Continuous positive airway pressure (CPAP) is the gold standard in therapy of obstructive sleep apnea (OSA) but is associated with numerous side effects often related to the nose and the upper airway. Humidified CPAP may, in part, relieve these symptoms. Nevertheless, little is known regarding the effects on ciliary function (CF).

In this prospective, randomized, crossover trial patients with OSA (AHI ≥ 20) were included and randomized to one of two treatment arms, nCPAP with or nCPAP without humidification, for a period of eight weeks. At the end of the eight-week period patients were swapped to the alternative treatment arm for a further eight week period. CF (beat frequency [CBF] and mucus transport time [MTT]) were assessed before and one day after the beginning of nocturnal ventilation and again after the end of each treatment arm.

The baseline CBF was 4.7 ± 0.8 Hz, MTT = 152 ± 158 s. CBF increased above the baseline level by +2.5 ± 0.7 Hz and MTT decreased by -167 ± 0.4 Hz and -158 ± 0.8 s (p < 0.01). Short-term changes with- out humidification (CBF +0.7±0.3 Hz, MTT =−152±158 s) and with humidification (CBF +0.7±0.82 Hz, MTT =−152±208 s) were not statistically significant. Regarding the long-term effects, CPAP without humidification significantly increased the CF above the baseline level by +2.5±0.4 Hz and −167±175 s (p < 0.01) and even more so with humidification (+4.6±0.7 Hz, −158±30 s; p < 0.01).

Independent of airway humidification, nCPAP has limited effects on short-term ciliary function of the nasal respiratory epithelium that is not statistically significant. However, long-term effects showed a significant increase in ciliary function both in terms of an increased beat frequency and an increase in mucus transport time that has not been described previously. The effect was more pronounced when humidification was used during nCPAP.
1. Results: The treatment pressure derived from automatic titration (9.8±2.2 cmH₂O) was significantly higher than that derived from manual titration (7.3±1.5 cmH₂O; p<0.001). A cohort study of 100 patients showed that AHI was satisfactorily decreased after CPAP treatment using a pressure derived from manual titration (54.3±18.9 events/hour before treatment and 3.3±1.7 events/hour after treatment; p<0.001).

Conclusion: Our results suggest that automatic titration pressure derived from REMstar-auto, is usually higher than the pressure derived from manual titration. This work was funded by National Natural Science Foundation of China (Grant No.8111008001).

P426 Prevalence of restless legs syndrome among patients with obstructive sleep apnea before and after CPAP treatment, compared to the general population. The Icelandic Sleep Apnoea Cohort (ISAC)
Bryndís Benediksdottir1, Erna Sif Arnardottir1,2, Christer Jansson1, Allan Pack1, Sigurður Jóhannsson1, Thorarinn Gislason1,2.

Objectives: To compare the prevalence of reported restless legs syndrome (RLS) between subjects with obstructive sleep apnea (OSA) and the general population. Also to evaluate changes with CPAP treatment.

Materials and methods: The OSA subjects (n=822) were newly diagnosed with moderate or severe OSA (665 males, 157 females). The control subjects (n=742) were a random selection of Icelandic (394 males, 348 females) who participated in another epidemiological study (www.boldcopd.org). Measurements included a standardized RLS rating scale, questions about sleep and the Ewspworth Sleepiness scale. The change with CPAP treatment was assessed after 2 years (n=588).

Results: Among OSA males 23.3% reported RLS but 12.9% of controls males (p<0.001). 35.8% of OSA females reported RLS but 24.4% of control females (p=0.03). Both among OSA patients and controls those with RLS more commonly reported insomnia, daytime sleepiness, nocturnal sweating, snoring and gastro esophageal reflux (p<0.05). No relationship was found between RLS and age, BMI, hypertension or respiratory disease in a logistic regression adjusting for the presence of OSA and the other factors mentioned. No relationship was found between RLS and sleep apnea severity. Subjects using CPAP had a decreased prevalence of RLS from 25.7% to 13.8% while no change was observed in those subjects not using CPAP (p=0.04 for difference between groups).

Conclusion: RLS is more prevalent among OSA patients than controls. CPAP treatment decreases RLS symptoms significantly.

P437 Nocturnal gastro-esophageal reflux and respiratory symptoms in patients with obstructive sleep apnea, before and after CPAP treatment, compared to the general population – The Icelandic Sleep Apnoea Cohort (ISAC) study.
Thorarinn Gislason1,2, Ossur Ingi Emilsson1,2, Erna Sif Arnardottir1,2, Christer Jansson1, Bryndís Benediksdottir1,2, Sigurður Jóhannsson1, Allan Pack1, Sigurður Jóhannsson1,2, Thorarinn Gislason1,2.

Introduction: The ISAC study is a population based cohort study of one hundred patients with OSA (AH1 = 54.3±18.9 events/h) by observing the efficacy and safety of CPAP pressure derived from manual titration.

Methods: Among patients with obstructive sleep apnoea (OSA), commercial vehicle drivers (CVD) should be treated with special care, since untreated OSA is a well established risk factor for traffic accidents. However, little is known whether symptoms and course of treatment of OSA in CVDs are similar to those of other OSA patients.

Results: We identified 37 CVDs treated with CPAP and compared their results with a control group of 74 patients. Both groups were well matched with respect to age, BMI, apnoea-hypopnoea-index and oxygen desaturation index. However, the Epworth Sleepiness Score (ESS) was significantly lower in the CVD group (8.1±2.8 vs. 11.0±2.7, p < 0.0001) and this difference was unchanged after 6 months of CPAP therapy (4.8±2.1 vs. 7.7±2.2, p < 0.0001). The adherence to CPAP therapy was lower in CVDs than in the control group: daily usage was 4.5±1.1 vs. 5.0±1.4 hrs (p = 0.02), % of days used was 75±14 vs. 83±19% (p = 0.012). CVDs had significantly more unscheduled visits in the first 6 months of treatment than control patients: 1.5±0.6 vs. 0.7±0.4 (p < 0.001).

Conclusions: Despite similar baseline characteristics, CVDs report significantly lower values in the Epworth sleepiness score at diagnosis and under CPAP treatment. CPAP compliance is lower in CVDs than in control patients and CVDs have more unscheduled clinic visits than other CPAP patients. These points should be taken in consideration when starting OSA treatment in CVDs.

P438 Control of breathing in obstructive sleep apnoea patients: Role of CPAP therapy
Antonina Re, Flaminio Moramile, Alessandro Di Marco Berardinò, Dinà Visca, Bruno Iovene, Salvatore Valente. Pneumologia, Università Cattolica del Sacro Cuore, Roma, Italy

Aim: Control of breathing during wakefulness in obstructive sleep apnoea (OSA) and the role of CPAP therapy is an ongoing controversy. We studied the ventilatory response of healthy controls and OSA patients before and after at least 1 year of CPAP therapy.

Methods: 17 never treated OSA patients (16 M; 53±13.2yrs; BMI=34.5±8.1; AH1=45±14.7) underwent nocturnal cardiolipmonary monitoring, spirometry and blood gas analysis. Read’s rebreathing test was used to evaluate hypocapnic ventilatory response (HVR CO2); hypoxic ventilator response (HVR O2) was studied by both progressive and transient methods, to explore both peripheral oxygen chemoreceptors and the central modulation. The relationship between minute ventilation (VE) or mean inspiratory flow (VTi) and PEti CO2 or PRe CO2 was expressed in terms of slope of linear regression for HVR CO2 and of parameter A of hyperbolic function for HVR O2.

Results: OSA patients showed an increased responsiveness to transient, but not to progressive, hypoxemia, and a reduced response to hypcapnia when compared to controls. Transient HVR O2 showed a significant reduction during CPAP therapy (p<0.01), whereas HVR CO2 increased only slightly. Progressive HVR CO2 was not modified by CPAP [Tab 1].

Conclusions: The daytime glicemic reactivity to transient hypoxia is increased by repeated nocturnal hypoxic stimuli; CPAP significantly restores the ventilatory stability during sleep.

Table 1. Chemosensitivity in Controls and in OSA pre and post CPAP

<table>
<thead>
<tr>
<th>Controls</th>
<th>OSA</th>
<th>p</th>
<th>OSA</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVR CO2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre CPAP</td>
<td></td>
<td></td>
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<tr>
<td>O2</td>
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<tr>
<td>HVR O2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post CPAP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HVR CO2</td>
<td>2.7±1.2</td>
<td>2.0±0.9</td>
<td>&lt;0.05</td>
<td>2.2±0.9</td>
</tr>
<tr>
<td>HVR O2</td>
<td>355.3±135.2</td>
<td>357.5±117.9</td>
<td>0.46</td>
<td>36.9±129.9</td>
</tr>
</tbody>
</table>

P439 Differences between commercial vehicle drivers and other patients in symptoms of obstructive sleep apnoea and response to CPAP therapy
Werner Strebel, Daisa Stolz, Michael Tamm. Pneumologie, University Hospital, Basel, Switzerland

Introduction: Among patients with obstructive sleep apnoea (OSA), commercial vehicle drivers (CVD) should be treated with special care, since untreated OSA is a well established risk factor for traffic accidents. However, little is known whether symptoms and course of treatment of OSA in CVDs are similar to those of other OSA patients.

Methods: We analysed the course of diagnosis and treatment in CVDs diagnosed with OSA in 2009 and 2010 and compared these data with a control group of non-CVD patients.

Results: We identified 37 CVDs treated with CPAP and compared their results with a control group of 74 patients. Both groups were well matched with respect to age, BMI, apnoea-hypopnoea-index and oxygen desaturation index. However, the Epworth Sleepiness Score (ESS) was significantly lower in the CVD group (8.1±2.8 vs. 11.0±2.7, p < 0.0001) and this difference was unchanged after 6 months of CPAP therapy (4.8±2.1 vs. 7.7±2.2, p < 0.0001). The adherence to CPAP therapy was lower in CVDs than in the control group: daily usage was 4.5±1.1 vs. 5.0±1.4 hrs (p = 0.02), % of days used was 75±14 vs. 83±19% (p = 0.012). CVDs had significantly more unscheduled visits in the first 6 months of treatment than control patients: 1.5±0.6 vs. 0.7±0.4 (p < 0.001).

Conclusions: Despite similar baseline characteristics, CVDs report significantly lower values in the Epworth sleepiness score at diagnosis and under CPAP treatment. CPAP compliance is lower in CVDs than in control patients and CVDs have more unscheduled clinic visits than other CPAP patients. These points should be taken in consideration when starting OSA treatment in CVDs.
Patients with apnoea-hypopnoea index (AHI) <5/hour served as controls. Serial measurements of exhaled NO after PSG were performed in 21 OSA patients and 8 control subjects.

Results: CANO was significantly higher in OSA patients (n=71; 4.07±1.7ppb) as compared with controls (n=24; 2.24±1.06ppb; p<0.0001) whilst maximal bronchoalveolar NO flux and fractional concentration of exhaled NO did not significantly differ between the two groups. In patients with OSA, CANO was strongly associated to AHI (r=0.70; p<0.0001) and to recording time with SatO2<90% (ST-90%; r=0.659; p<0.0001). The area under ROC curve for screening patients with OSA and significant nocturnal oxygen desaturation (ST-90%>15%) was 0.885 (0.777-0.933) (p<0.0001). CANO at 4.49ppb could detect these patients with sensitivity of 46% and specificity of 94%. Increased CANO variation after PSG was significantly related to oxygen desaturation index (TS-90%).

Conclusions: Increased alveolar NO concentration was related to the severity of nocturnal oxygen desaturation in patients with OSA, linking the distal lung inflammation to intermittent hypoxia. CANO could be used to screen for severe OSA in suspected and symptomatic patients.

P441

Predictors of long-term PAP-adherence in obstructive sleep apnea syndrome

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Introduction: Few studies have assessed long-term adherence to positive airway pressure therapy (PAP) in OSA. The aim of this retrospective study was to determine adherence and its potential predictors.

Methods: All patients (pts) treated at the St.Gallen sleep centre from 11/2001 to 4/2011 were included for analysis of baseline data and follow-up information. The primary dependent variable of interest was continued use of PAP. Kaplan-Meier estimates and Cox-proportional hazards regression were used to model the risk of loss of adherence. A multivariate regression analysis was performed for age, gender, EPDS sleepiness scale (ESS), BMI, apnea-hypopnea index (AHI) and oxygen desaturation index (ODI) at baseline.

Results: During the study period, of 2160 pts started on PAP, 42% died on PAP, 91% no longer needed PAP (weight reduction, alternative treatments) and 311 (14%) were lost to follow-up. In 1716 pts, adherence at 1 year was 74% (95% CI: 71-77%), at 5y 56 (53-59)%, and at 8y 52 (49-56)%. Results of univariate and multivariate analyses are summarized in the figure.

Conclusion: Adherence is independently associated with clinical (ESS) and polysomnographic (ODI, AHI) measures of OSA severity, but not with BMI, age, gender. Most pts who stopped PAP were lost to follow-up. With a relatively low long-term adherence, intensified efforts and alternative or novel follow-up options (e.g. teleometry) to support such patients should be tested.

P442

Utility of a nurse-led visit program for patients with obstructive sleep apnea syndrome treated with CPAP


Obstructive Sleep Apnoea Syndrome (OSAS) is a frequent cause of visit in our clinic. The aim of our study was to create a specific nurse-led individual consultation for their follow-up visits. Aim: We want to analyze the characteristics of patients and changes made in terms of treatment or even medical discharge.

Methods: We have analyzed IAH, BMI, Epworth sleepness scale (ESS), CPAP compliance and satisfaction grade in patients attended from June to December 2010.

Results: We attended 243 patients. 88% of them were men, the age average was 56.6±11.6 years. At the moment of the diagnose the IMC was 33.2±5.6 and the ESS 10.3±4.9. At nurse-led visit IMC was 33.3±5.6 and ESS 9.5±4.2. We found an average of use of 6.0±3.2±2 hours per night and 6.4±1.6±1 days per week. We had a good level of compliance in 78% of them, quite good in 8.5% and bad in 13.5%. They fulfilled a satisfaction test (scale 0-10) and the mean value obtained was 7.2±2.4. We needed to change the mask model because of bad tolerance in 20% of patients. Because of good follow up, we could discharge from medical control 37,9% of the cases, they are followed now only in the Nurse unit and almost 60% remained controlled by both medical and nurse but medical one are their regular follow-up visit. We only give definitive discharge because of low compliance in 1.2%.

Conclusions:

– Our patients showed a good level of satisfaction
– We have found a good level of CPAP compliance
– We had to change mask model in a substantial number of cases
– We could discharge from medical follow up an important number of patients, optimizing the use of health care resources.

P443

Impact of a respiratory rehabilitation program in the functional capacity of the patients with obstructive sleep apnea-hypopnea syndrome (OSAHS)

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Objectives: Determine the basal exercise capacity in patients with severe OSAHS. Determine the exercise capacity modified after 3 months of treatment with CPAP or with CPAP and Respiratory Rehabilitation Program. Analyze the impact of these changes on the quality of life, physical activity and psychological impact.

Methods: A prospective study with a consecutive inclusion of healthy patients with the polysomnographic diagnosis of severe OSAHS. We evaluated the exercise capacity of these patients by means of a cardiopulmonary test in a cyclogometer to submaximal exercise capacity before the beginning of the treatment in both groups.

Results:

The average age was 48.5±12.5 years old, 90.9% male, 40% smokers, 30.9% ex-smokers and 29.1% non-smokers (17.8±20.26 packet/year). The average BMI was 32.27±5.56.

Conclusions: There is a slight decrease of the basal exercise capacity in both groups. There are no differences between submaximal test and the maximum load (W). After 12 weeks of treatment in both groups, we obtained a significant decrease in exercise capacity, without differences between groups. There is an increase in submaximal effort results in both groups, although in CPAP group increases 29.71% and CPAP+RR 116.84% with no differences.

P444

Nasal inflammation and compliance with nasal CPAP therapy in obstructive sleep apnoea syndrome (OSA)

Mohammed AIAlhaj, Raymond Sapsford, Jadwiga Wedzicha, John Hurst.

Academic Unit of Respiratory Medicine, Academic Unit of Respiratory Medicine, UCL Medical School, London, United Kingdom.

Background: CPAP is the standard therapy for treating OSA (1). However, CPAP can cause undesirable nasal side effects that compromise compliance (2). Aims and objectives: Over a six month period, we assessed the association between nasal inflammation using nasal wash interleukin (IL-6) concentration and compliance with therapy.

Methods: Twenty-two patients were recruited with new confirmed OSA. Daily CPAP use was prospectively recorded on diary cards. Nasal wash IL-6 and diary cards for compliance were performed at no CPAP and at 1, 3 and 6 months.
post-CPPAP. Pearson correlation was conducted to assess the relationships. A P value < 0.05 was considered a statistical significance.

**Results:** The twenty-two patients (mean age±SD: 59.5±7.5 years) had AHI of mean (SD) 30±2±15.9.

**Characteristics of the OSA patients**

<table>
<thead>
<tr>
<th>Details of subjects studied (n=22)</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjects (n=22)</td>
<td>159.9(99.61%)</td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>39.5</td>
<td>7.5</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>34.6</td>
<td>8.6</td>
</tr>
<tr>
<td>AHI (event/h)</td>
<td>50.2</td>
<td>15.9</td>
</tr>
<tr>
<td>Neck circumference</td>
<td>37.2</td>
<td>1.5</td>
</tr>
<tr>
<td>CPAP (cm H2O)</td>
<td>7.84</td>
<td>0.87</td>
</tr>
<tr>
<td>Current Smoker (%)</td>
<td>22.7</td>
<td></td>
</tr>
</tbody>
</table>

At recruitment to the study.

We found a significant relationship between increased nasal IL-6 and decrease in compliance at baseline and six month of CPAP therapy, Pearson [r=-.517; p=0.014].

**Conclusion:** Our results show that nasal inflammation relates to compliance with CPAP therapy in OSA.

**References:**

**P445**

**Residual sleepiness in obstructive sleep apnea (OSA) patients on CPAP:** Not only a symptom but rather a true syndrome?

Merce Gasal1, Renaud Tamisier2, Marc Sapone3, Francesco Martin4, Bruno Stach5, Yves Grilliet1, Patrick Levy5, Jean-Louis Pern1, on behalf of the Scientific Council of The Sleep Registry of the French Federation of Pneumology.1 INSERM U 1042, HP2 Laboratory (Hypoxia: Pathophysiology), Joseph Fourier University, La Tronche, France; 2 Sleep Laboratory and EFCR, Locomotion, Rehabilitation and Physiology Department, Grenoble University Hospital, Grenoble Cedex 09, France; 3 Unité des Sommeil et Vigilance, Polyclinique Bordeaux Caumeran, Bordeaux, France; 4 Unité des Pathologies du Sommeil, Centre Hospitalier de Compiegne, Compiegne Cedex, France; 5 Service de Pneumologie, Clinique Teissier, Valenciennes, France; 6 Pneumologie, Cabinet Privé, Valence, France

**Background:** Hypoxia brain damage might explain persistent sleepiness in some CPAP compliant OSA. Since residual sleepiness (RES) on CPAP remains not fully understood, wake promoting drugs in RES are no longer allowed by the European Medicines Agency.

**Aim:** To describe RES phenotype in a large prospective sample of OSA patients attending follow-up in the sleep lab of our hospital. Diagnostic evaluations were carried out with portable monitoring at home, and with polysomnography in the sleep lab. Titration was performed with the same autoCPAP device in both groups.

**Methods:** At the end of the study, 13 (19%) subjects had dropped out in the group 1, and 9 (14%) in the group 2 (p= not significant). There were no significant differences among groups in both basal and with-CPAP values of apnea-hypopnea index (AHI), oxygen desaturation index (ODI), and total sleep time with oxyhemoglobin saturation below 90% (TST90). In the home group, therapeutic pressure values reached at the end of each unattended home titration night were similar. Home diagnosis and titration approach should be considered in a subset of patients with OSA. A single unattended titration night is sufficient to determine the therapeutic pressure.

**P446**

**Home-based evaluation in patients with high risk for moderate to severe OSA:**

Mario Francesco Damiani1, Pierluigi Carratu1, Valentina Anna Ventura1, Ersilia Tedeschi2, Annamaria Milano1, Gabriella Gubitosa1, Vito Antonio Falcone1, Vitaliano Nicola Quaranta1, Riccardo Drigo2, Onofrio Resta1, 1 University of Bari, Pulmonary Medicine, Bari, Italy; 2 U.O.C. di Pneumologia, U.O.C. di Pneumologia, Feltre (BL), Italy

Obstructive sleep apnea (OSA) is a disorder characterized by recurrent obstruction of the upper airways during sleep. The high prevalence of this disease led to propose new strategies based on the home evaluation and management of patients. The aim of this study was to compare unattended home-based protocol with an overnight-laboratory analysis, in a sample of patients with high risk for moderate to severe OSA. We enrolled 131 patients, who were randomly divided into 2 groups: group 1 (n=66) was diagnosed and titrated at home; group 2 (n=65) was analyzed in the sleep lab of our hospital. Diagnostic evaluations were carried out with portable monitoring at home, and with polysomnography in the sleep lab. Titration was performed with the same autoCPAP device in both groups.

**Methods:** At the end of the study, 13 (19%) subjects had dropped out in the group 1, and 9 (14%) in the group 2 (p= not significant). There were no significant differences among groups in both basal and with-CPAP values of apnea-hypopnea index (AHI), oxygen desaturation index (ODI), and total sleep time with oxyhemoglobin saturation below 90% (TST90).

**Results:** The CPAP adherence threshold associated with the lower RES prevalence was 6 hours/night. Hypoxic insult is probably not the explanation for RES since OSA severity does not seem to be critical. Residual symptoms are not limited to sleepiness and this true “CPAP resistant syndrome” may justify treatment by wake promoting drugs.

**References:**
icant therapeutic implications. Indicators for ventilator control instability can be significant proportions of central sleep apnea (CSA) and/or a periodic breathing (PB) pattern. The aim of the present study was to determine the prevalence of such indicators in CHF patients with OSA.

**Patients and methods:** The ongoing German multi-center SchlafHF registry prospectively included 7007 stable CHF patients (NYHA class ≥II and LVEF ≤45%) from cardiology practices and cardiology departments of hospitals. Patients were studied with a two-channel screening device (nasal airflow, pulse oximetry; ApneaLink, ResMed, Sydney, Australia) that detects PB patterns based on an algorithm using pattern recognition. Patients with suspected SDB received polysomnography (PSG) with certified scoring.

**Results:** Of the 2183 PSG-patients 1583 (73%) had an AHI ≥15/h, of whom 49% had OSA (≥50% of apneas and hypopneas were obstructive). In such CHF patients with OSA the prevalence of a significant proportion of central apneas and hypopneas (20-49%) was 35%. The prevalence of objectively assessed PB was 44% in OSA patients. 350 (59%) heart failure patients with OSA presented with either a significant proportion of CSA and/or a PB pattern.

**Conclusions:** The high prevalence of a significant proportion of CSA and objectively assessed PB pattern in CHF patients with OSA suggests ventilator control instability that may have an impact on the appropriate modality of positive airway pressure therapy to suppress apneas and hypopneas.

**P449**

**Pulmonary diffusion capacity is not associated with severity of Cheyne-Stokes respiration in heart failure patients**

Olaf Oldenburg, Britta Körber, Thomas Bitter, Thomas Fischbach, Dieter Horstkotte. Department of Cardiology, Heart and Diabetes Center North Rhine-Westphalia, Ruhr University Bochum, Bad Oeynhausen, Germany

A recent study in severe heart failure (HF) patients indicates a possible pathophysiological role of an impaired pulmonary diffusion capacity and respiratory disturbance during sleep, especially the degree of Cheyne-Stokes respiration (CSR). Aim of the present study was to verify this hypothesis in a larger cohort of HF patients.

In 87 patients (83 male, age 68±9 years) with polysomnography confirmed and untreated CSR due to cardiac failure (NYHA ≥ II, LV-EF ≤45%), pulmonary diffusion capacity (TLCO and KCO) were prospectively investigated using the single-breath method. Apnoea-hypopnoea-index (AHI) was 38±14/h, LV-EF 34±7%, TLCO 67±17% of normal and alveolar-volume corrected diffusion capacity (KCO) 85±20% of normal. Correlation analysis using Spearman rank order correlation revealed no significant correlation of AHI and TLCO (r = 0.071, p = 0.516) or AHI and KCO (0.019, p = 0.863).

In our cohort of HF patients with untreated CSR no correlation of respiratory disturbance during sleep and pulmonary diffusion capacity was found. Thus, a significant role of an impaired pulmonary diffusion on CSR genesis seems to be unlikely.