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(23–50 years). Median serum amylase level at the time of pancreatitis was 7921U/L(176–29111U/L), with 3 patients subsequently becoming pancreatic insufficient (PI). Pancreatic Enzyme Replacement Therapy (PERT) reduced abdominal pain in 2 cases. Botulinum Toxin type A injections on the Sphincter of Oddi reduced further AP.
Conclusion: Our study has shown that it is important to recognise AP in CF patients. Moreover, treating with PERT and in some cases with Botulinum Toxin can help in reducing recurrent episodes of AP.

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Evaluation of liver disease in cystic fibrosis: clinical and genetic characteristics of patients

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Objectives: With improved survival of CF patients, the relative importance of liver disease (LD) has increased. The study analyzed the prevalence of CF-related LD in our CF population and the clinical and genetic characteristics of these patients.
Methods: All patients older than 2 years (n = 102) were screened for LD through clinical, biochemical, ehographic, and hepatobiliary scintigraphic assessment. LD was defined by the finding of hepatomegaly and/or splenomegaly; significant and persistent increase of at least two serum liver enzyme levels, suggestive ultrasonographic abnormalities (score >4), and morphologic or functional scintigraphic abnormalities.
Results: 33 patients (32.3%) were classified as having LD, three of them with portal hypertension. The clinical presentations of LD had 13, abnormal liver blood test results 21, ultrasound abnormalities 33, and scintigraphic abnormalities 22 patients. A male predominance was found in the group with LD (69.7%). Pancreatic insufficiency (PI) was present in all patients with LD. There was no significant difference in the pulmonary function, nutritional status, and in the prevalence of meconium ileus or DIOS between groups with and without LD. Genetic analysis showed higher frequency of F508del mutation in LD group (77.3%) vs. no LD group (66.2%). All patients with LD had severe mutations: F508del, G542X, N1303K, 621+G→T, R1066C, CFTRdel.21Kb, 1811+1G→C, V456F, R1162X, 457TAT→G, and Y161D.
Conclusion: Male patients who have PI and carry mutations associated with a severe phenotype are in increased risk for LD. Our data highlight the value of ultrasound as the most sensitive tool for detection and follow up patents with LD.

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How do CF patients cope with transition from Creon 40,000*?

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Objectives: Good nutrition is a cornerstone of CF care, and to enable this many patients require high doses of replacement pancreatic enzymes. However, the high concentration enzyme Creon 40,000* ceased production in 2015, and affected patients have been transferred to lower concentration products. We wished to study the effect this had had on the nutritional state and enzyme use of such patients attending our large adult CF clinic.
Methods: We looked at the change in product, body mass index, and average daily lipase consumption in 18 adult CF patients (13 male) who had previously been taking Creon 40,000*, 3 months following transition.
Results: Sixteen patients changed to Creon 25,000*. Although not an equivalent dose, most patients simply doubled the number of capsules and some took extra capsules in the belief that the 25,000 product was "not as strong" as the 40,000 product, and overall the average daily dose increased by 12% from 14,000 to 15,700 IUs lipase/kg. Only one patient reduced their daily lipase intake, and two changed to an entirely different brand due to reported adverse side-effects. After 3 months, there was little change in BMI (mean pre 22.8 v post 22.3, P = NS).
Conclusion: Paradoxically, the removal of the higher strength enzyme product has actually increased the daily consumption of pancreatic enzymes in our patients, but appears to have had little effect on their overall nutrition. We are working with our affected patients to rationalise their enzyme intake in order to maintain their nutritional status.

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CF liver disease and lung function

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Objectives: Evaluation of the relation between CF associated liver disease and pulmonary status of children with cystic fibrosis.
Methods: The study design was cross sectional, observing twenty-seven patients with cystic fibrosis liver disease(CFLD), F508 del homozygous, age 10–18 years. They were routinely followed-up by clinical assessment, liver biochemical tests, ultrasound examinations (US) every 3 months; also noticing the number of antibiotics cycles/year. Every visit, spirometry and lung ultrasound was performed, except exacerbation, while CT scan was performed every two years and transient elastography (TE) annually.
Results: 40.7% (11 patients) were diagnosed with severe CFLD, median age 15.6 years. There was a good correlation with FEF_{25-75} % with an average of 31.6% and a median FEV_1 – 64.7%. In patients with moderate CFLD, there was a discrepancy between median FEF_{25-75} % (44.8%) which was low, and FEV_1 with greater value (76.5%). We found that distal obstruction was strongly associated with CFLD, almost all patients having lower than normal FEF_{25-75} %, but no correlation between the number of antibiotherapy cycles and CFLD was found.
Conclusion: Distal obstruction seems to be a risk factor for CFLD, or CFLD is associated with poor lung function status. A longitudinal study would better assess the possible cause-effect relation between lung function and CFLD.

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Prucalopride use in patients with cystic fibrosis

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Objectives: NICE TA211 recommends Prucalopride for women who fail treatment with at least 2 laxatives from different classes. Although chronic constipation is very common in CF, there is limited data on its use in such patients. We assessed our patients' experience of Prucalopride for chronic constipation and its efficacy in reducing constipation related admissions (CRA).
Methods: We looked at previous laxative use, effect on CRAs, dosage and duration of treatment from medical records and Quality of Life scores from patient questionnaires in 4 male and 1 female pancreatic insufficient CF patients (age range 26–47) taking Prucalopride for constipation.
Results: Four patients had tried 3 or more laxatives previously and all took fewer laxatives alongside Prucalopride (dose range 1–4 mg/day). It improved quality of life in 4 patients, and 80% found it an effective laxative. However, only 1 patient had a reduced CRA frequency.
Conclusion: Although Prucalopride did not reduce CRAs in our patients, it was well tolerated with few side-effects. It may add to the treatment options available to treat this difficult and common complication of the CF condition.

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Evaluation of nutritional status and fat-soluble vitamin deficiency in patients with cystic fibrosis

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Objectives: Abnormal CFTR function in the pancreas causes pancreatic ductular obstruction related to subsequent pancreatic insufficiency and

intestinal malabsorption of both fat-soluble vitamins and nutrients. In this cross-sectional study, we tried to evaluate the nutritional status and determine the prevelance of fat-soluble vitamin deficiency in patients with cystic fibrosis (CF) in Turkey.
Methods: We retrospectively analysed the data of fat-soluble vitamin levels, microbiological status, lung function tests and nutritional status of patients with CF who attend to Hacettepe University Department of Pediatric Pulmonology and Gastroenterology within three months.
Results: We evaluated 130 patients; the mean age of the patients was 11.9±6.7 years and the mean duration of following time was 8.7 years. According to WHO BMI Z score, 10.7% of patients had malnutrition. The mean FEV1 was 75±26% and the mean FVC was 75±22%. *Staphyloccus aureus* was the most common microorganism isolated from sputum culture. Pancreatic insufficiency was detected in 99% of patients. Vitamin A and D deficiencies were the most common findings with 26% and 32% respectively in our cohort. In addition to multivitamin complex, 20% of patients were receiving extra vitamin A and 22.3% of patients were receiving extra vitamin E supplement.
Conclusion: Fat-soluble vitamin testing and assessment of nutritional status are essential to identify deficiency in pancreatic-insufficient children who may be noncompliant to supplementation or require a higher supplement dose and nutritional support.

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Improved lung function and hepatosteatosis after oral choline substitution in CF patients

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Objectives: Choline is an essential nutrient and a component of phosphatidylcholine (PC), an essential membrane phospholipid. Hepatic PC turnover is high, due to PC secretion via bile and lipoproteins. Moreover, PC is essential for clearing organs from pro-apoptotic ceramides via sphingomyelin synthase. In CF, fecal choline loss is high, due to pancreatic phospholipase A2 deficiency. Such choline deficiency results in low plasma choline and PC which is associated with impaired lung function. We therefore analyzed plasma choline and PC in routine patients, and the effect of choline substitution on lung function and hepatosteatosis in adult CF patients.
Methods: Plasma choline and PC analysis in routine CF patients. Unblinded intervention study (N = 10, male). 3x1 g choline chloride for 90 days. Pre-/post-intervention assessment of lung function and liver fat.
Results: In routine patients (age 12±5 y) plasma choline was 7.4 (4.3–9.5)µmol/L, which is below control values (10–12 µmol/L). Choline substitution increased plasma levels in study patients from 6.3±1 to 15.3±2.8 µmol/L. In substituted patients hepatosteatosis was abolished after 90d. Absolute FEV_1 was improved by 6.2±5.5% (mean±SD), p = 0.0028; FVC by 4.5±7.8%, p = 0.036 and MEF25–75 by 6.4±9.4%, p = 0.011. Several patients reported effects on subjective well-being, like improved performance, digestion and flatulence.
Conclusion: Correcting for the impaired choline status in CF patients by substitution improves lung function and steatohepatosis. Future studies will have to define the mechanisms, optimal dosage and galenics, and the long-term efficiency of such treatment.

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Retinal screening of patients with cystic fibrosis related diabetes (CFRD) in the All Wales Ad-

didn't attend screening; of those who attended 42% had evidence of retinopathy. Since this finding we advertised retinal screening and improved links with our retinal screening centres.
Methods: Age, sex, FEV1%, BMI, HbA1c, duration of diabetes and insulin therapy, presence of retinopathy and attendance at screening were retrospectively obtained for 2013/14.
Results: See the table. Those with retinopathy tend to being older, 34.1 (8.8) years vs 29.8 (8.6) p = 0.05, and having had DM longer 9.1 (6.4) years vs 5.8 (3.4) p = 0.006. BMI, FEV1% and Hba1c not significantly different between those with and without retinopathy.

Table: Results of retinal screening, 2013/14

	2013	2014
No. of pts with CFRD on insulin	72	72
Attended retinal screen	39	48
No of pts under Ophthalmology	2	2
No of pts who did not attend retinal screen	18	19
No record of retinal screen	13	3
Retinopathy detected	10 (4 mild, 6 moderate)	12 (7 mild, 5 moderate)
Maculopathy detected	1	1

Conclusion: Attendance at retinal screening has improved following the use of posters and promotion at joint CFRD clinics (36% to 25.5%) but remains significant. Rates of retinopathy have fallen from 42% to 24% but this remains a significant figure suggesting further work is needed in this area especially as CF patients are ageing and as such complications such as retinopathy are expected to increase.

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Incorporating diabetic retinal screening into the cystic fibrosis annual review

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The leading cause of visual impairment and blindness among Type 1 and 2 diabetics is diabetic retinopathy (DR) – a chronic progressive, sight-threatening disease of the retinal micro-vasculature associated with prolonged hyperglycaemia.
With increasing survival in CF, CF Related Diabetes (CFRD) – where a progressive spectrum of glucose intolerance is seen, is now a common comorbidity and an important aspect of CF management.
There is now an increasing incidence of DR in patients with CFRD [1] and regular screening for DR is not universal practice in UK CF clinics. However, The National Screening Committee recommends annual retinal screening for all diabetic patients over the age of 12 years [2].
Over the last year, at our large adult CF unit (n = 219; CFRD = 39%), we now review all retinal screening results as part of the Annual Review process. The uptake of screening within our CFRD population has been 36%. We obtain screening results from four local retinopathy screening centres within four weeks. This enables referral of patients to an appropriate specialty clinic, discuss issues such as driving and lifestyle and coordinate further follow-up screening visits.
Our process has been received positively by patients and reduces the risk of visual impairment amongst a young population, by the prompt identification and effective treatment of sight threatening DR. We continue to work towards improving the uptake of screening and building closer links with the local screening centres.

Reference(s)

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