223 Lung transplantation in children and young adults: a 20 years single center experience

S. Gruber[1], T. Eiwegger[1], P. Jaksch[2], W. Klepetko[2], Z. Szépfalusi[1], G. Lang[2], A. Graf[3], T. Frischer[1]. [1]*Medical University of Vienna, Department of Pediatrics and Adolescent Medicine, Vienna, Austria;* [2]*Medical University of Vienna, Department of Thoracic Surgery, Vienna, Austria;* [3]*Medical University of Vienna, Department of Medical Statistics, Vienna, Austria*

Background: Lung transplantation in adults is an accepted therapeutic option in end-stage organ disease. In children however, there is ongoing debate on its positive impact on survival. Together with the scarcity of patients and donor organs, this has led to a very restrictive use of the procedure, with approximately 80 procedures performed per year worldwide. We report the results of the first twenty years of pediatric lung transplantation at a single center in Austria.
Methods: Kaplan Meier survival statistics were performed to estimate patient and organ survival. Pre- and post-transplant parameters were assessed and their influence on patient and organ survival evaluated. Univariate tests on the parameters of interest as well as a stepwise multivariate analysis using Cox regression were performed.
Outcome: A total of 54 transplantations were performed in 43 patients. Mean estimated patient survival was 104.6 months, 1-year, 5-year and 10-year survival rates were 78.0%, 62.1% and 40%. Freedom from BOS was found in 94.4% and 47.1% of patients at 1 and 5 years post-transplant. We observed an improvement of outcome over the years with a 5-year survival of 71.4% in the second decade. A high rate of successful re-transplantation resulted in prolonged survival in patients with acute or chronic graft failure after first transplantation.
Conclusion: In our collective, we show a mean survival rate after pediatric lung transplantation of almost ten years, indicating a survival benefit of the procedure. In future, multicenter analyses are required the definition of distinct age-associated aspects of pediatric lung transplantation.

224 Nontuberculous mycobacterial infections among cystic fibrosis patients undergoing lung transplantation

T. Qvist[1], T. Pressler[1], V.Ø. Thomsen[2], M. Iversen[3], T.L. Katzenstein[4]. [1]*Copenhagen University Hospital Rigshospitalet, Copenhagen Cystic Fibrosis Centre, Copenhagen, Denmark;* [2]*Statens Serum Institute, International Reference Laboratory of Mycobacteriology, Copenhagen, Denmark;* [3]*Copenhagen University Hospital Rigshospitalet, Lung Transplantation, Copenhagen, Denmark;* [4]*Copenhagen University Hospital Rigshospitalet, Infectious Diseases, Copenhagen, Denmark*

Objectives: There is conflicting evidence of good outcome in cystic fibrosis (CF) patients with NTM infection undergoing lung transplantation (LTx). We conducted a study to evaluate the outcomes of all LT × CF patients in Denmark with current or prior NTM.
Methods: From a recent analysis of all Danish CF patients testing positive for NTM over the last 19 years, we identified patients who had undergone LTx. Data on clinical manifestations, treatment regimens and outcomes were extracted from patient files.
Results: Nine patients with NTM infection had undergone LTx between 1997 and 2010. The median age at time of first NTM positive sputum sample and LTx was 18 and 29 years, respectively. Five patients were cured of their NTM prior to LTx. Active disease at the time of LTx was present in four patients with *M. abscessus*. Two of these died shortly after LTx due to graf dysfunction. Two acquired deep surgical wound infections postoperatively; one has been cured after extensive anti-mycobacterial treatment, while the other still receives treatment for a substernal abscess. Both remain healthy and all post-LTx BAL samples are negative.
Conclusion: There has previously been a few reports of good clinical outcome after LTx among CF patients with *M. abscessus* infection, even when patients failed to clear infection. We found four patients with active M. abscessus at the time of LTx, two died of unrelated causes and two had serious complications, but good outcome. The current study confirms that CF patients with NTM can successfully undergo LTx. Postoperative complications in the form of deep tissue wound infections can be expected, but do not rule out good clinical outcome.

225 Analysis of bacterial pathogens before and after lung transplantation in cystic fibrosis patients

N. Ravenni[1], P. Cocchi[2], S. Campana[1], S. Bresci[1], C. Braggion[1], G. Taccetti[1]. [1]*Cystic Fibrosis Center, Anna Meyer Children's University Hospital, Department of Pediatrics, Florence, Italy;* [2]*University of Florence, Department of Sciences for Woman and Child's Health, Florence, Italy*

Lung transplantation is a well established treatment for patients with cystic fibrosis with end-stage lung disease. Some pathogens can affect long term survival in these patients, although it is not clear whether the same strain persist after lung graft.
The primary goal was to analyse the clonal relatedness of bacterial strains belonging to the most important species isolated before and after lung transplantation.
Seven patients (5 males and 2 females, median age at transplant 34 years, range 20–42) were studied. The isolates were collected before (median 12 months, range 9–22) and after (median 12 months, range 2–16) lung transplantation. Bacterial isolates belonging to different species were collected and identified using biochemical commercial tests. Strains isolated from the same patients belonging to the same species were genotyped by means of Rep-PCR.
Forty-eight isolates were collected: 38 *Pseudomonas aeruginosa* (Pa), 4 *Achromobacter xylosoxidans* (Ax), 3 methicillin-resistant *Staphylococcus aureus* (MRSA) and 3 *Inquilinus limosus* (Il). Each species was isolated before and after lung graft. Pa, MRSA and Il bacterial strains collected from 6 out of 7 patients showed no variability before and after lung transplantation, demonstrating a clonal relationship. Only Ax strains from one remaining patient had different fingerprinting.
All patients had the same bacterial species strains before and after transplantation. Further studies are necessary to evaluate if this persistence affects transplant outcome. This evidence could clarify the role of bacterial infection in transplant outcome and thus lead to improved treatment strategies.

226 Lung transplant patients with cystic fibrosis attain lower blood concentrations of cyclosporine compared to other lung transplant patients

T. Qvist[1], M. Rasmussen[2], A.H. Andersen[2], T.S. Håkedal[2], T. Pressler[1], J. Carlsen[3], M. Iversen[3]. [1]*Copenhagen University Hospital Rigshospitalet, Copenhagen Cystic Fibrosis Centre, Copenhagen, Denmark;* [2]*The Danish University of Pharmaceutical Sciences, Department of Pharmacology and Pharmacotherapy, Copenhagen, Denmark;* [3]*Copenhagen University Hospital Rigshospitalet, Lung Transplantation, Copenhagen, Denmark*

Objectives: Patients with cystic fibrosis (CF) are known to have malabsorption of lipophilic compounds. This could potentially influence the uptake of cyclosporine (CsA). The aim of the present study was to analyse blood concentrations of CsA in relation to drug dosage in lung transplanted (LTx) patients with and without CF.
Methods: All LTx CF patients in Denmark between 1992–2005, were compared to an age matched non-CF LTx control group from the same period. Patient data was collected by retrospective chart review and from a central database. Follow-up was 24 months. A subanalysis of co-administration of pancreatic enzyme and meal timing on CsA dosing and concentration was also performed.
Results: 66 patients were included, hereof 36 CF patients and 30 controls. Despite higher or equal CsA dosing in the CF group, blood concentrations were consistently lower compared to the control group over the 24-month follow-up ($p = 0.0003$). On average, CsA blood concentrations were 67 ng/ml lower in the CF group. No statistically significant association was found between co-administration of pancreatic enzyme and timing of CsA administration in relation to meals and CsA concentration ($p = 0.8912$) or dosage ($p = 0.1341$).
Conclusion: In this case-control study we found that LTx CF patients had significantly lower CsA blood concentrations post-LTx than an age-matched control group, despite equivalent CsA dosing. This strongly suggests poorer CsA absorption in CF patients independent of co-administration of pancreatic enzyme and timing of drugs in relation to meals. We recommend careful monitoring of CsA blood concentrations to prevent underdosing of CF patients.