News Release

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Session B16: New Randomized Controlled Trials in Pulmonary Rehabilitation
Monday, May 18, 2015, 9:30 a.m. – 11:30 a.m.
Location: Colorado Convention Center

Pulmonary Rehabilitation Helps Patients Newly Diagnosed with Obstructive Sleep Apnea

ATS 2015, DENVER—Pulmonary rehabilitation (PR) treatment could be a valuable addition to comprehensive therapy in patients with obstructive sleep apnea (OSA) syndrome, according to a new study. The study was presented at the 2015 American Thoracic Society International Conference.

"In our study with 40 newly diagnosed OSA patients and a control group, pulmonary rehabilitation helped reduce body mass index, certain body circumferences, and improve pulmonary function," said researcher Katerina Neumannova, MSc, PhD, Palacky University, Faculty of Physical Culture, Olomouc, Czech Republic.

The classic treatment for patients with OSA is continuous positive airway pressure, often called CPAP or CPAP therapy. Treatment via PR, which is used for conditions such as chronic obstructive pulmonary disease (COPD), has not been thoroughly studied in OSA, even though patients with OSA often have respiratory symptoms associated with a decreased health-related quality of life and a diminished functional capacity.

The study included 40 patients with OSA who were randomly assigned to either the PR group (n=20) or the control group (n=20). All patients involved in the study received CPAP therapy as their apnea/hypopnea index (AHI) was higher than 15.

The PR group had 6 weeks of 60-minute individual rehabilitation sessions twice a week. The sessions consisted of education, exercise training, breathing retraining, respiratory muscle training, and oropharyngeal exercises. At baseline and then after 6 weeks of CPAP-only use or

CPAP with the PR, researchers tracked a number of parameters, including pulmonary function, AHI, body mass index (BMI), percentage of body fat; and neck, waist, and hip circumferences.

The final study included 15 patients in the PR group and 20 in the control group, as 5 patients did not complete PR. Although OSA severity was significantly decreased in both groups after the treatment, significant reduction of BMI, neck, waist and hip circumferences was confirmed only in the PR group. That same group also had an improvement in pulmonary function. Patients in both groups had decreased body fat, although body fat loss was higher in the PR group.

“Patients with OSA can benefit from pulmonary rehabilitation treatment,” Dr. Neumannova said. “We can determine on a patient-by-patient basis which patients would benefit most from pulmonary rehabilitation based on their individual disease and clinical judgement.”

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** Please note that numbers in this release may differ slightly from those in the abstract. Many of these investigations are ongoing; the release represents the most up-to-date data available at press time.*

Abstract 66101
Pulmonary Rehabilitation Treatment as an Adjunct Therapy in Obstructive Sleep Apnoea Syndrome: A Randomized Controlled Trial
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Scientific Abstract
Category:
15.05 - Pulmonary Rehabilitation: Outcomes (PR)
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Abstract Body

Rationale: Continuous positive airway pressure (CPAP) is still the main treatment option in patients with obstructive sleep apnoea syndrome (OSA). Other treatment option, such as pulmonary rehabilitation (PR) treatment, has not been thoroughly investigated, although patients with OSA often describe respiratory symptoms associated with diminished functional capacity and decreased health related quality of life. Therefore patients with OSA can also positively benefit from PR programme, even though recommendation for PR treatment will be based on pathophysiology of their disease and clinical judgement. For that reason the objectives of our study was to compare the effect of CPAP treatment and combination of CPAP treatment with PR programme on OSA severity and changes in body weight in newly diagnosed patients with OSA.

Methods: Forty OSA patients (20 male, 20 female, aged 54.2±6.8 years) were recruited and

randomly allocated to either PR group (n=20) or controlled group (n=20). Because apnoea/hypopnoea index (AHI) was higher than 15, CPAP therapy was described to all patient. PR group underwent 6 weeks 60 minutes twice weekly individual exercise training combined with education, breathing retraining, respiratory muscle training and oropharyngeal exercises. Pulmonary function, AHI, oxygen desaturation index (ODI), average saturation, percentage of total sleep time with oxygen saturation below 90% (%t<90), *Epworth* Sleepiness*Scale* (ESS), body mass index (BMI), percentage of body fat, neck, waist and hip circumferences were assessed at baseline and after 6 weeks of treatment with CPAP or treatment with CPAP in combination with PR programme.

Results: 5 patients in PR group did not complete the programme, for that reason comparison between baseline and final assessment were done in 15 patients in PR group and in 20 patients in control group. There were not any significant differences of AHI, average saturation, %t<90, pulmonary function, BMI, percentage of body fat or neck, waist and hip circumferences between both groups at baseline. Although OSA severity was significantly decreased in both groups, significant reduction ($p < 0.05$) of BMI, neck, waist and hip circumferences and improvement of pulmonary function were confirmed only in PR group (Table 1) after the treatment. Percentage of body fat was significantly decreased at both group ($p=0.02$ in control group, $p=0.003$ in PR group), although higher reduction was confirmed in PR group.

Conclusion: Results of our study suggest that PR treatment could be an additional important part of comprehensive therapy in patients with OSA.

The study was supported by a project No. CZ.1.07/2.3.00/30.0004.

Table 1. The effect of CPAP treatment and combination of CPAP treatment with PR programme in patients with OSA (mean±standard deviation, * statistical significance after treatment in PR group, † statistical significance after treatment in control group)

	PR group	n=20	Control group	n=20
	baseline	after 6 weeks	baseline	after 6 weeks
AHI	54.5±27.4	4.3±3.9***	55.4±28.9	4.0±3.7†††
ODI	72.9±32.8	9.8±4.9***	53.6±27.5	11.7±8.3†††
average saturation	90.2±4.8	94.3±1.4**	88.8±4.7	93.2±2.3†††
%t<90	26.1±24.3	1.0±1.2***	36.2±28.2	7.2±15.2†††
ESS	12.9±4.7	5.7±4.1***	10.8±6.4	5.6±4.2†††
VC (% of predicted)	96.4±10.9	103.2±14.7**	99.5±21.5	94.8±22.9
FEV_1 (% of predicted)	91.5±12.7	96.1±15.0*	92.1±20.1	86.3±21.1
BMI	40.3±9.4	39.6±9.1**	36.4±5.4	36.3±5.3
% of body fat	39.4±10.3	36.9±10.1**	40.1±6.2	39.1±6.3†
neck circumference	44.9±3.9	43.7±3.5***	43.5±4.6	43.4±4.1
waist circumference	124.4±15.1	122.2±15.7**	117.0±13.2	116.4±12.6

hip circumference	121.7±12.7	119.3±12.2**	118.3±12.0	116.6±11.2