

The performance of two automatic servo-ventilation devices in the treatment of central sleep apnea

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Find this Study: <http://www.journalsleep.org/AcceptedPapers/SP-497-10.pdf>

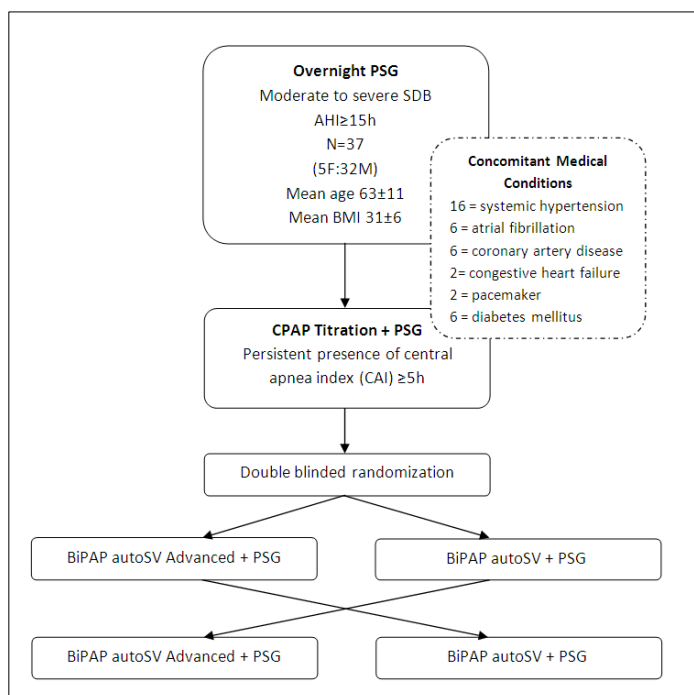
Objective: A prospective, multi-centre, randomized, crossover, controlled trial to evaluate the therapeutic performance of the BiPAP autoSV Advanced device (Philips Respironics) for the treatment of Central Sleep Apnea (CSA)

Devices: BiPAP autoSV Advanced;
Conventional BiPAP

autoSV

Method:

- 37 consecutive patients were enrolled
- Moderate to severe sleep disordered breathing (SDB) with an apnea hypopnea index (AHI) ≥ 15 h under full polysomnography (PSG) and a central apnea index (CAI) ≥ 5 h during a CPAP titration study
- Most patients had already been treated with CPAP for ≥ 4 weeks and continued to demonstrate persistent central apnea with a CAI ≥ 5 per hour.
- Patients received one night each of BiPAP autoSV Advanced and conventional BiPAP autoSV in random order under full PSG
- Patients blinded to the treatment order
- The two randomized BiPAP studies were scored blindly centrally



Results: Data was analysed from all 37 patients. The authors concluded that;

- Compared to the diagnostic night sleep architecture improved during BiPAP autoSV and BiPAP autoSV Advanced therapy nights.
- There was a significant decrease in the arousal index, with all devices, compared to the diagnostic night ($p=0.008$)
- AHI was significantly lower with BiPAP autoSV Advanced compared to BiPAP autoSV ($p \leq 0.035$) and CPAP ($p < 0.001$). This is attributable to the improvement in oxygen saturation.
- CAI was decreased significantly with BiPAP autoSV Advanced compared to BiPAP autoSV ($p \leq 0.035$) and CPAP ($p < 0.001$)

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- OSA was decreased significantly with BiPAP autoSV Advanced compared to BiPAP autoSV ($p \leq 0.035$)

Respiratory Indices across the 4 study nights					
Variable	Diagnostic median (mean \pm standard deviation) Range	CPAP titration median (mean \pm standard deviation) Range	Auto SV median (mean \pm standard deviation) Range	AutoSV Advanced median (mean \pm standard deviation) Range	p-value
Apnea Hypopnea Index	51 (53 \pm 23) 17 - 93	29 (35 \pm 20) ^a 11 - 94	6 (10 \pm 10) ^{a,b} 0 - 40	5 (6 \pm 6) ^{a,b,c} 0 - 27	<0.001
Central Apnea Index	9 (16 \pm 19) 0 - 72	10 (19 \pm 18) 5 - 75	1 (3 \pm 4) ^{a,b} 0 - 14	0.3 (0.6 \pm 1) ^{a,b,c} 0 - 3	<0.001
Obstructive Apnea Index	6 (12 \pm 17) 0 - 73	0.4 (1 \pm 1) ^a 0 - 6	1 (2 \pm 2) ^{a,b} 0 - 13	1 (1 \pm 2) ^{a,c} 0 - 9	<0.001
Hypopnea Index	19 (21 \pm 14) 1 - 55	12 (15 \pm 12) 1 - 41	2 (5 \pm 6) ^{a,b} 0 - 29	2 (4 \pm 5) ^{a,b} 0 - 21	<0.001
Mixed Apnea Index	0.5 (4 \pm 9) 0 - 49	0 (0.4 \pm 1) ^a 0 - 6	0.2 (0.4 \pm 1) 0 - 4	0 (0.2 \pm 0.4) ^a 0 - 2	0.002
Baseline SPO ₂ , %	95 (95 \pm 2) 91 - 98	96 (96 \pm 2) 90 - 99	96 (96 \pm 1) 94 - 99	96 (96 \pm 1) 93 - 100	0.02
Min SPO ₂ , %	81 (79 \pm 10) 52 - 93	86 (84 \pm 10) 43 - 93	89 (87 \pm 9) ^a 53 - 95	88 (88 \pm 5) ^a 74 - 97	<0.001

a Significant vs. Diagnostic; $p \leq 0.016$.

b Significant vs. CPAP; $p \leq 0.001$.

c Significant vs. Auto SV; $p \leq 0.035$.

Conclusion:

- In this study BiPAP autoSV Advanced resulted in more effective treatment of both central and obstructive events than CPAP or conventional BiPAP autoSV
- The Investigators speculate that the automated back-up rate and the automatic EPAP gave the BiPAP autoSV Advanced an advantage over conventional servo-ventilation.
- To determine the impact of such new technology on quality of life, morbidity and mortality further cardiovascular or mortality event driven studies are needed

The bottom line:

- The BiPAP autoSV Advanced is superior to conventional BiPAP autoSV