Niigata University, Niigata, Japan; [2]Dept. of Community Preventive Medicine, Graduate School of Medical and Dental Sciences, Niigata University, Niigata, Japan; [3]Dept. of Neurology, Brain Research Institute, Niigata University , Niigata, Japan; [4]Dept. of General Medicine, Medical and Dental Hospital, Niigata University, Niigata, Japan

Background: Multiple system atrophy (MSA) is the neurodegenerative disease characterized by autonomic failure, parkinsonism, and cerebellar ataxia in various combinations, and has high frequency of sleep-disordered breathing (SDB), which caused by dysregulation of respiratory control.
Aims: This study investigates whether respiratory irregularity is involved in the development of SDB with MSA.
Methods: 22 MSA patients (9men, 60.0±6.2 years, BMI 23.1±5.0 kg/m^2) were enrolled from January 2007 to June 2010. We performed polysomnography (PSG) and laryngoscopy under propofol sedation. Respiratory irregularity was assessed by approximate entropy (ApEn) of respiratory movement, which is a measure of system complexity (Pincus SM. *Proc Natl Acad Sci USA* 1991), evaluated from the three-minute data of respiratory movement before falling asleep in PSG (Burioka N, et al. *Chest* 2003). We chose the age-, sex-, and apnea-hypopnea index (AHI)-matched controls from ordinary obstructive sleep apnea (OSA) patients (BMI 27.6±4.5 kg/m^2).
Results: PSG demonstrated that all MSA patients fulfilled OSA criteria, and their AHI was 40.6±26 per hour. Laryngoscopy showed that 15 patients (68%) had vocal cord abductor paralysis (VCAP). In the MSA group, there was a significant correlation between AHI and ApEn of respiratory movement ($r=0.63$, $p<0.01$). However, AHI had no correlation with age, BMI, duration and severity of MSA, degree of VCAP, and any respiratory parameters. In the control group, their AHI significantly correlated with BMI ($r=0.68$, $p<0.01$), but not with ApEn.
Conclusions: This study raises the possibility that respiratory irregularity influence the severity of SDB in MSA.

P2244
The relationship between obstructive sleep apnea syndrome and apolipoprotein E allels
Ebru Kucuk[1], Oner Balbay[1], Ali Nihat Annakkaya[1], Ege Gulec Balbay[2], Fatma Silan[3], Peri Arbak[1]. *[1]Chest Diseases, Duzce University Faculty of Medicine, Duzce, Turkey; [2]Chest Diseases, Duzce Ataturk State Hospital, Duzce, Turkey; [3]Genetics, Onsekiz Mart University Faculty of Medicine, Canakkale, Turkey*

Aim: Clinical and epidemiological studies indicate that OSAS has a strong genetic basis. Apo E in humans is an important determinant of blood lipid levels. There are few studies investigating the possible relationship between OSAS and Apolipoprptein E. In this study, we aimed to investigate the apolipoprotein E allels as a genetic risk factor in OSAS.
Method: 62 adult patients (35 male, 27 female) with sleep apnea applying to Chest Diseases Clinic between October 2006 and May 2009 were included in this study. All patients underwent fullnight PSG and were evaluated for apolipoprotein E allels.
Results: The mean age was 51±12. According to PSG results, 20 cases with negative PSG and 18 with mild, 10 with moderate, 14 with severe OSAS patients was diagnosed.
Clinically important patients were divided into 2 groups according to AHI<=15 (n:38) and AHI>15 (n:24). No homozygote Apo E2 (22) and homozygote Apo E4 (44) were observed in study group. The cases with OSAS had almost statistically significant higher Apo E2 frequency than that of not OSAS (23.8%, respectively, 10/42 and 5%, 1/20, p = 0.080).
As AHI increases, frequency of Apo E3 allel detection will also increase in OSAS patients. But frequency of Apo E4 allel detection will decrease (respectively, p=0,717, and p=0,613). Apo E3 allel contrary to Apo E4 was frequently observed AHI above 15 whereas Apo E4 allel was frequently observed AHI below 15.
Conclusion: It's thought that APO E2 allel is a risk factor for OSAS. But more studies are needed to confirm this relation.

P2245

259. Comorbid obstructive sleep apnoea (OSA) and OSA comorbidities

P2243
Does respiratory irregularity contribute to the pathogenesis of sleep-disordered breathing in multiple system atrophy?
Satoshi Hokari[1], Hideaki Nakayama[1], Takayuki Matsuto[2], Takayoshi Shimohata[3], Toshinori Takada[1], Tetsutaro Ozawa[3], Masatoyo Nishizawa[3], Eiichi Suzuki[4], Ichiei Narita[1]. *[1]Dept. of Homeostatic Regulation and Development, Graduate School of Medical and Dental Sciences,*

WITHDRAWN

P2246

Comorbidities of obstructive sleep apnoea syndrome

Madhav Tamhankar, Murali Mohan, Ranganath Ramanjaneya, Tiyas Sen. *Pulmonology, Narayana Hrudayalaya, Bangalore, India*

Introduction: Obstructive Sleep Apnoea (OSA) is often associated with unrecognized comorbidities. Persons of South Asian origin already have a higher prevalence of diabetes and hypertension than in the developed world, and COPD prevalence is rising fast. We expected that the prevalence of comorbidities would be high in our population with OSA.

Methods: Patients at our referral hospital in India, proven by polysomnography to have moderate to severe OSA (Apnoea Hypopnoea Index (AHI) > 15/hour), were studied for important comorbidities: diabetes mellitus (DM), hypertension (HTN) and COPD, diagnosed as per accepted guidelines (ADA, JNC VII, GOLD), or already on treatment. Results were compared with recent Indian prevalence data for these comorbidities.

Results: Moderate to severe OSA was present in 182/201 subjects (90.54%), and severe OSA in 169/201 subjects (84.08%). (Age: Mean 55.65 years Range 27 – 78 years). [Gender: Men 138 (68.7%) Women 63 (31.3%)}. The comorbidities were:

Co-morbidities of Moderate and Severe OSAS

Co-morbidity	Prevalence (%)	
	Mod-severe OSA (n=182)	Severe OSA (n=169)
DM	46.7	47.3
HTN	58.8	58.6
DM + HTN	35.7	36.1
COPD	25.3	26

127/182 (69.8%) of those with moderate to severe OSA had both DM and HTN. All comorbidities exist at a much higher level in persons with moderate to severe OSA than in the general population [estimated prevalence: DM 9%, HTN 28.%, COPD (men 5%, women 2.7%)].

Conclusion: Moderate to severe OSA is associated with a high prevalence of significant comorbidities like diabetes, hypertension and COPD. The prevalence is higher than a chance co-occurrence of common conditions in the general population. A search for OSA should be made in every patient with DM, HTN or COPD and vice versa.

P2247

Sleep apnoea in patients with renal transplantation

Antigone Fritz, Oliver Vonend, Lars Christian Rump. *Nephrology, University Hospital of Düsseldorf, Düsseldorf, Nordrhein-Westfalen, Germany*

Sleep apnoea is an important risk factor for cardiovascular mortality. With up to 50%, cardiovascular events are the major cause of death in patients with end stage renal disease (ESRD). Moreover, major adverse cardiac events (MACE) often limit the long term survival after successful kidney transplantation.

Therefore a consequent detection and reduction of cardiovascular risk factor should be a major goal in patients with ESRD in particular for patients on the waiting list. Sleep apnoe (SA) has a prevalence of 30-80% in dialysis patients. The diagnosis of SA is difficult in patients with ESRD since conventional questionnaires are often misleading.

We started a study to investigate the prevalence of sleep apnoe in patients with renal transplantation. The study collective includes over 130 patients, more than 50 of them received a living transplantation. The prevalence of sleep apnoea in our study group was round about 40%. There was no influence of the typical risk factors for sleep apnoea such gender and BMI in our patient collective. The age (P=0,003) and the co-existence of other cardiovascular diseases (p<0,001) were the most important risk factors for sleep apnoea. Also typical dialysis parameters like diuresis and time on dialysis influences the appearance of sleep apnoea. Notably symptoms like sleepiness and snoring or the Epworth Sleepiness Scale were not usefull to detect sleep apnoea in our study collective.

The study will be finished in summer 2011. Further study datas will be expected. For conclusion we can summarize that it is very usefull to screen everybody on the waiting list for kidney transplantation because it presents a very common cardiovascular risk factor in patients with renal disease.

P2248

Sleep related disorder of breathing in syndromic and nonsyndromic craniosynosotosis

Shaikh Iqbal[1], Muslim AlSaadi[1], Essam Elgamal[2]. [1]*Pulmonology and Sleep Unit, Department of Pediatrics, King Saud University, Riyadh, Saudi Arabia;* [2]*Neurosurgery, King Saud University, Riyadh, Saudi Arabia*

Aims: To look at sleep related disorderd breathing (SRDB) in syndromic {SC} & non-syndromic craniosynostosis{NSC} children in our hospital.

Background: SRBD is highly prevalent in SC [1] children. Neuropsychological deficits [2] and not SRDB is reported in NSC children.

Methods: Children with no SRDB history (Group1-SC, n=4) & (Group2-NSC, n=10) were referred for polysomnography (PSG) between Sep2007 to Nov2010 preoperatively.

Results: The median total apnea-hypopnoea index (TAHI) were 8.80 (range 1.8-18.2); 2.8 (range 0.2-21.4) & central apnea index (CAI) were 0.6 (range 0-2.1); 0.1 (range 0-1.2) group-1 & group-2, respectively.

Table 1. Polysomnographic data in children with syndromic craniosynosotosis

No	Age at PSG (in years)	Sex	TAHI (Events/Hour)	TCAI (Events/Hour)
1	0.79	Male	18.2	0
2	0.85	Female	7.8	2.1
3	1.52	Female	1.8	0.1
4	8.78	Female	8.9	0

PSG: Polysomnograph; TAHI: Total Apnoea Hypopnoea Index; TCAI: Total Central Apnoea Index.

Table 2. Polysomnographic data in children with non-syndromic craniosynosotosis

No	Sex	Age at PSG (in years)	TAHI (Events/Hour)	TCAI (Events/Hour)
1	Female	0.24	0.2	0
2	Male	0.67	0.7	0
3	Female	0.69	21.4	0
4	Female	0.80	7.3	0.2
5	Male	1.0	0.2	0.2
6	Male	1.01	14.6	0
7	Male	4.06	1.0	0
8	Male	4.21	0.7	0.2
9	Female	5.15	4.6	1.2
10	Male	7.49	8.2	0.9

PSG: Polysomnograph; TAHI: Total Apnoea Hypopnoea Index; TCAI: Total Central Apnoea Index.

Conclusion: Asymptomatic SC & NSC children have PSG evidence of SRDB.

References:

[1] Al-Saleh S et al SRDB with syndromic craniosynostosis.J Cranio maxillo fac Surg. 2010 Jun.

[2] Kapp-Simon KA et al Childs Neurodevelopment of children with single suture craniosynostosis, Nerv Syst. 2007 Mar;23(3):269-81.

P2249

Should cardiologists routinely screen and evaluate myocardial infarction patients for sleep disorders?

Filip M. Szymanski[1], Krzysztof Filipiak[1], Anna Hrynkiewicz-Szymanska[2], Grzegorz Karpinski[1], Grzegorz Opolski[1]. [1]*Department of Cardiology, The Medical University of Warsaw, Warsaw, Poland;* [2]*Department of Cardiology, Hypertension and Internal Diseases, The Medical University of Warsaw, Warsaw, Poland*

Introduction: A risk of a cardiovascular event increases with the number of cardiovascular risk factors.

Aims: The aim of this prospective study was: To identify Acute Coronary Syndromes (ACS) patients at high risk of OSA, using Berlin questionnaire (BQ) and Epworth Sleepiness Scale (ESS), and 2. To decrypt the clinical characteristics of ACS patients at high risk of OSA.

Methods: We studied 158 consecutive patients, assessed by BQ and the ESS. The high risk of OSA was defined as cumulative high risk, based on BQ and ESS scores higher than 10 in a scale of 24.

Results: Fifty four (34.2%) patients were at high risk. On admission patients at high risk of OSA had significantly often history of hypertension (92.6% vs. 55.8%; p<0.0001), diabetes mellitus (37% vs. 15.4%; p=0.0049), significantly higher mean ESS (14.83±3.02 vs. 5.83±3.33; p<0.0001), systolic blood pressure (149.9±34.2 vs. 128.4±23.6 mmHg; p<0.0001), diastolic blood pressure (87.7±17.4 vs. 76.2±12.1 mmHg; p<0.0001), Body Mass Index (32.3±4.6 vs. 27±3.8 kg/m^2; p<0.0001), and lower Glomerular Filtration Rate (79.5±21.2 vs. 87.5±22.2 ml/min/1.73 m^2; p=0.048). Patients at high risk of OSA had often onset of acute chest pain between midnight and 5.59 am compared to the patients at low risk (42.6% vs. 26%; p<0.05). Mortality (7.4% vs. 1%; p=0.03) was more frequent in patients at high risk of OSA.

Conclusions: Every third ACS patient was diagnosed with OSA. Cardiologists should routinely screen and evaluate myocardial infarction patients for sleep disorders, especially when they are obese, have hypertension, and chest pain in the night hours.

P2250

Daytime sleepiness in patients on intrathecal chronic opioid (IT) therapy is not related to sleep disordered breathing (SDB)

Francesco Fanfulla[1], Laura Demartini[2], Paola Fulgoni[1], Michelangelo Buonocore[3], Massimo Barbieri[2], Cesare Bonezzi[2]. *[1]Sleep Center, S. Maugeri Foundation Institute of Pavia, Pavia, Italy; [2]Pain Unit, S. Maugeri Foundation Institute of Pavia, Pavia, Italy; [3]Neurophysiology Unit, S. Maugeri Foundation of Pavia, Pavia, Italy*

Persistent pain is a pervasive problem in modern medicine. Intrathecal therapy offers an alternative tool for the long-term management of patients with chronic pain who did not respond to less invasive therapies or systemic opioids, mainly in terms of reduced side effects. SDB as well as excessive daytime sleepiness (EDS) are common in chronic pain patients on oral opioid therapy, but no data are available for patients receiving IT. Aim of our study was to study two groups of consecutive patients receiving IT opioid therapy, according to absence (A, n=6) or presence (P, n=5) of EDS. All the patients (8 F, age 56.9±8.3 yrs, BMI 25.6±6 kg/m^2) underwent polysomnography (PSG) and maintenance wakefulness test (MWT). Table 1 shows sleep indices for both group of patients:

Table 1

	SE (%)	N2 (%)*	N3 (%)*	REM (%)*	AHI	ODI
A	87.4±13	28.6±11	32.9±16.5	20.9±6	18.8±13	10±8.7
P	80±14.3	52.9±16	14±12.9	12.7±6.4	23.8±30	31.7±38.4
ALL	83±14	41.9±18	22.6±17	16±7	21.5±23	21.8±30

*p<0.05.

Both EDS and sleep latency at MWT were statistically significantly correlated with the amount of NREM2 percentage (r=0.68, p=0.003; r= -0.61, p=0.04; respectively). 6 patients were affected by sleep apnea (AHI 32.8±26): central in 1, mixed in 1 and obstructive in 4 patients. Age was statistically significantly correlated with AHI (r=0.76, p<0.01) and ODI (r=0.62, p<0.05). No statistically significant correlations were found between respiratory and sleepiness indices as well as morphine equivalent doses or years of opioids therapy. In conclusion, daytime sleepiness is common in patients receiving IT opioids but it is only correlated with sleep quality and not with respiratory disturbances.

P2251

Sleep apnea-hypopnea syndrome and glaucoma: Is there any association?

Nuria Grau[1], Marta Castany[2], Miquel Felez[1], Carles Sanjuas[1], Joaquim Gea[1]. *[1]Respiratory Department, Hospital del Mar, Parc de Salut Mar, Barcelona, Spain; [2]Oftalmology Department, Hospital de la Vall D'Hebron, Barcelona, Spain*

Background: The possible association between SAHS and open-angle or normotensive glaucoma needs further investigation.
Methods: Patients in whom polysomnography was indicated upon the clinical suspicion of SAHS underwent comprehensive ophthalmologic evaluation in the search of glaucomatous optic neuropathy and increased intra-ocular pressure (IOP).
Results: Nine-two patients (mean age 54±11 years, 37% female) were included. In 16 of them, the Apnea-Hypopnea Index (AHI) was < 5, thus ruling out the diagnosis of SAHS. In 49 patients (53%) severe SAHS was established (AHI of higher than 30). Direct visualization of the optic disc head was suspicious of glaucomatous affectation in 12,8% of the examined eyes. Patients with a positive suspicion of glaucomatous optic neuropathy (GON, group 1) were older (59±10 vs. 54±12 years; p < 0.05) and presented with a higher IOP (18±2 vs. 15±3 mmHg; p < 0.001) as opposed to those with normal visual optic nerve examination (group 2). We found more structural glaucomatous changes in men (17% of them) than in women (4,5%; p = 0,012). The AHI was significantly higher in group 1 as compared to group 2 (AHI of 51±10 vs. 32±11, respectively; p<0,001). In a multivariate analysis, both increased AHI and IOP remained as independent risk factors of GON (p = 0.017 and p = 0.005, respectively). Therefore, an increased AHI favored the development of GON independently of the IOP.
Conclusions: Sleep apnea-hypopnea syndrome increases the susceptibility to glaucomatous damage of the optic nerve head. In some SAHS patients, this risk of glaucomatous optic neuropathy lays upon a distinct mechanism other than increased intra-ocular pressure (normotensive glaucoma).

P2252

Anxiety, depression and alexithymia in patients with obstructive sleep apnea syndrome

Silvia Dumitru, Dionissios Bratis, Sotirios Gyftopoulos, Athanassios Tselebis, Ioannis Xazapis, Katerina Chronopoulou, Epaminondas Kosmas. *3rd Dept of Pulmonary Medicine & Sleep Laboratory, Chest Diseases Hospital "Sotiria", Athens, Greece*

We attempted to investigate anxiety (with Spielberger's Trait Anxiety), depression (with Beck Depression Inventory) and alexithymia (with Toronto Alexithymia Scale) in patients with newly diagnosed obstructive sleep apnea syndrome (OSAS) with an Apnea-Hypopnea Index (AHI) ≥ 5 events/hour. We present our results from 32 consecutive patients (age 51±9 years, AHI 54±16 events/hour, no significant cardiac or other comorbidities) who have performed full night polysomnography due to symptoms, sucha as snoring, disrupted sleep, witnessed apneas, morning headache, morning fatigue and daily hypersomnolence (estimated by Epworth Scale).We have found that 56.25% of patients had clinically important anxiety, 62.50% depression and 46.87% alexithymia. Apart from a weak correlation between anxiety and sleep latency, there was not any other correlation between the above psychologic parameters and age, AHI, nocturnal oxygenation and sleep efficiency. We found a cut-off level of AHI ≥ 70 events/hour and age ≥ 60 years old in combination, where all 9 patients in that specific subgroup had anxiety, depression and alexithymia. In conclusion, the incidence of anxiety, depression and alexithymia is significantly higher in OSAS patients as compared to the general population.Older age and more severe OSAS are factors predisposing to these psychologic disturbances. However, not any correlation has been found between the psychologic profile and severity of OSAS, abnormal oxygenation or sleep quality. Probably, other factors, unknown as of yet, may play a role.

P2253

Obstructive sleep apnea syndrome in patient with primary open angle glaucoma

Ege Gulec Balbay[1], Oner Balbay[2], Murat Tunc[3], Harun Yuksel[3], Ali Nihat Annakkaya[2], Peri Arbak[2], Talha Dumlu[2]. *[1]Chest Diseases, Duzce Ataturk State Hospital, Duzce, Turkey; [2]Chest Diseases, Duzce University, Duzce, Turkey; [3]Ophthalmology, Duzce University, Duzce, Turkey; [4]Duzce, Turkey*

Introduction: It was claimed that obstructive sleep apnea syndrome (OSAS) aggravates or causes glaucoma by impaired optic nerve head blood flow or by directly damage to the optic nerve secondary to prolonged hypoxia. The objective of this study was to investigate the prevalence of OSAS in patient with primary open angle glaucoma (POAG).
Material and methods: The consecutive 21 POAG patients (12 female/ 9 male) attending the outpatient clinic of the department of Ophthalmology between July 2007 and February 2008 were included in this study. All of these patients underwent to Polysomnographic examination.
Results: The prevalence of OSAS was 33.3% in glaucoma patients (14.3% mild and 19% moderate). The age and the diameter of the neck in patients with OSAS were significantly greater than those with no OSAS. The adipose tissue thickness in triceps reached near significance in glaucomatous OSAS patients. Snoring was observed in all glaucoma cases with OSAS. Particularly, the prevalence of OSAS was significantly more common in glaucoma patients having the symptoms of habitual snoring, witnessed apnea than those of not. The prevalence of OSAS was also significantly increased with having major symptoms together.
Conclusions: Although it was not provided an evidence for a cause-effect relationship in the present study, the high prevalence of OSAS in patients with POAG might put forward a different view of aspect to ophthalmologists. Further studies are required especially in large groups who had CPAP (Continuous positive airway pressure) therapy to explore the long term results of coincidence, relation and cross interaction of these two common disorders.

P2254

Sleep disorders in morbid obesity who undergo bariatric surgery

Beatriz Morales, Paola Benedetti, José Manuel Fernandez-Sanchez-Alarcos, Gema Rodriguez-Trigo, José Luis Álvarez-Sala, Mª Asunción Nieto. *Pneumology, Hospital Clinico San Carlos. Universidad Complutense de Madrid, Madrid, Spain*

Introduction Insomnia and obstructive sleep apnoea (OSA) often have been considered conflicting medical conditions, recent studies suggest that these two entities often coexist.
Aims: To determine the prevalence of sleepiness and insomnia in morbidly obese patients diagnosed with OSA with an indication of bariatric surgery and to assess an association between them.
Method: All morbidly obese patients in whom bariatric surgery was indicated between 1/05/2002 and 1/10/2006 were studied. Morbid obesity was defined by body mass index (BMI) greater than 40 or between 35-39 kg/m^2 associated with comorbidity. The following variables were prospectively collected and analyzed age, sex, height, weight, BMI, toxic habits, insomnia and excessive daytime sleepiness, measured by the Epworth Sleepiness Scale. All patients underwent nocturnal respiratory polygraphy for the assessment of OSA.
Results: We studied 145 patients (70% women) with a mean age of 42 years (range 19-69) and a mean BMI of 46±5.9. The prevalence of OSA was 95%. The prevalence of somnolence and insomnia in patients who suffer from OSA was 39% and 28% respectively. There was no statistically significant relationship between insomnia and somnolence (p 0.378). The association between OSA, somnolence and insomnia are shown in Table 1.

Relationship between OSA, somnolencia and insomnia

	AHI 5–14	AHI 15–29	AHI ≥30	p
Somnolencia (yes)	14	25	57	0,049
Insomnia (yes)	20	27	44	0,782

AHI, apnea hipopnea index.

Conclusions: The prevalence of daytime sleepiness and insomnia in patients with morbid obesity with bariatric surgery indication and OSA is high but we have not found a statistically significant relationship between both clinical entities.

P2255

Positional sleep apnoea syndrome: An underestimated pathology that needs to be explored

Jean Claude Meurice, Elise Antone, Jean Philippe Neau, Antoine Verbert, Joel Paquereau. *Pneumology, CHU de Poitiers, Poitiers, France Pneumology, CHU de Poitiers, Poitiers, France Neurology, CHU de Poitiers, Poitiers, France Pneumology, CHU de Poitiers, Poitiers, France Sleep Center, CHU de Poitiers, Poitiers, France*

Background: Few epidemiological data have been published concerning the prevalence and significance of positional sleep apnoea syndrome (PSAS), and several different definitions have been used.
Aim of the study: Our objective was to optimize the detection of PSAS and to evaluate its severity.
Methods: We retrospectively analysed 1400 polysomnographic recordings performed during a 3 year-period. Recordings with less than 3 hours of total sleep time were excluded. PSAS was defined as pure when supine apnoea-hypopnoea index (AHI) >10/h with lateral AHI <10/h, and as mixed when supine AHI and lateral AHI >10/h. We distinguished patients with normal global AHI <10/h, and patients with pathological global AHI>10/h.
Results: 1219 patients were included and were separated in 407 "Normal" (global and supine AHI < 10), 80 "Normal PSAS" (global AHI < 10, supine AHI>10 and lateral AHI<10), 65 "non PSAS" (global AHI>10, supine AHI<10), 271 "pure PSAS" with global AHI>10, and 396 "mixed PSAS" with global AHI>10.
"Pure PSAS" patients were significantly younger and characterized by significant lower values for global AHI and body mass index (27.9±19.2/h; 28.3±5.4 kg/m^2) than "non PSAS" (36.6±23.3/h; 31.6±7.2 kg/m^2) and "mixed PSAS" (41.4±21.4; 30.5±7.0 kg/m^2). Minimal SpO_2 during sleep was significantly reduced in "Normal PSAS" when compared to "Normal", and in "mixed PSAS" in comparison with "non PSAS" and "pure PSAS".
Conclusion: Our results point out the high prevalence of PSAS and its significant influence on nocturnal saturation, in normal patients as well as when associated with non positional SAS ("mixed PSAS"). PSAS could represent a transition before severe SAS occurrence that needs to be explored.

P2256

Incidence, characterization and clinical implications of sleep disorders in patients with atrial flutter

Nuria Grau[1], Victor Bazan[2], Miquel Felez[1], Carles Sanjuas[1], Julio Marti-Almor[2], Joaquim Gea[1]. [1]*Respiratory Department, Hospital del Mar, Parc de Salut Mar, Barcelona, Spain;* [2]*Electrophysiology Unit. Cardiology Department, Hospital del Mar, Parc de Salut Mar, Barcelona, Spain*

Background: Sleep apnea-hypopnea syndrome (SAHS) is prevalent in patients with atrial fibrillation (AFib). It is unclear whether atrial flutter (AF) is accompanied by a high incidence of SAHS and impaired pulmonary function.
Methods: We included 48 patients with AF, 26 and 22 of whom did not have and had associated AFib (groups 1 and 2, respectively). Fourteen patients with lone atrial fibrillation (group 3) and a matched control population (group 4, n= 50) with similar demographics, including body mass index (BMI) and incidence of hypertension and structural heart disease (SHD) served as control groups. Pulmonary function was assessed by using FEV_1, FVC and FEV_1/FVC. Sleep disorders were analyzed by using the apnea-hypopnea (AHI) and CT90 indexes and Epworth sleepiness scale (ESS).
Results: Group 1 and 2 had similar demographics (19 male, 67±9 years, BMI 32±6 kg/m^2; and 13 male, 65±10 years, 33±8 kg/m^2, respectively) and were older than group 3 (56±10 years, p< 0.01). Neither SHD nor pulmonary function differences were noted among groups. The AHI, CT90 and ESS were considerably higher in patients from group 1 (52±31, 19±18 and 12±4, respectively) as compared to our control population (group 4, p< 0.001). This difference was not significant when compared to the remaining groups (p= 0.1). Importantly, 15 out of the 26 patients from group 1 underwent CPAP therapy because of newly diagnosed SAHS, and a lower incidence of atrial arrhythmias during follow-up was registered in this subgroup (p= 0.047).
Conclusions: The incidence of SAHS in patients with isolated atrial flutter is high and its specific treatment results in a more favorable arrhythmia control outcome.

P2257

Results of respiratory parameters in morbidly obese patientes with obstructive sleep apnoea after bariatric surgery

Amaia Urrutia Gajate[1], Sandra Pedrero Tejada[1], Jose Amilibia Alonso[1], Federico Vazquez San Miguel[2], Gaizka Errazti De Olartecoechea[3], Marta Inchausti Iguiñiz[1], Maria Alfonso Imizcoz[1], Ruth Diez Arnesto[1]. [1]*Pneumology, Cruces Hospital, Barakaldo, Spain;* [2]*Endocrinology, Cruces Hospital, Barakaldo, Spain;* [3]*General Surgery, Cruces Hospital, Barakaldo, Spain*

Background: Bariatric surgery (BS) is an effective treatment for morbidly obese patients. Our aim is to analyze the sleep breathing parameters after BS in patients with obstructive sleep apnoea (OSA) and the differences between patients who corrected the disorders and patients who did not
Methods: Morbidly obese and diagnosed of OSA patients, who underwent BS. We analyzed weight-loss and sleep parameters before and after BS. We consider improvement a decrease of 50% in the AHI or AHI after BS ≤10
Results: 52 patients, 41 (79%) women, 11 men (21%), mean age 44.24±9.78 years. 48 (92%) with preBS AHI >10, 4 cases (8%) with SaO2 disorders.

	Before surgery	After surgery	p
AHI	43.62±30.98	7.7±8.62	0.001
Min SaO2	62.98%±11.38	82.38%±7.41	0.001
CT 90%	23.23%±23.13	8.7%±17.81	0.001
BMI	51.9±7.89	34.96±6.56	0.001

39 cases with AHI postBS ≤10 y 13 cases with IAH >10.

AFTER SURGERY	AHI <10	AHI >10	p
n	39 (92,85%)	13 (7,15%)	
Previous BMI	52,48	50,44	ns
Weight loss (kg)	45,5	42,4	ns
Previous AHI	37,5	66,6	0,005
AHI after surgery	3,2	21,27	<0,001
Decrease in IAH %	92%	68%	<0,001
Decrease of >50% in AIH	36/39 92%	10/13 77%	0,008
CT 90% before surgery	24	43	ns
CT 90% after surgery	12	18	ns
Decrease of CT 90%	50%	61%	ns
SaO2 min before surgery	63%	60%	ns
SaO2 min after surgery	84%	77%	0,02
Increase of SaO2 min	19%	17%	ns

49/52 cases (94%) improved or solved their OSA. In 3 cases the AHI postBS was >10, but improved from severe to mild. 4 cases with SaO2 disorders and AHI <10 correct postBS. No patient had IAH postBS >30
Conclusions: 1. BS solved completely the OSA in most of the patients (40/52, 77%) and improved it in all of them. 2. No statistical difference was observed in weight loss before and after BS. 3. Patients with an AHI postBS >10 had a high preBS AHI (mean 66.6), significantly higher than patients with AHI <10 postBS. Were not difference according to BMI-preBS and weight loss

P2258

Objective assessment of sleep pattern and daytime sleepiness during Ramadan fasting in Muslims and non-Muslims

Ahmed BaHammam, Abdulrahman Alaseem, Abdulmajid Alzakri, Munir Sharif. *Uni, King Saud University, Riyadh, Saudi Arabia*

Background: Studies using sleep diaries have shown a delay in bedtime and rise time during Ramadan. However, no objective study has assessed sleep pattern during Ramadan in a free living environment.
Objectives: To assess the effect of Ramadan and its attendant life-style changes on: circadian changes in sleep, and energy expenditure in Muslims and non-Muslims.
Methods: The ArmBand was used to assess the circadian changes in sleep and energy expenditure for 3 weeks, during a baseline period (BL, one week before Ramadan), the first week (R1), and the second week (R2), of Ramadan, in eight Muslims and eight non-Muslim volunteers. The ArmBand is a validated metabolic body monitoring system that records sleep and total energy expenditure. A 29-items questionnaire concerning sleep was collected as well. In addition, Optalert was used to objectively assess daytime drowsiness using the John Drowsiness Scale (JDS).
Results: Muslims and non-Muslims were matched for age and body mass index. While the start of work has been delayed for Muslims from 7:30 Am to 10 AM, there was no change in working hours for non-Muslims. When BL, R1 and R2 were compared in Muslims, there was a significant delay in bedtime, and rise time and a significant reduction in total sleep time. No changes were documented in sleep pattern in non-Muslims. No changes in daytime sleepiness were documented in both groups using the Epworth sleepiness scale and the JDS.
Conclusion: Changes in sleep pattern in Muslims could be related to changes in lifestyle like the changes in working hours. There is no objective evidence of increased sleepiness during fasting.

P2259

Decreased ventilatory response to carbon dioxide by steady state in patients with myotonic dystrophy type 1 compared to healthy subjects

Mathias Poussel[1], Pierre Kaminsky[2], Julien Laroppe[1], Silvia Varechova[1], Bruno Chenuel[1]. [1]*Service des Examens de la Fonction Respiratoire et de l'Aptitude à l'Exercice, C.H.U de Nancy, Nancy, France;* [2]*Service de Médecine Interne Orienté vers les Maladies Orphelines et Systémiques, C.H.U de Nancy, Nancy, France*

Background and objective: Ventilation is exquisitely sensitive to increased PCO2. Carbon dioxide produces its effects by stimulating both central and peripheral chemoreceptors. The testing of such ventilatory response to CO2 can be achieved either by steady state or rebreathing (Read) methods. In order to test the hypothesis based upon abnormality of the central ventilatory control mechanisms in myotonic dystrophy, contributing to chronic alveolar hypoventilation, we compared the ventilatory response to CO2 between control subjects and patients with myotonic dystrophy type 1 (MD1).
Methods: Ventilatory response to CO2 was achieved in a steady state while breathing gas mixtures containing 3% and 6% of CO2. Each concentration was successively inhaled during 5 minutes following spontaneous breathing room air

for at least 10 min. While seated in a comfortable chair, ventilation and PETCO2 were continuously recorded.
Results: Twenty one controls and 51 MD1 patients were studied. In controls mean ventilatory responses to CO2 were 1.18 L/min/mmHg ± 0.71 (CO2= 3%) and 1.25 L/min/mmHg ± 0.72 (CO2= 6%). In MD1 patients mean ventilatory responses to CO2 were 0.71 L/min/mmHg ± 0.46 (CO2= 3%) and 0.75 L/min/mmHg ± 0.36 (CO2= 6%). For both concentrations, ventylatory response to CO2 was significantly lower ($p<0.01$) in MD1 patients than in controls.
Conclusion: This control study confirms the decreased ventilatory response to CO2 in MD1 patients using the alternative steady state method. Further studies are needed to define more precisely the role of the impairment of the central ventilatory control in the course of the disease.

P2260
The relationship between testosterone, obesity and depressive mood in obstructive sleep apnea (OSA) postmenopausal women
Raluca Mihaela Bercea[1,2], Elena Cojocaru[2], Traian Mihaescu[1,2]. *[1]Pneumology, Clinic of Pulmonary Diseases, Iasi, Romania; [2]Physiology, University of Medicine and Pharmacy "Gr. T. Popa", Iasi, Romania*

Background: The relationship between respiratory sleep disorders and menopausal state in women is not well supported; only known that obese female have higher androgen levels then non-obese females.
Aim: The aim of our study was to illustrate the link between OSA severity, serum total testosterone level and depressive mood in obese postmenopausal women.
Material and method: The present study included 13 severe OSA female patients (apnea hypopnea index (AHI) >30 events/h) with obesity (body mass index (BMI) >30 kg/m^2), ages between 53 and 60 years, for least two years of amenorrhea. All patients fulfilled Beck Depression Inventory (BDI). Serum total testosterone level (T) was performed from blood samples collected in the morning after wake up. Control group selected consisted in 10 non-OSA females with same characteristic with study group.
Results: We found significant correlations between T level and BMI ($r=0.636$, $p=0.019$), without correlation between T level and AHI or BDI ($p>0.05$). It was remarked a strong positive correlation between BDI score and AHI ($r=0.720$, $p=0.006$). T-test shows no differences between two groups in testosterone level (OSA group 0.757±0.28 ng/dl vs. non-OSA group 0.625±0.19 ng/dl, $p=0.226$), but significant differences for BDI score (OSA 9.69±5.15 vs. non-OSA 4.3±2.16, $p=0.005$).
Conclusion: Our study reveals no effect relationship between OSA severity and serum testosterone level. Testosterone level is positive correlated with obesity. Depressive mood is induced by OSA severity, without relation with testosterone level. More approaches are needed to elucidate androgens involvement in severe OSA postmenopausal women.

P2261
Mean platelet volume in patients with obstructive sleep apnea syndrome and its relationship with cardiovasculer diseases
Elif Kaya, Asiye Kanbay, Nuri Tutar, Hakan Buyukoglan, Fatma Sema Oymak, Inci Gulmez, Ramazan Demir. *Pulmonary Medicine, Erciyes University, Kayseri, Turkey*

Obtructive Sleep Apnea Syndrome (OSAS) is an independent risk factor for the development of cardiovascular event and hypertension. Mean Platelet Volume (MPV); an indicator of platelet activation and aggregation which are closely related with cardiovascular diseases (CVD). We aimed to show the relationship between OSAS and MPV with CVD. The medical records of 205 subjects who were admitted for the sleep study were evaluated. OSAS was diagnosed by polysomnography if Apnea-Hypopnea Index (AHI) >5. MPV calculated from blood samples. According to AHI, individuals in whom AHI< 5 were recruited as group 1 (control group), those in whom AHI=5-15 group 2 (mild OSAS group), those in whom AHI=15-30 group 3 (moderate OSAS group), those in whom AHI >30 group 4 (severe OSAS group). Of the subjects 137 (67%) were male, 68 (33%) were female and the mean age was 53.0±14.1years. There were 35 (17%), 20 (10.2%), 40 (20.4%) and 108 (52.6%) in group 1, 2, 3 and 4 respectively. There were significant differences in terms of coronary artery disease and hypertension between all groups ($p<0.05$) Except group 1 and 2, other groups showed a significant increase in MPV was detected while the severity of OSAS increased ((group 1= 9.3±0.7, group 2= 9.4±0.8, group 3= 9.5±1.1, group 4= 10.2±1.2; p for trend 0.03). We have shown that MPV is significantly increased in patients with OSAS which is an independent risk factor CVD. MPV may use as a marker to predict CVD in OSAS.

P2262
Congenital central hypoventilation syndrome (CCHS): A case of late onset presentation
Tatiana Lamon, Sandrine Pontier, Laurent Tetu, Daniel Riviere, Alain Didier. *Pneumologie, CHU Larrey, Toulouse, France Pneumologie, CHU Larrey, Toulouse, France Pneumologie, CHU Larrey, Toulouse, France Pneumologie, CHU Larrey, Toulouse, France*

CCHS or Ondine's curse is a rare autosomal dominant disease, characterized by disorders of the autonomic nervous system, with abnormal ventilatory responses to hypercapnia and hypoxemia. PHOX2B has been identified as the major disease causing gene for CCHS. It results from polyalanine repeat expansion mutations. It typically occurs in the newborn period, but some cases have been described on adults (late onset CCHS) and reflects the variable penetrance of PHOX2B mutations.
A 48 year-old woman presented after an ovarian cyst surgery a severe hypoventilation requiring intubation. Arterial blood gas revealed a PO2 of 50 mmHg, a PCO2 of 80 mmHg and a pH of 7,22. Past medical history indicated poor apparent symptoms for few years. These included apneas, fitfully sleep and awakening with headaches. Physical examination and pulmonary function tests, lung tomography, magnetic resonance imaging of the brainstem were normal. Polysomnography revealed many central and obstructive apneas and hypopneas (apnea-hypopnea index of 22/h) with severe hypoxemia (SpO2 average 75%) and hypercapnia (transcutaneous CO2 85mmHg). Non invasive ventilation was initially poorly tolerated. Finally, she responded to an adaptative servo ventilation. Hypoxia and hypercapnia tests showed no adaptation of the ventilatory response. Genetic analysis showed a heterozygous five alanine expansion mutation of the 20-residue polyalanine tract in exon 3 of the PHOX2B gene.
The diagnosis of late onset CCHS should be considered in patients with unexplained hypoventilation after anesthesia, and physiologic evaluations documenting abnormal ventilatory response should be completed. The presence of a PHOX2B mutation confirms the diagnosis.