112. Cystic fibrosis (adults and children): risk factors and clinical problems

P111 Cystic fibrosis registry: A preliminary report of CF patient from NRITLD
Liveliu Pop1,2, Laura Larisa Dracea1, Elaheh Heydarian Fard3, Maryam Hassanazad2, Mehdi Farzian4, Niloofar Baghaei5, Shahid Beheshti University of Medical Sciences, Tehran, Islamic Republic of Iran; 2Pediatric Respiratory Disease Research Center, NRITLD, Masih Daneshvari Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Islamic Republic of Iran; 3Pediatric Respiratory Disease Research Center, NRITLD, Masih Daneshvari Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Islamic Republic of Iran; 4Pediatric Respiratory Disease Research Center, NRITLD, Masih Daneshvari Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Islamic Republic of Iran; 5Pediatric Respiratory Disease Research Center, NRITLD, Masih Daneshvari Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Islamic Republic of Iran

Introduction: Cystic fibrosis is an inherited chronic disease that affects the lungs and digestive system of about 70,000 children and adults in the worldwide. To create a more accurate picture of current state of Iranian CF patients, we started to collect and register the data of CF cases at pediatric Pulmonary ward of Masih Daneshvari Hospital.

Material and method: This cross-sectional study was performed on 68 CF patients aged 0-18 years (mean: 14.46 yds) to describe the demographics, clinical features and outcome among patients hospitalized in Masih Daneshvari Hospital from 2000-2011. 56% of the patients, had Consanguinity marriage and 10.6% had family history of CF in one sibling. Regarding the age at the onset of symptoms, in 33.4% the symptoms was started at the newborn period but only in 9% diagnosis was made at this age. For all patients HRCT of the lung was performed and the dominant finding was Bronchiectasis in 92.70%. Bacteriological findings of cases-detected PA in 68.18% cases, Staph.a in 6.06% cases, AsP.F in 6.06% cases, Candida in 4.54% cases, B.Cepacia in 1.51%. According to the ABPA diagnostic criteria 4 patients diagnosed with ABPA. 17% of the patients are candidate for lung transplantation and 3 patients underwent lung transplantation. Out of 68 cases 19 cases expired due to respiratory failure.

Considering the result of our study and high rate of morbidity and mortality in our cases, we propose that CF registry and evaluation of the disease progression by means of a routine monitoring will increase the survival and improve quality of life of the patients.

P1111 Improving identification and treatment of children & adolescents with cystic fibrosis related diabetes (CFRD)
John McNamara1,2, Mary Sachs1, Sandy Landvik1,2, Mary Smieja1, Janet Majkozak1, Lisa Read1, Laura Gandrud1,2, Cindy Fibrosis, Children’s Hospitals & Clinics of Minnesota, Minneapolis, MN, United States; 2Cystic Fibrosis, Children’s Respiratory and Critical Care Specialists, PA, Minneapolis, MN, United States

Introduction: Our CF center performed a quality improvement project to improve identification and treatment of CFRD. Our primary goal was to screen at least 80% of patients ≥8 years of age with oral glucose tolerance testing (OGTT) in 2011. Our secondary goal was to improve the mean HbA1c of CFRD patients.

Methods: With CF family and staff involvement, we identified barriers in our existing screening process and after multiple PDSA (Plan, Do, Study, Act) cycles implemented new processes:

- Created lab protocol for patients receiving OGTT to improve screening efficacy
- Scheduled annual labs at the first clinic visit of the year
- Improved messystem relationships through weekly huddles between pulmonary and endocrine teams
- Developed protocol for follow-up of identified patients with CFRD

Protocol Design to Improve HbA1c
- Plan endocrine consult and transition to endocrine clinic using principles of clinical Microsystems
- Implement system to contact families who failed clinic appointment
- Provide additional education of staff and families

Results: Screening of outpatients with OGTT improved from 2010 (66%) to 2011 (99%). The mean HbA1c in patients with CFRD in 2010 was 7.0 (n=4). Their levels improved to 6.6 in 2011, and the mean for all patients including newly identified patients with CFRD in 2011 was 6.0 (n=17).

Conclusion: The development of an outpatient screening process successfully identified patients with CFRD. We successfully screened 99% of our patients with OGTTs, and reduced the mean HbA1c in CFRD patients.

P1114 Adults with cystic-fibrosis related diabetes have lower pulmonary function and more infections
M.C. Stam, H.W. de Valk, E.A. van de Graaf. CF Center, UM/CUtrecht, Utrecht, Netherlands; 1Cystic Fibrosis, Children's Hospital, Brasov, Romania; 2National CF Center, Second Pediatric Clinic, Timisoara, Romania

Background: Life expectancy of the CF-patient has increased over the past two decades. As a consequence, more patients develop cystic-fibrosis related diabetes (CFRD). Previous studies showed that CFRD is associated with a stronger decline in pulmonary function.

Aims: The aim of this retrospective study was to examine whether in current times CFRD-patients have more infections and a stronger decline in both pulmonary function and Body Mass Index than non-diabetic CF-patients (NDCF).

Research design and methods: A population of 138 CF-patients aged 17–46 years from the UM/CUtrecht Cystic Fibrosis Center was studied. Pulmonary function is measured on a three-monthly basis. All data on pulmonary function were reviewed in the period 1991–2011 using a mixed model analysis. BMI and infection frequency were reviewed in the period 2009–2011.

Results: The FEV1 at baseline was 57% of predicted in CFRD-patients compared to 74% in NDCF-patients (p<0.001). Both colonisation with Pseudomonas Aeruginosa and having CFRD were independently associated with a lower FEV1 at baseline (p=0.025 and p=0.036 respectively). The decline in FEV1 was similar in CFRD-patients and NDCF-patients (0.07 liter/yr). There was no decline in BMI in either group. CFRD-patients had more infections requiring i.v. antibiotics than CF-controls, most notably in the group of patients with a FEV1< 45% of predicted (p=0.034).

Conclusions: Pulmonary function at baseline was worse in CFRD-patients than in non-CFRD patients. The decline in FEV1 in CFRD-patients was comparable to NDCF-patients. CFRD-patients with FEV1< 45% had the highest number of infections, possibly predisposing to pleural adhesions and more complicated lung transplantation.
P1115 Cystic fibrosis: Heartburn and lung function – “Too hot to handle”

Maríana Rei1, Cláudia Chaves Loureiro1,2, Fernanda Gambosa1, Carlos Robalo Cordero1,2, Serviço de Pneumologia, Hospital da Universidade de Coimbra, Portugal; 2Medical, Faculty of Medicine, Coimbra University, Coimbra, Portugal

Background: Respiratory tract injury is the major cause of morbidity in Cystic fibrosis (CF) patients. Gastroesophageal reflux disease (GERD) might contribute to lung function decline and progression of pulmonary disease in them. Despite the high prevalence of gastroesophageal reflux (GERD) symptoms in CF patients, its prevalence and association with gastric aspiration and respiratory impact are not well characterized.

Aim: Assess prevalence of GERD in CF adults, and study possible associations with genotypes, specific colonization, lung disease severity and GERD treatment.

Methods: Retrospective study conducted in 23 CF patients attended at Pneumology Unit of Coimbra University Hospital, through a direct questionnaire (adapted from Mayo GER Reflux Index) and review of electronic geriatric records in previous 12 months. Results: Of 23 studied patients, mean age 30±7.6, 70% female; DFS08 homogygote was the most frequent genotype. P. Aeruginosa and S. Aureus organisms were the most frequent secondary colonization. In 48% lung function was severely depressed. 21% (91% at least 1) experienced at least one GERD symptom, 12 (57%) referred the occurrence of 5 or more. Concerning lung function severity, we established significant statistical difference between groups under treatment versus untreated group, being the first the one that presented the worst CFV values (p<0.032).

Conclusions: Despite the limited evidence that GERD adversely impacts lung function, the possibility that acid suppression improves the outcome of this patients, leads to a strong recommendation for aggressive treatment of GERD. However, according to our study, acid suppression treatment might be insufficient, turning it in a contemporary and scientifically important subject.

P1116 Dynamic hyperinflation in cystic fibrosis

François Tremblay, Julie Morisset, Claude Poirier. Pulmonary Division, Centre Hospitalier de l’Université de Montréal, Montréal, QC, Canada

Introduction: Cystic fibrosis (CF) is the most common life-limiting autosomal recessive disease. CF affects the exocrine glands of lungs, pancreas, intestines and liver. Lungs are usually affected more critically. Exercise tolerance is reduced in patients with CF. It has been shown that pulmonary function weakly correlates with peak exercise capacity. Furthermore, it has been demonstrated that oxygen desaturation during exercise is present in severe lung involvement, but not in mild to moderate disease. Peripheral muscle dysfunction has been demonstrated to be not related to dynamic hyperinflation in cystic fibrosis patients. Therefore, the presence of dynamic hyperinflation in this population has been investigated.

Objectives: The aim of this study is to evaluate the relationship between dyspnea and dynamic hyperinflation in CF during exercise.

Methods: Results: Six patients with mild to moderate CF (FEV1 45-79%) were studied during incremental treadmill exercise and changes in inspiratory capacity (IC) were obtained to measure dynamic hyperinflation. During the exercise, dyspnea was assessed by Borg scale. Of the 6 CF patients, 5 patients showed a decrease in IC (dynamic hyperinflation). Furthermore, there was a direct relation between dyspnea assessed by Borg scale and change in IC (r = 0.38).

Conclusions: The first to demonstrate the presence of dynamic hyperinflation in mild to moderate CF and a direct relationship between dyspnea and IC in CF during exercise. This provides a better understanding on exercise limitations in CF.

P1117 Factories predicting mortality in cystic fibrosis where lung transplantation cannot be performed

Yasemin Gokdemir1, Elif Ergden1, Fazilet Karakoç1, Bulent Karaday1, Ihsan Nuri Akpinar1, Reitka Eruç1, Pediatric Pulmonology, Marmara University Medical Faculty, Istanbul, Turkey; 2Radiology, Marmara University Medical Faculty, Istanbul, Turkey

Introduction: Cystic fibrosis is the most common lethal genetic disorder affecting the Caucasian population. Severe pulmonary disease is responsible for over 80% of deaths associated with cystic fibrosis. Patients with less than 2 years life expectancy and with reduced quality of life are candidates for lung transplantation.

Aim: To evaluate the risk factors of mortality in moderate to severe cystic fibrosis lung disease that does not go to lung transplantation.

Material and methods: We follow up 206 cystic fibrosis patients in our clinic and 35 of them with FEV1 <60% were enrolled to the study. Demographic data, pulmonary function test, high resolution computed tomography modified Bhalla score, blood gas analysis and nutritional status of patients were evaluated.

Results: Respiratory support requirement was frequent in moderate to severe chronic lung disease (31.4%). Low pulmonary function, non invasive ventilation requirement, having diabetes mellitus, (β2) saturation <95, Pco2 >50 mm Hg and frequent IV antibiotic treatment were significantly related with increased mortality (p<0.05).

Conclusion: This is a single centre study of cystic fibrosis patients with moderate to severe lung disease that did not go to lung transplantation. We evaluated the clinical going and factors that were associated with mortality. We think that it is important to do similar multicentre studies to discover Turkish CF patients information that have different genetics and phenotype.

P1118 Genotypic diversity of Pseudomonas aeruginosa in cystic fibrosis patients with the CFTR 11234V mutation in a large kindred family

Abud Abdul Wahab, Saad Taj-Aldeen, Ammar Saadoon, Sanjay Diophode, Corne Klaassen, Jacques Meis. Pediatrics, Hamad Medical Corporation, Doha, Qatar; Medical Microbiology and Infectious Diseases, Canisius Wilhelmina Hospital, Nijmegen, Netherlands

Background: Pseudomonas aeruginosa is one of the primary pathogens within the cystic fibrosis (CF) lung and a cause of morbidity and mortality. Reports of cross infection and epidemics with this pathogen within and across CF centers raised the possibility of clonal spread among siblings with CF.

Aim: To genotype P. aeruginosa by amplified fragment-length polymorphism (AFLP) analysis in CF patients with the CFTR 11234V mutation belonging to a large kindred tribe, and to determine whether the genotypes are identical among CF siblings and among different families with the same mutation.

Methods: Sixty seven P. aeruginosa isolates from 23 CF patients were studied at Hamad General Hospital, Qatar. Genotypic relatedness was assessed using AFLP and compared with 33 P. aeruginosa isolates of a known genotype from the Netherlands.

Results: Twenty seven CF patients were from 17 families, 16 males with a median age of 15 years (range 4 years-34 years). Twenty-two CF patients (12 families) with the CFTR 11234V mutation arising from a single large kindred tribe harboured the CFTR mutation. P. aeruginosa colonization. Twenty three unique genotypes of P. aeruginosa were identified and different from P aeruginosa strains isolated from Dutch CF patients. Ten families each had one unique genotype which were different from the other four families harboured 2 different genotypes, one family 3 genotypes and two families had 4 genotypes. CF siblings within one family harboured the same genotypes of P. aeruginosa.

Conclusions: This study demonstrated genotypic diversity of P. aeruginosa isolates between families and established cross-infection among CF siblings.

P1119 Nebulised antibiotics with the I-neb adaptive aerosol delivery (AAD) system: Impact on adherence in cystic fibrosis (CF) patients

Silvia Garzoni1, Carlos Martin1, Pilar Vallejos2, Antonio Moreno1, Ines de Mir1, Alba Torren1, Marcelo Razquin1, 1Pediatric Pulmonology and Cystic Fibrosis Unit, Hospital Universitari Vall d’Hebron, Barcelona, Spain; 2Medical Department, Praxis Pharmaceutical, Madrid, Spain

Purpose: To assess the adherence and compliance to prescribed treatment of CF patients to nebulised antibiotic utilising the AAD system.

Methods: 17 cystic fibrosis patients (14 male (range 8-18 years) infected with Pseudomonas aeruginosa and treated with aerosolised colistin twice a day using the AAD were included. Data were downloaded during a clinic visit 3 months later and in 7 patients, a second downloaded after year. None of the patients were aware that the data were recorded.

Results: Mean overall adherence over the 3 months of treatment (number of recorded doses/number of prescribed doses x100) was 90.73% (SD: 26.37%) with 2 out of 17 patients having an overall adherence below 75% The mean percentage of days each patient fully adhered was 79.48% (SD: 17.57%) and the mean of fully compliance was 84.90% (SD: 28.27%). Overall mean values adherence was maintained over the year. Mean treatment duration was 8.08 minutes. Evening adherence (94.76%, SD:33.34%) was better, (but statistically not significant) than in the morning (86.20%, SD:22.04%). Also, no significant correlations were observed between better adherence and FEV1, PFR, age, BMI, chronic PA.

Conclusions: The high level of adherence observed in our series contrast with the poor compliance reported in previous studies. The AAD system recording offers very useful information to examine patterns of adherence during aerosolised therapy and allows to monitor aspects of the treatment that can be improved.

P1120 The prevalence and characteristics of intravenous (IV) antibiotics allergy in adult patient with cystic fibrosis (CF)

Izzi Ijiri1, Zeena Jasal1, Deep Shah1, Wael Bashair1, Sarah Whewall1, Angela Nocpor1, Albert Yick-Hou Lim1, 1Department of Respiratory Medicine, University Hospital of North Staffordshire, Stoke on Trent, United Kingdom; 2North West Midlands Cystic Fibrosis Centre, University Hospital of North Staffordshire, Stoke on Trent, United Kingdom

Background: CF patients have increased risk of antibiotics allergy. There is little information on the prevalence and characteristics of IV antibiotics in adult CF patients.

Objectives: To determine the prevalence and the role of CFTR genotype in IV antibiotic allergy, and to describe the characteristics of allergy.

Methods: A retrospective study on all CF patients attending the regional adult CF centre at University Hospital of North Staffordshire between January 2009 and December 2010. Age, sex, CFTR genotype, BMI, spirometry, sputum microbiology/mycology, Aspergillus serology, allergic reactions, the type and the number of courses of IV antibiotics administered were recorded.

Results: 39 of 54 patients received at least 1 course of IV antibiotic were studied. 16 patients with allergy (mean (±SE) age 28.5±2.6, 10 females) and 23 without (mean (±SE) age 28.5±2.6, 10 female). The 2 groups had similar spirometry
The use of Pezzer catheter in cases of persistent airleak in advanced cystic fibrosis

Kalliopi Athanassiadi1, Selin Yakarisik2, Ebru Yalcin1, Deniz Dogru1, Ugur Ozcelik 1, Liviu Pop1, Zagorca Popa 3, Tudorache 2, Timisoara; 2Pediatric II Department, University of Medicine and Pharmacy “Victor Babes”, Timisoara; 3Pediatrics, General Hospital “Evangelismos”, Athens, Greece; 1Thoracic Surgery, General Hospital “Evangelismos”, Athens, Greece

Objective: Spontaneous pneumothorax with persistent airleak is a complication that is commonly reported in patients with cystic fibrosis (CF). There is an attributable mortality and considerable morbidity to the complication, resulting in increased health-care utilization and a measurable decline in lung function. We present a series of 11 patients with CF presenting with recurrent pneumothoraces and persistent airleak treated with a Pezzer catheter.

Materials & methods: All 11 patients presented with large pneumothoraces; a 28 French Argye intercostal catheter was inserted in the 5th or 6th intercostal space, mid axillary line, and connected to an underwater seal drain, resulting in re-expansion of the lung. However, there was persistent air leak on coughing in 7 cases while in the rest 4 cases, the intercostal tube became inactive and smaller pneumothoraces presented as local ones, impossible to be drained by the already in place intercostal catheter. In both groups either with persistent pneumothoraces or recurrent ones we decided to use Pezzer catheters made of Latex instead of Argye ones.

Results: All pneumothoraces were resolved within 3 days after the insertion of a Pezzer catheter. There were no complications recorded and in a follow up of 2 years no recurrence was observed.

Conclusion: Our experience supports the use of Pezzer catheter connected to water seal in cases of advanced cystic fibrosis with prolonged air leak, since it promotes pleurodesis. It reduces significantly the duration of the intrapleural drainages and the length of the in-hospital stay. The procedure is cost-effective, safe, and easy to perform.

P1122
Acrodermatitis enteropathica-like skin lesions in cystic fibrosis patients

Guzin Canli1, Selin Yakarisik2, Ebru Yalcin1, Ugur Ozcelik1, Nural Kiper1,2, Department of Pediatrics, Pediatric Chest Diseases Unit, 1Department of Pediatrics, Hacettepe University, Ankara, Turkey

Background: Acrodermatitis enteropathica is a rare disease characterized by symmetrically distributed skin lesions involving the hands, feet, knees, elbows, and buttocks.

Objectives: To report 3 CF patients diagnosed with severe dermatitis.

Case 1: Four-month-old male patient was admitted with diffuse skin eruptions, failure to thrive, edema, hipoalbuminemia and anemia. His sweat test was not diagnostic; but he was suspected to be CF with clinical findings, treated with pancreatic enzyme replacement (PERT) and supportive therapy. His skin lesions resolved within 2 weeks. CF was confirmed with elevated sweat test (96 mEq/L) retested after the resolution of the edema, and mutation analysis that revealed 2813AA-Gr-.

Case 2: Two-month-old male patient was admitted with diffuse erythematous and puffy feet, failure to thrive, edema, hipoalbuminemia, and anemia. He was thought to be CF, treated with PERT and skin lesions resolved within 3 weeks. High sweat test and homozygous Delet/508 mutation confirmed the diagnosis.

Case 3: Two-month-old male patient was admitted with scaling erythematous rash, failure to thrive, diarreha, hipoalbuminemia, and anemia. We could not perform sweat test because of diuse edema and rash. He was diagnosed as CF with clinical and laboratory findings. Despite supportive therapies, we lost him because of staphylococci sepsis as the skin integrity was impaired. Sequence analysis revealed G576A/R668C compound heterozygous mutation. Acrodermatitis enteropathica-like skin lesions can be seen in CF because of malabsorption and insufficient nutrition that lead to hypoproteinemia, zinc and essential fatty acids deficiencies. In patients with these skin lesions, CF must be kept in mind and sweat test must be repeated after the resolution of edema.