

P43

CPAP Treatment in Subacute Stroke Patients with Obstructive Sleep Apnea : A pilot study

Ho wook Kim^{1*}, Yeong wook Kim^{1†}, Sungju Jee^{1†}, Min Kyun Sohn^{1†}

Chungnam National University, School of Medicine, Department of Rehabilitation Medicine¹

Objective

Obstructive sleep apnea (OSA) in stroke patients is associated with worsening functional and cognitive status during inpatient rehabilitation. The aim of this study was to evaluate the effectiveness of CPAP treatment in stroke patients during inpatient rehabilitation period using a neuropsychological and functional assessments.

Materials and Methods

We performed a randomized controlled trial in subacute stroke patients(ischemia and hemorrhage) admitted to department of rehabilitation medicine after November 2017. To diagnose OSA, we performed sleep examination by portable polysomnography (Stardust II™, Respironics Inc. USA). OSA was diagnosed when Apnea-Hypopnea index (AHI) is higher than 20/h. Patients were randomly divided to 2 groups as follow : control group(rehabilitation treatment as usual) or CPAP group (CPAP treatment). Baseline clinical data were evaluated at the time of admission to department of rehabilitation medicine. We assessed stroke severity, neurologic function, cognitive impairment, and quality of life. Quality of sleep was assessed by using Epworth Sleepiness Scale (ESS). Tests were performed at baseline and after the two-week of intervention period.

Results

Ten patients participated in this study, 4 patients were excluded from the study. Because they were not OSA patients. Six OSA patients were included. The two groups(Control vs CPAP group) seems to be no differences in improvement on National Institute of Health Stroke Scale (NIHSS), modified Rankin scale (mRS), functional ambulation categories (FAC), Korean version modified Barthel Index (K-MBI), Berg balance scale(BBS) and EuroQol 5 dimensions questionnaire (EQ-5D). The CPAP group showed improvement in the cognitive functioning and Epworth Sleepiness Scale (ESS)(Table1). In polysomnographic study, the CPAP group showed improvement in obstructive apneas index compared with the control group(Table 2).

Conclusion

CPAP treatment seems to be improves cognitive status and quality of sleep in stroke patients with OSA. Additional patient enrollment is required to determine the effects of CPAP treatment on cognitive and functional status in subacute stroke patients.

Table 1. Clinical characteristics of patients with and without CPAP

	No.1(CPAP)	No.2(CPAP)	No.3(Control)	No.4(CPAP)	No.5(CPAP)	No.6(CPAP)
Age (years)	70	59	57	77	66	41
Sex	male	female	male	male	male	male
Stroke type	ischemic	hemorrhagic	ischemic	ischemic	ischemic	hemorrhagic
Stroke lesion	supratentorial	infratentorial	supratentorial	supratentorial	infratentorial	infratentorial
BMI (kg/m ²)	27.22	29.43	23.21	18.78	22.32	29.06
HTN	+	+	-	-	+	+
Diabetes	-	-	-	-	-	-
LOS	40	50	51	39	42	37
Δ ESS	2	3	-1	1	1	0
Δ NIHSS	0	1	1	1	3	2
Δ mRS	0	1	1	1	1	1
Δ FAC	1	0	2	0	0	1
Δ MMSE	3	5	2	6	6	3
Δ K-MBI	6	26	23	8	21	35
Δ BBS	9	6	37	4	5	3
Δ EQ-5D	0.08	0.08	0.08	0.343	0.343	0.263

LOS, Length of Stay; ESS, Epworth Sleepiness Scale; NIHSS, Korean version of the National Institute of Health Stroke Scale; mRS, modified Rankin Scale; FAC, functional ambulation categories; MMSE, Korean version of Mini-Mental State Examination; K-MBI, Korean version modified Barthel index; BBS, Berg Balance Scale; EQ-5D, EuroQol-5 Dimension

Table 2. Polysomnographic data of patients with and without CPAP

	No.1(CPAP)	No.2(CPAP)	No.3(Control)	No.4(CPAP)	No.5(CPAP)	No.6(CPAP)
Δ AHI	5.3	7.1	13.8	32.4	14	9.9
Δ Obstructive apneas index	8.5	7.5	1.4	31.8	11.7	9.1
Δ Central apneas index	0	0.2	1.8	0.5	0.2	-1.5
Δ Hypopnea index	-2.5	0	8.6	-1.5	2.1	2.6
Δ Desaturation index	7	5.6	38.5	26.1	18.5	10.9

AHI, Apnea-Hypopnea index