepsin levels in BAL fluid, occurred in all CF patients after LTx, independent of the degree and acidity of GER. Supported by: CF Trust (BVSM), Belgium and FWO, Vlaanderen.

**Delayed gastric emptying is associated with lower BMI in adults with cystic fibrosis**


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**Introduction:** The prevalence of delayed gastric emptying (DGE) and its impact on nutritional status and gastro-oesophageal reflux (GOR) are unknown in adults with CF. This study aimed to assess gastric emptying and to examine its association with BMI and GOR.

**Methods:** 19 adults with CF aged 19–47 years were studied. They underwent scintigraphic assessment of gastric emptying following ingestion of a solid meal of porridge, milk and sugar radio-labelled with Tc-99m colloid. Images were taken every 2 min for 90 min (Starcam Gamma Camera), and analysed for half-emptying time (t1/2). GOR was assessed using 24 h esophageal pH monitoring. Abdominal symptoms suggestive of DGE and dietary intake were evaluated using standardised questionnaires. Correlations between t1/2 and clinical factors were assessed using univariate and multivariate analysis.

**Results:** Mean BMI was 21.6±1.2 kg/m² and mean FEV1 was 69±25% predicted. t1/2 ranged from 13 to 121 min (mean 58±31 min). 16% of patients had DGE (t1/2 > 85 min). 47% of patients had acid GOR on pH monitoring. t1/2 was negatively correlated with BMI (r=-0.69, p=0.001) and FEV1% (r=-0.52, p=0.02), but was not associated with GOR. Presence of symptoms of DGE, pancreatic status and dietary energy intake did not correlate with t1/2. The association between t1/2 and BMI was retained in multivariate analysis.

**Conclusions:** DGE was found in 16% of adults with CF. DGE was associated with poorer nutritional status, but was not associated with abdominal symptoms or GOR. It is possible that malnutrition may contribute to DGE. Alternatively, DGE may restrict ability to meet increased energy requirements for CF, which may in turn contribute to the development of malnutrition, and limit the effectiveness of nutrition intervention strategies.