Is lung transplantation a cause of sleep apnea hypopnea syndrome? P3455

Inés Escrivano Gimeno, María Josefa Díaz de Atauri, Trinidad Díaz Cambriés, Alicia De Pablo Gafas, Virginia Pérez Gonzalez, Angel López Encuentra. 
Pneumología, 12 de Octubre Hospital, Madrid, Spain

Aims: To analyze the prevalence of Sleep Apnea Hypopnea Syndrome (SAHS) in a cohort of patients before and after lung transplantation (LT).

Methods: All consecutive LT recipients with at least 2 polysomnographies (PSG) during one-year post-LT follow up have been included. The study was done in a tertiary hospital. Period of study: September 2008-February 2011. Anthropomorphic measurements, Epworth scale and PSG (before LT, 6 and after 12 months post-LT) were performed. Data about type and cumulative dose of immunosuppressive drugs were collected. SAHS was defined as an apnea-hypopnea index (AHI) ≥10/hour.

Results: Ten patients were included, 60% males, with a median age of 53.5 (range 15 to 63) years. 4 LT were unilateral and 6 bilateral. The SAHS prevalence was 30% (n=3) pre-LT, 80% (n=8) at the first PSG after LT, and 40% (n=4) at the second one. There were significant differences between mean AHI in the pre-LT sleep study and AHI in the first study after LT, but not with the one after 12 month of follow up. The data are shown in the figure:

Considering AHI values and SAHS presence there were not found any statistical relationship among them and the variables analyzed that could explains the SAHS prevalence progression in LT recipients.

Conclusions: The prevalence of SAHS is higher in the patients listed for LT compared with general population. It increases during the first months after LT and decreases over the time.

Sleep disordered breathing in Prader Willi syndrome post recombinant human growth hormone therapy P3457

Arun Kumar Pogalanthi, Sadassivam Suresh, Pat Wales, Gordon Williams, Margaret Harris. Department of Paediatric Respiratory & Sleep Medicine, Mater Children’s Hospital, South Brisbane, Queensland, Australia

Introduction: Recombinant human growth hormone (rhGH) is licensed for treatment in Prader Willi Syndrome (PWS) for improvement of body composition, height velocity, mobility, behaviour and quality of life. Sleep disordered breathing (SDB) disorders are common in individuals with PWS. It has been suggested that rhGH exacerbates SDB.

Aims: To identify PWS children who have changes in SDB on polysomnography (PSG) at 6 weeks of commencement of rhGH in a tertiary paediatric sleep setting.

Methods: We retrospectively reviewed PWS patients who underwent PSG pre and during 6 weeks post commencement of rhGH. PSGs were scored according to OSA-hypopnoea index (OSA-HI) and respiratory disturbance index (RDI). Data was collected 6 weeks before and after commencement of rhGH treatment and PSGs were scored by an experienced sleep technician. The data from PSGs is shown in the figure:  

Abstract printing supported by Chiesi. Visit Chiesi at Stand D.30
6 weeks post commencement of rhGH. The PSG was conducted in a sleep lab using standardized procedure and reported by a sleep physician.

Results: We studied 26 patients (13 Boys and 13 Girls) with age range between 1.6 to 17.9 years. 16 patients (61.5%) had normal PSG study indicating no deterioration in SDB since commencing on rhGH, 5 patients (19.2%) had mild increase in Aapnoe Hypopnoea Index (AHI). 1 patient (3.8%) required an increase in in-temine ventilation (NIV) and 4 patients (15.4%) were advised to cease rhGH treatment as PSG showed significant increase in AHI since rhGH commencement.

Discussion: 80% of our PWS patients on rhGH had either no evidence of change in SDB six weeks post rhGH treatment or mild increase in AHI. 19.2% (5 Patients) in which 4 patients (15.4%) studied ceased rhGH and in 1 (3.8%) NIV support was increased.

Conclusion: As we have no predictors of who will have SDB deterioration with rhGH, patients with PWS should have PSG before and after starting rhGH and monitoring of children with pre and post growth hormone PSG studies and clinical evaluation is essential in treatment.

P3458 Periodic breathing and oxygenation pattern depending on severity of bronchopulmonary dysplasia
Natalja Petrova1, Irina Dobrodeva1, Yuri Petrenko1, Nikolai Shabalov2, Vyacheslav Lubimenko1,2. Newborn Physiology and Diseases Research Laboratory, Federal Specialized Perinatal Centre under V.A. Almazov Federal Heart, Blood and Endocrinology Centre, Saint-Petersburg, Russian Federation; 1Neonatal and Perinatal Care Unit, Children City Hospital No. 1, Saint-Petersburg, Russian Federation; 2Pneumatic Unit, Military Medical Academy, Saint-Petersburg, Russian Federation.

Objective: Periodic breathing (PB) is a common breathing pattern in premature infants. Our aim was to study PB occurrence and its impact in oxygenation in infants without moderate and mild bronchopulmonary dysplasia (BPD) compared to infants without BPD.

Methods: We performed pneumography on 25 premature infants with BPD (1 case of severe, 8 of moderate, and 16 of mild BPD) and 25 non-BPD premature comparable in gestation age (26-30 weeks). Infants were examined 1-3 times at ages of less than 29 days, 29-50 days, more than 50 days. Incidence of major neurologic abnormalities appeared not to differ among groups.

Results: Occurrence and duration of PB did not differ in infants with mild BPD and without BPD at all ages. Infants with moderate to severe BPD demonstrated no PB during first 28 days, lesser incidence of PB at 29-50 days (1 of 3 infants), lesser duration of PB at 50 days and older (4.3±3.1% of recording length) compared to infants with mild BPD (8 of 10 infants; 18.3±6.7%, respectively; P<0.05) and without BPD (17 of 18 infants; 13.3±5.3, respectively; P<0.05). In most cases PB was accompanied by arterial O2 saturation (SpO2) oscillation. The minimal SpO2 values during this oscillation were >80% in all except one case of PB in infants without BPD. In BPD group in 5 of 9 PB cases at 29-50 days and 5 of 15 PB cases at 50 days and older SpO2 was 80% and lower; these were infants with moderate to severe and mild BPD respectively.

Conclusion: Infants with mild BPD seem to have more active peripheral chemoreceptors compared to premature with moderate to severe lung disease. PB may be associated with significant desaturations in infants with BPD regardless of its severity.

P3459 Effects of sleep disordered breathing, asthma and socio-economic status on behavioural parameters in children
Yasemin Goldenkeri1, Retika Erzu1, Ayse Rodopman Arman1, Pinar Ay2, Ahmet Topuzoglu1, Fatih Terekli1, Bulent Karadag1, Fazilet Karakoc1, 1Pediatrik Pulmonology, Marmara University, Istanbul, Turkey; 2Child Psychiatry, Marmara University, Istanbul, Turkey.

Background: Inner-city children with asthma have increased prevalence of sleep disordered breathing (SDB) and these children have more pronounced behavioral problems.

Aim: To study the effect of asthma and SDB on behavior in children by socio-economic status (SES).

Methods: This cross sectional study was performed in 6 primary schools; 3 with low and 3 with high SES. These schools were determined by a previous study which evaluated the SES of the students. All children in the 1st to the 4th grades were included. ISAAC questionnaire for asthma, pediatric sleep questionnaire for SDB and a standardized SES questionnaire were completed by the parents.

Results: 1383 children (51% female) were included. Mean age was 8.7±1.1 years. Rates of ever and current wheezing were 25.8% (95%CI: 23.5-28.2%) and 19.8% (95%CI:17.7-21.9), respectively. 11.4% (95%CI:8.8-13.2%) had childhood diagnosed asthma and 7.1% (95%CI:5.8-8.8) had SDB. Children attending schools in poor neighbourhoods tended to have higher rates of SDB (p<0.05). Although children in both groups had similar rates of ever and current wheezing, those with lower SES had less doctor diagnosed asthma (p=0.03). Children with SDB had increased risk of ever and current wheezing and risk increased in children with lower SES. Presence of SDB increased the risk of ever wheezing among children with low and high socio-economic status with an OR of 4.4 and 3.2, respectively (p<0.05).

Conclusion: SDB is more common in children with lower SES. Children with SDB have higher rates wheezing and risk increases in children with lower SES.

P3461 Obstructive sleep apnoea syndrome and insomnia: The development of insomnia symptoms with CPAP treatment
Xuan-Lan Nguyen1, Dominique Rakotomalala1, Joel Chaskalovic1,2, Bernard Fleury1,1Service de Pneumologie, Hôpital Saint-Antoine, Paris, France; 2Department of Mathematics, University of Savarina, Israel, Israel; 1Département de Mathématiques, Institut Jean le Rond d’Alembert, Paris, France, Metropolitain.

Rationale: Insomnia is frequently reported in obstructive sleep apnoea syndrome (OSAS) patients due to the high prevalence of both diseases and, potentially, a causal relationship between them.

Objective: To assess the evolution of insomnia under long-term continuous positive airway pressure (CPAP) treatment.

Methods: Eighty apnoic patients (age = 54.9±10.6 years, respiratory disturbance index = 45.0±24.6/h) on CPAP were followed prospectively for 24 months. Dependent variable was assessed at baseline (T0) with the QDAS scale, and at each follow-up the insomnia and sleep quality used the Insomnia Severity Index (ISI) (an ISI > 14 defining insomnia) and the Pittsburgh Sleep Quality Index (PSQI) at T0 and T24. A multivariate correlation analysis identified the major explanatory factors for the ISI at T24.

Results: The median ISI was 14 at T0 and 6 at T24. The ISI (13.7±2.3) was comparable in gestation age (26-30 weeks). Insomnia was no longer measurable with CPAP treatment in two-thirds of initially insomniac patients. Residual insomnia was associated with high levels of initial insomnia and depressive symptoms.

Conclusion: Increased rates of externalizing and internalizing problems in inner-city primary school children with SDB might reflect a negative impact on overall neurobehavioral health. Being male, coming from lower SES, and the presence of both wheezing and SDB might increase negative behavioral problems.

P3460 Sleep disordered breathing, asthma and socio-economic status in children: How do they interact?
Yasemin Goldenkeri1, Retika Erzu1, Pinar Ay2, Ahmet Topuzoglu1, Ayse Rodopman Arman1, Cem Kalefat1, Bulent Karadag1, Fazilet Karakoc1, 1Pediatrik Pulmonology, Marmara University, Istanbul, Turkey; 2Public Health, Marmara University, Istanbul, Turkey.

Background: Sleep disordered breathing (SDB) and asthma have been closely linked. Both conditions are affected by socio-economic status (SES).

Aim: To study the rate of asthma and SDB by SES in children.

Methods: This cross sectional study was performed in 6 primary schools; 3 with low and 3 with high SES. These schools were determined by a previous study which evaluated the SES of the students. All children in the 1st to the 4th grades were included. ISAAC questionnaire for asthma, pediatric sleep questionnaire for SDB and a standardized SES questionnaire were completed by the parents.

Results: 1383 children (51% female) were included. Mean age was 8.7±1.1 years. Rates of ever and current wheezing were 25.8% (95%CI: 23.5-28.2%) and 19.8% (95%CI:17.7-21.9), respectively. 11.4% (95%CI:8.8-13.2%) had childhood diagnosed asthma and 7.1% (95%CI:5.8-8.8) had SDB. Children attending schools in poor neighbourhoods tended to have higher rates of SDB (p<0.05). Although children in both groups had similar rates of ever and current wheezing, those with lower SES had less doctor diagnosed asthma (p=0.03). Children with SDB had increased risk of ever and current wheezing and risk increased in children with lower SES. Presence of SDB increased the risk of ever wheezing among children with low and high socio-economic status with an OR of 4.4 and 3.2, respectively (p<0.05).

Conclusion: SDB is more common in children with lower SES. Children with SDB have higher rates wheezing and risk increases in children with lower SES.

Poster Discussion

Abstract printing supported by Chiesi. Visit Chiesi at Stand D.30
Methods: 50 healthy men, mean±SD age 26±6y, living at <600m, were studied at Zurich (490m) and while staying in the Swiss Alps at Davos Wolfang (1630m, 2 days) and Jakobshorn (2590m, 2 days), in randomized order. Sleep studies, psychomotor vigilance tests (PVT), snow board simulator tests and questionnaire evaluations were performed at all locations.

Results: Compared to 490m, sleep studies at altitude revealed reduced oxygen saturation, a higher central apnea/hypopnea index and reduced slow wave sleep. Multiple logistic regression did not show an independent effect of altitude on reaction times in PVT and snowboard simulator when controlled for various confounders.

Conclusion: In healthy men, mild altitude hypoxia and periodic breathing at moderate altitude are associated with subtle sleep disturbances but neither subjective sleep quality nor psychomotor vigilance during daytime are impaired. 

Grants: Zurich Centre for Integrative Human Physiology, Swiss Federal Accident Insurance.

P3463 Prevalence of thyroid disease in patients with obstructive sleep apnea

Ahmed Balkanmam 1, Muath Sharif 2, Awan Jammah 3, Salah Balkanmam 1, University Sleep Disorders Center, King Saud University, Riyadh, Saudi Arabia; 2 Endocrinology Section, King Saud University, Riyadh, Saudi Arabia

Background: Previous studies have reported conflicting results with regard to thyroid disease in obstructive sleep apnea (OSA) patients.

Objectives: To determine the prevalence and predictors of thyroid disease in OSA patients.

Methods: Consecutive patients who were referred for an overnight polysomnography (PSG) in the study period underwent serum TSH and thyroxine (FT4) measurement within 4 weeks of PSG using the electrochemiluminescence immunoassay method. Standard definitions were used to define clinical hypothyroidism, subclinical hypothyroidism, clinical hyperthyroidism and subclinical hyperthyroidism.

Results: During the study period, 271 patients with OSA and a mean age of 48.7±14 yr, body mass index (BMI) of 37.9±9.6 kg/m2 and apnea hypopnea index (AHI) of 55.5±37 hr and 76 non-OSA patient (control group) with a mean age of 40.8±14 yr and BMI of 33.7±8.9 kg/m2 and AHI of 3.8±1.3/hr were included. Among OSA patients, a total of 26 (9.6%) were known cases of clinical hypothyroidism. 

The prevalence of newly diagnosed clinical hypothyroidism was 0.4% and the prevalence of newly diagnosed subclinical hypothyroidism was 11.1% in OSA patients. In the non-OSA patients, the prevalence of newly diagnosed clinical hypothyroidism was 1.4%, and the prevalence of newly diagnosed subclinical hypothyroidism was 5%. There were no cases of clinical or subclinical hyperthyroidism in the studied group. Female gender was the only predictor of clinical hypothyroidism.

Conclusion: The prevalence of newly diagnosed clinical hypothyroidism was very low in OSA patients to warrant routine testing for thyroid function. On the other hand, subclinical hypothyroidism was common among patients with OSA.

P3464 Isolated nocturnal hypoxia in sickle cell disease (SCD)? Is it an initial feature or separate entity?

Nadeem Maddakar 1, Rohit Saha 1, Bhagyashree Jayaraman 2, Tullie Yeghen 1, Tudor F Toma 1, Respiratory Medicine, Lewisham Healthcare NHS Trust, London, United Kingdom; 2 Respiratory Medicine, Guys and St Thomas Hospital NHS Trust, London, United Kingdom

Introduction: Hypoxia is detrimental to patients with sickle cell disease (SCD) as it causes polymerisation of sickle haemoglobin. Whilst daytime oxygen saturations in patients with SCD are normal or near normal, overnight oxygen levels are not known and are not routinely assessed in SCD.

Aim: To evaluate and describe the prevalence and characteristics of nocturnal oximetry changes in patients with SCD.

Methods: SCD patients referred by haematology for lung function testing also underwent overnight oximetry. Nocturnal oximetry findings were manually scored and results were correlated with lung function. Nocturnal hypoxia (NH) was defined as 30% total sleep time with SpO2 <90%.

Results: Lung function testing showed that one patient had airway obstruction, while the rest had normal spirometry. The average KCO was Mean ± SD 91.63±20.54% predicted. The average overnight saturation in this group was 94.0±2.13% However, the mean night time oxygen saturation in the group was 91.14±4.32.

NH was evident in 4/10 patients in this group and percentage of sleep time nocturnal desaturation was mean of 83.78±18.02. SD. NH of >5% was 7.92±13.10. None of the patients had a 4% oxygen desaturation index 10 events per hour.

Conclusion: Patients with SCD can have a normal gas transfer and a borderline normal daytime oximetry. However, during sleep, SCD patients can have long periods of moderate to severe hypoxia.

Snow board simulator test showed that NH showed can be seen in SCD even in the absence of OSA and COPD.

The pathophysiology of night time hypoxia in SCD and the possible therapeutic potential of night time oxygen for these patients deserve further studies.

P3465 Correlation between intermittent nocturnal hypercapnia and depressive symptoms in patients with obstructive sleep apnea syndrome

Radoslav Bilyukov, Tsantko Mondeshki, Rostislav Chernera, Daniela Pettrova, Ogian Georgiev. Clinic of Pulmonology, University Hospital “Alexandrovska”, Sofia, Bulgaria

Background: It is still controversial whether sleep disordered breathing could play an independent role in the development of depression. The role of nocturnal hypercapnia is still unclear. It is disputive whether non-invasive ventilation is beneficial.

Materials and methods: 58 patients with OSA participated in our study. OSA was proved using Compumedics polysomnography. The patients were divided into two groups – patients with obesity hyperventilation syndrome (OHS) and OSA; and patients with OSA only. Nocturnal hypercapnia was determined by measurement of end-tidal carbon dioxide (ETCO2) – Nonin Medair. In each group depression was diagnosed using the International Classification of Diseases criteria. The severity of depressive symptoms was determined using the Zung and Hamilton scales. Patients were on biveload positive airways pressure therapy and were followed up for 6 months.

Results: Thirty of the patients (51.7%) had depressive symptoms. There was no correlation between AHI and the severity of depression (p=0.328). The analysis of the hypnogram showed that sleep fragmentation, characterized by arousal index including significant period of wakefulness was a significant impact on depressive symptoms (p=0.048, r=0.265). Another important factor that determines daytime affective status was nocturnal hypercapnea (p=0.05, r=0.265). Body mass index (BMI) also showed a statistically significant relationship with the depressive symptoms (p=0.006, r=0.368).

Conclusion: The degree of OSA determined by AHI and the desaturation index do not contribute to the development of depressive symptoms in patients with OHS/OSA. BML sleep fragmentation, nocturnal hypercapnea are of greater importance.

P3466 CPAP therapy in idiopathic pulmonary fibrosis patients with obstructive sleep apnea

Isolde Bouloukakis 1, Charalampos Mermigkis 2, Dimitrios Mermigkis 2, Vlachaki Elina 1, Eleftheria Tsotzaki 1, Eleftheria Mavroudi 1, Nikolaos Siafakis 1, Sophia Schiza 1, Sleep Disorders Unit, Department of Thoracic Medicine, Medical School, University of Crete, Heraklion, Greece; 2 Sleep Disorders Unit, 401 General Army Hospital, Athens, Greece

Background/Aim: Recent literature shows an increased incidence of Obstructive Sleep Apnea (OSA) in patients with Idiopathic pulmonary Fibrosis (IPF) and there are no published studies related to CPAP treatment in these patients. We aimed to assess CPAP effectiveness in sleep and quality of life in IPF patients with OSA and recognize difficulties in CPAP initiation and acceptance.

Methods: Five male patients with newly diagnosed IPF and moderate to severe OSA were included. CPAP therapy was initiated. The patients completed the Epworth Sleepiness Scale (ESS), the Pittsburgh Sleep Quality Index (PSQI), the Functional Outcomes in Sleep Questionnaire (FOSQ), the Fatigue Severity Scale (FSS), the SF-36 quality of life questionnaire and the Beck Depression scale (BDS) before and 1 month after CPAP therapy.

Results: Small, although not statistical significant, improvement was noted in ESS and BDS, the SF-36 Quality of Life scale and the Beck Depression scale (BDS) before and 1 month after CPAP therapy.

Conclusion: The degree of OSA determined by AHI and the desaturation index do not contribute to the development of depressive symptoms in patients with OHS/OSA. BMI sleep fragmentation, nocturnal hypercapnea are of greater importance.

P3467 The effect of concomitant COPD on obstructive sleep apnea syndrome severity and sleep structure

Ali Fidan, Baiys Saleçi, Nesrin Kiral, Elif Torun, Sevda Comert, Gulsen Saraç, Aslihan Altin, Benan Çaglayan.

Aslihan Altin, Benan Çaglayan.

1 Sleep Disorders Unit, Department of Thoracic Medicine, Medical School, University of Crete, Heraklion, Greece; 2 Sleep Disorders Unit, 401 General Army Hospital, Athens, Greece

Abstract printing supported by Chiesi. Visit Chiesi at Stand D.30
P4346

Are upper airways resistance syndrome and obstructive sleep apnea a side-effect of oral cancer therapy?
S. P. Tandon1, A. Khutarkar1, S. Ansari1, M. Khale,S. K. Raja1, J. Deodhar3
1Pulmonary Medical Unit, Tata Memorial Hospital, Mumbai, India; 2Département de Pneumologie, Université d'Angers, Angers, France; 3Unit of Gynecological Endocrinology and Menopause, University of Pavia, Pavia, Italy

Background: Upper airways resistance syndrome and Obstructive Sleep Apnea (OSA) are frequent disorders in oral cancer patients. The aim of this study was to assess their prevalence in a cohort of oral cancer patients treated with radiotherapy.

Methodology: The study is a retrospective analysis of 141 oral cancer patients treated with radiotherapy between January 2005 – January 2010 were retrospectively analysed.

Results: The prevalence of UARS and OSA was 35.4% (20.4%) and 21.3% (10.3%), respectively. The prevalence of OSA in men was 27.2% (13.7%) and in women was 27.7% (16.3%). The prevalence of UARS was 52.7% (31.7%) and 27.0% (15.7%) in men and women, respectively.

Conclusion: UARS and OSA are common disorders in oral cancer patients treated with radiotherapy. Further studies are required to evaluate the impact of OSA and UARS on the clinical outcomes of oral cancer patients.

P4347

Obstructive sleep apnea syndrome in non-arteritic anterior ischemic optic neuropathy
Jorge Vale1, Vitor Melo1, Eloisa Silva1, Claudia Souza1, Isabel Gil1, Ricardo Faria2, Amparo Sánchez Serrano1, José Ade1, Antonio Simões Torres1
1Sleep Center, S. Maugeri Foundation, Pavia, Italy; 2Unit of Internal Medicine and Endocrinology, S. Maugeri Foundation and University of Pavia, Pavia, Italy

Introduction: The acute vision loss associated with non-arteritic anterior ischemic optic neuropathy (NAION) frequently occurs upon awakening, suggesting that a pathological event during sleep may trigger NAION. Several recent studies have reported links between NAION and obstructive sleep apnea syndrome (OSAS).

Objective: To evaluate newly diagnosed NAION patients for the existence of an associated OSAS.

Methods: Newly identified NAION patients, from the department of Ophthalmology, underwent overnight laboratory polysomnography. The prevalence of sleep apnea in NAION patients was compared to the prevalence previously found in the general population. The classic risk factors associated with NAION were also identified.

Results: A total of 23 patients were recruited (16 men and 7 women), mean age 63.6±6.8 years, body mass index 30.2±5.6 kg/m². 13 of these 23 NAION patients (56.5%) had OSAS and 20.8% had severe OSAS (RDI > 30 h). In this study, 69.2% of the patients had hypertension, 61.5% had dyslipidemia, 38.5% had a history of transient ischemic attack and 30.8% had diabetes. The mean cumulative time with oxygen saturation less than 90% (CT90) was 13.7±24.3%.

Conclusion: The acute vision loss associated with non-arteritic anterior ischemic optic neuropathy (NAION) frequently occurs upon awakening, suggesting that a pathological event during sleep may trigger NAION. Several recent studies have reported links between NAION and obstructive sleep apnea syndrome (OSAS).