The efficiency of azelastine hydrochloride and fluticasone propionate nasal spray to improve PAP adherence in patients with obstructive sleep apnea

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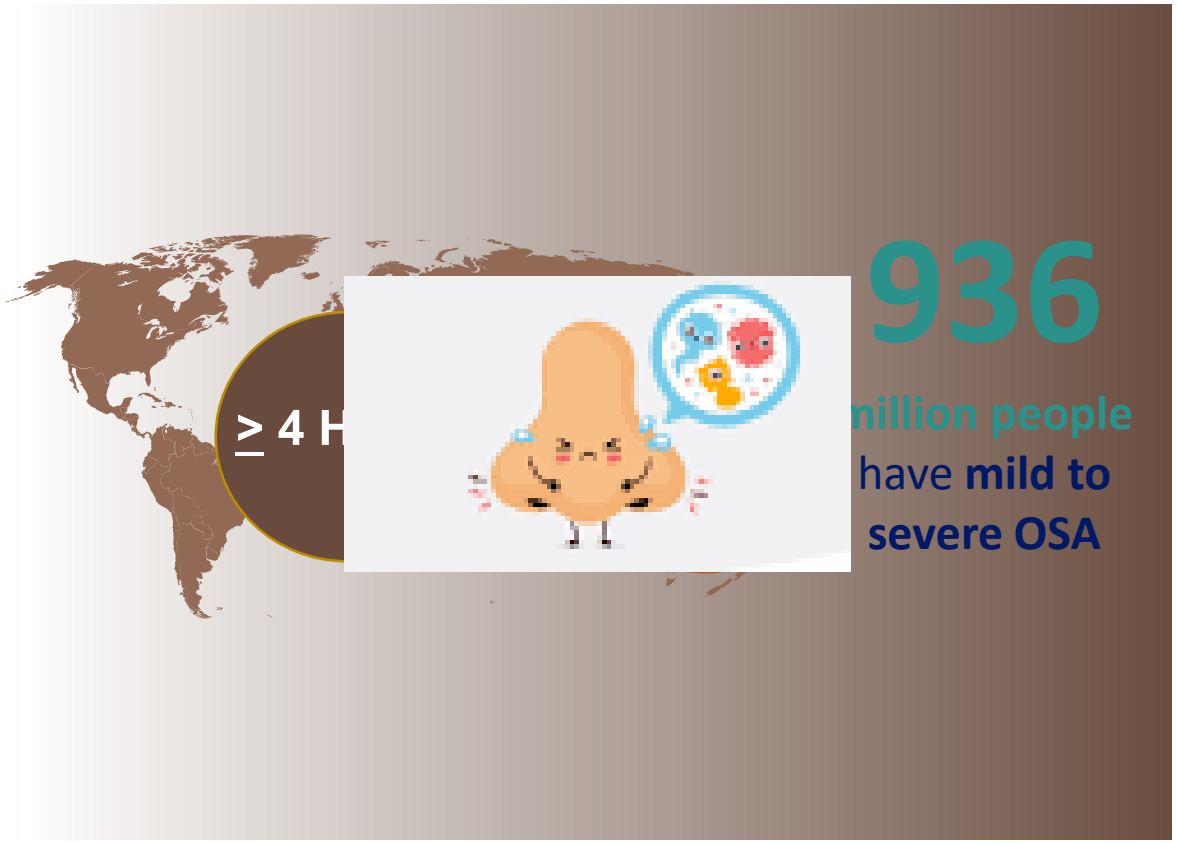
INTRODUCTIONS

- Obstructive sleep apnea
- CPAP adherence
- CPAP rhinitis



Bejanfield AV et al. Lancet Resp Med 2019;7(8):687-698.

Literature Review

SLEEP DISORDERED BREATHING

Continuous Positive Airway Pressure (CPAP) Induces Early Nasal Inflammation

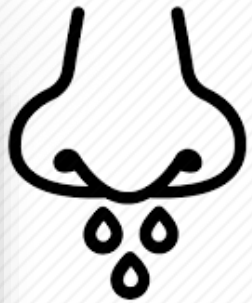
Isaac Almendros, MSc[1]; Irene Acerbi, MSc[1]; Isabel Vilaseca, MD[2,5]; Josep M. Montserrat, MD[3,5]; Daniel Navajas, PhD[1,4,5]; Ramon Farré, PhD[1,5]

[1]Unitat de Biofisica i Bioenginyeria, Facultat de Medicina, Universitat de Barcelona - IDIBAPS, Barcelona, Spain; [2]Department Otorhinolaryngology, Hospital Clinic, Barcelona, Spain; [3]Sleep Lab, Pneumology, Hospital Clinic-IDIBAPS, Barcelona, Spain; [4]Institut de Bioenginyeria de Catalunya, Barcelona, Spain; [5]CIBER Enfermedades Respiratorias, Spain

Nasal function and CPAP use in patients with obstructive sleep apnoea: a systematic review

Marina Brimioulle[1] · Konstantinos Chaidas[1]

Received: 15 May 2021 / Revised: 29 July 2021 / Accepted: 11 August 2021



Almendros, I. Sleep. 2008 Jan 1;31(1):127-31

Brimioulle, M. Sleep Breath 26, 1321–1332 (2022)

Literature Review

[Contemporary Reviews in Sleep Medicine]

CHEST

Adherence to CPAP
What Should We Be Aiming For, and How Can We Get There?

Check for updates

Jessie P. Bakker, PhD; Terri E. Weaver, PhD; Sairam Parthasarathy, MD; and Mark S. Aloia, PhD

Thorax 2001;**56**:727–733

Continuous positive airway pressure for sleep apnoea/hypopnoea syndrome: usefulness of a 2 week trial to identify factors associated with long term use

G Popescu, M Latham, V Allgar, M W Elliott

Early 2-4 wk

predicts **Long-term**

Adherence

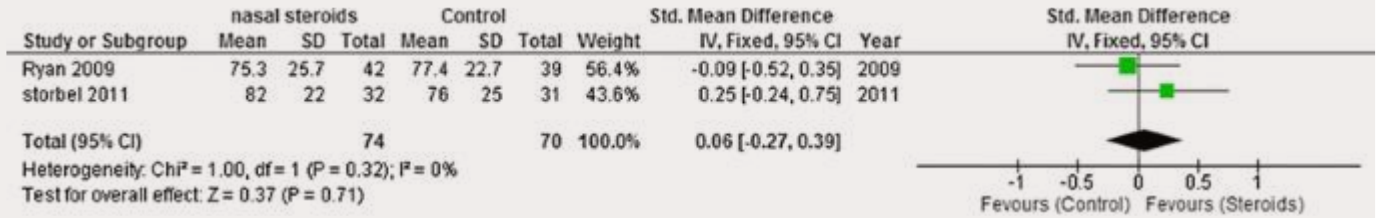
Bakker JP, CHEST 2019; 155(6):1272-1287

Popescu G, Thorax 2001;56:727–733

Literature Review

The effects of topical nasal steroids on continuous positive airway pressure compliance in patients with obstructive sleep apnea: a systematic review and meta-analysis

Natamon Charakorn[1,2] · Prakobkiat Hirunwiwatkul[1,2] · Naricha Chirakalwasan[2,3] · Busarakum Chaitusaney[1,2] · Mantana Prakassajjatham[4]



Effects of intranasal steroids on continuous positive airway pressure compliance among patients with obstructive sleep apnea

Charnsiri Segsarnviriya[1] · Rutti Chumthong[1] · Prasit Mahakit[1]

Received: 3 August 2020 / Revised: 7 October 2020 / Accepted: 21 October 2020 / Published online: 26 October 2020

Table 2 CPAP use data at 30 and 90 days after treatment

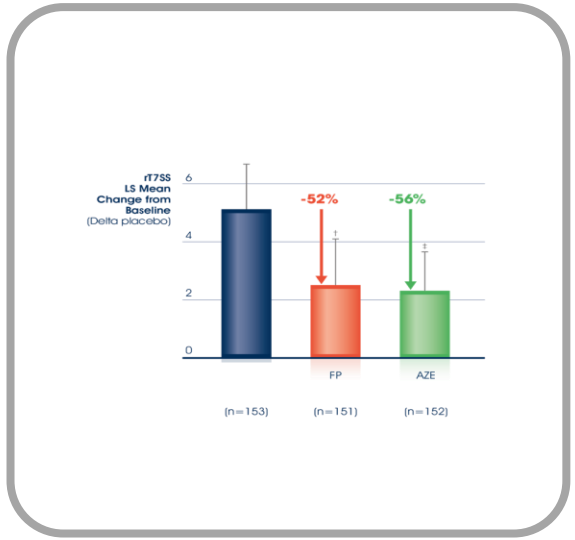
	30 days			90 days		
	Intranasal steroid	Control	*p* value (a)	Intranasal steroid	Control	*p* value (a)
Percent days with usage	80.22 ± 11.51	78.32 ± 12.61	0.482	87.70 ± 7.97	81.15 ± 10.15	0.002*
p value (b)				< 0.001*	0.059	
Average usage (all days) (minute)	304.64 ± 98.71	273.73 ± 96.86	0.161	348.08 ± 80.09	288.48 ± 80.43	0.001*
p value (b)				< 0.001*	0.034*	
Percent of days with usage ≥ 4 h	89.09 (83.07, 99.02)	79.10 (68.72, 100)	0.014*	90.02 (94.20, 100)	89 (80, 100)	0.020*
p value (b)				< 0.001*	0.001*	

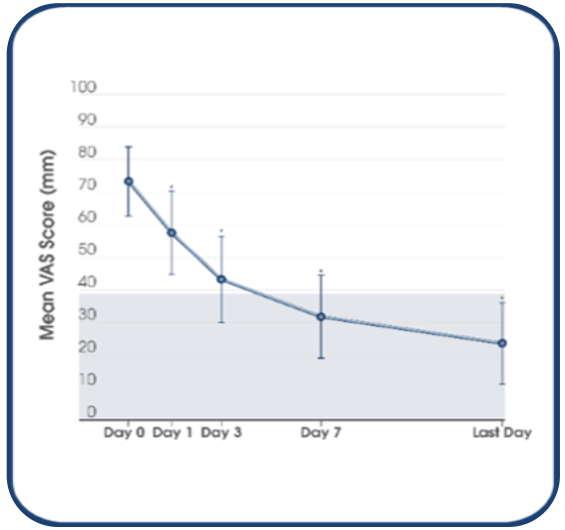
p value (a) indicates *p* value of the comparison between study and control group. *p* value (b) indicates *p* value of the comparison between 30 days after treatment and 90 days after treatment

Charakorn, N. Sleep Breath 21, 3–8 (2017)

Segsarnviriya, C. Sleep and Breathing, 2021, 25.3: 1293-1299

Novel dual combination drug





Onset of Action

Efficacy

Real life

Research question

A combination drugs between INS plus antihistamine is one of an intervention to improve PAP adherence in Naive PAP-treated patients with OSA ?

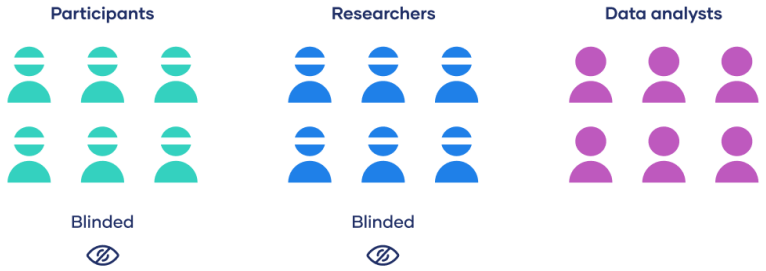
PURPOSE

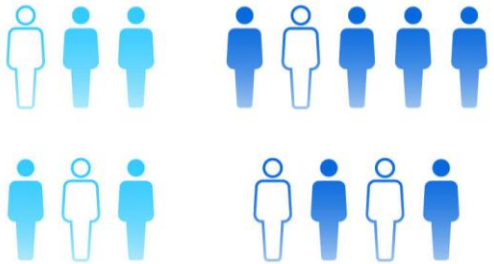
To determine the efficiency of combination drugs between INS plus antihistamine and placebo drugs on PAP adherence and symptoms of CPAP-induced rhinitis in patients with OSA

Study Design

Randomized control trial study

MTU-EC-IM-6-330/64





Double Blinded
Double Dummy

3-Stratified

Vary the block size

Materials and Methods

❖ **Inclusion criteria**

- Naive PAP-treated patients with OSA
- Age 18-75 years old

❖ **Exclusion criteria**

- Patients with OSA who have history of INS usage in prior 3 months
- Allergic rhinitis patient who must treat with INS
- Elderly patient who have history of impair cognitive function or dementia
- Comorbid with Narcolepsy, Insomnia, Parasomnia, Central sleep apnea
- Allergy to azelastine hydrochloride and fluticasone propionate

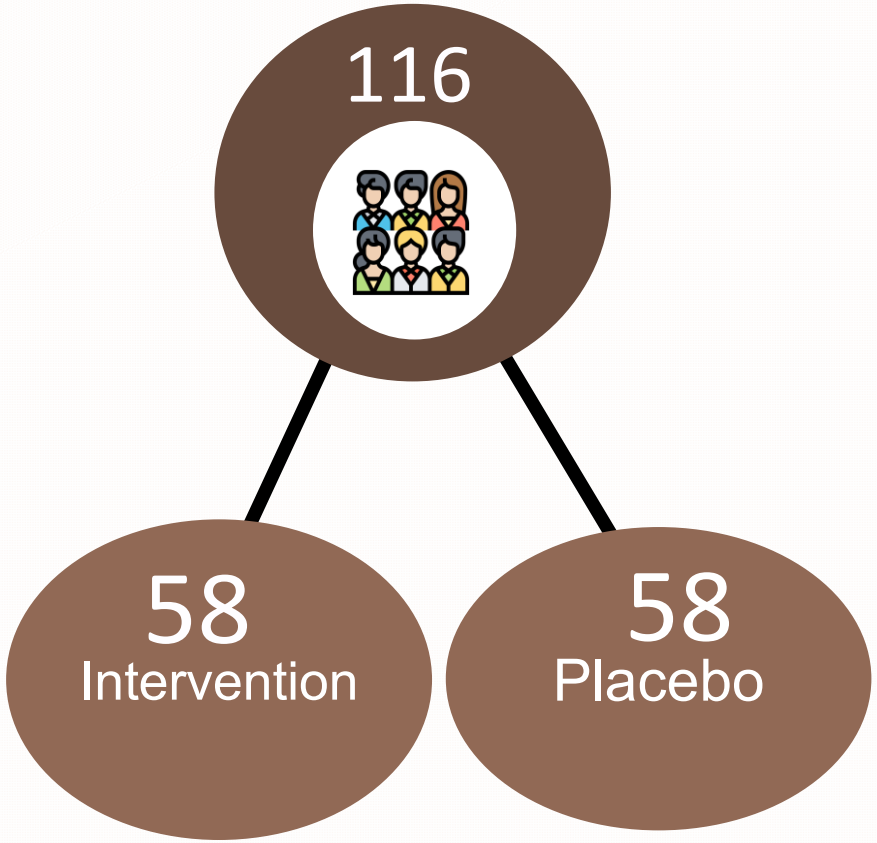
Sample size calculation

Sample size

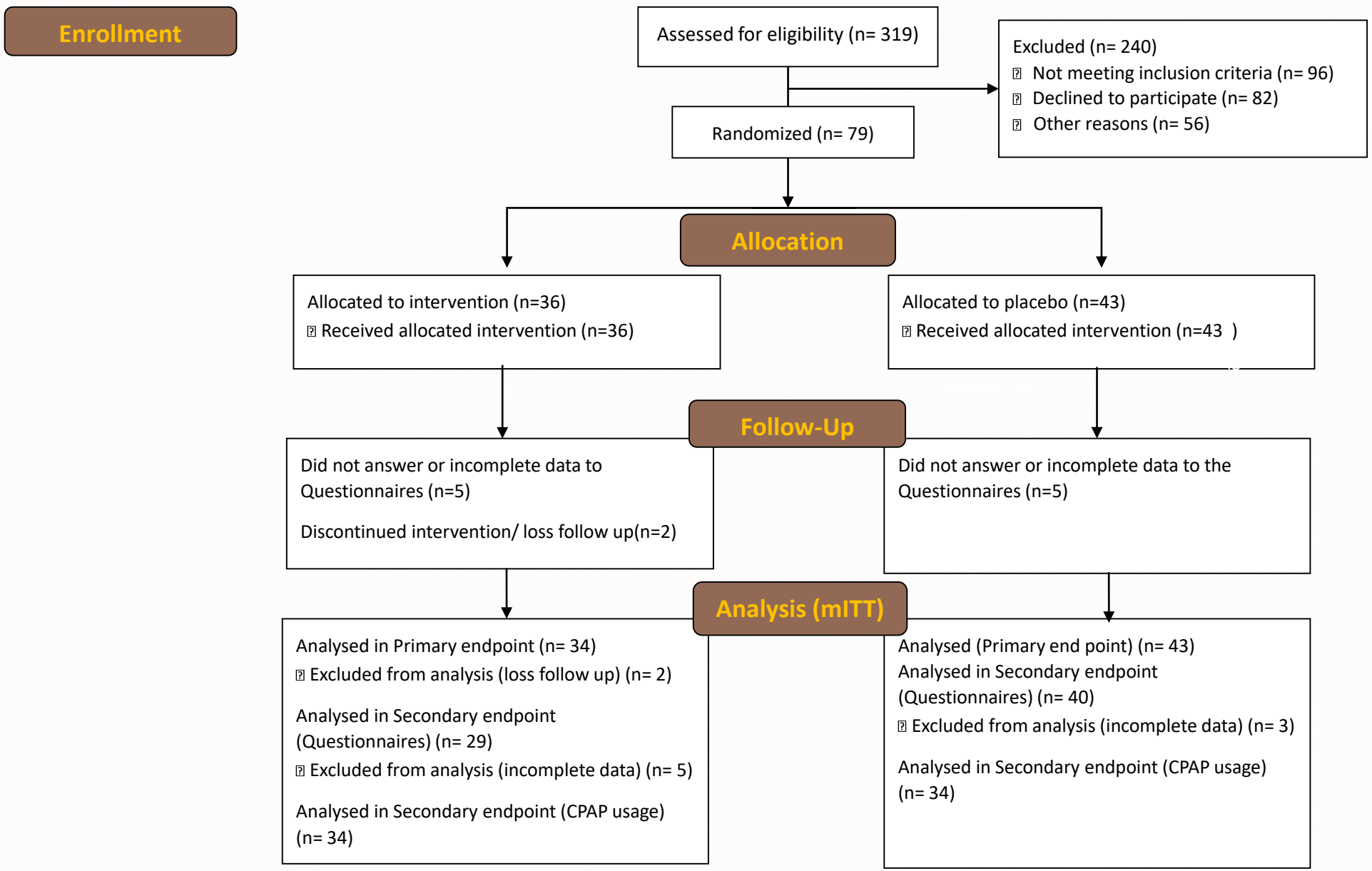
Power 80%, α 0.05, estimate withdrawal 10%

N = 116,

58 for each intervention



Consort diagram



Materials and Methods

Naive PAP-treated OSA at TUH assessed for eligibility (N=116)

Preliminary

N = 79

Intervention group (N =36)

Withdraw = 2
Missing data = 5

Missing data = 3

Placebo (N= 43)

Standard patient education, CPAP device , Questionnaires

2 wk

4 wk

Questionnaires and CPAP usage detail

Questionnaires form was taken via Line application or phone call

Standard patient education, CPAP device

2 wk

4 wk

Questionnaires and CPAP usage detail

Questionnaires form was taken via Line application or phone call

Analyzed

Materials and Methods

Primary outcome	• percent used day >4hr
Secondary outcome	• total nasal score, RQQ, VAS, Side effect, total day used, % day usage, average daily usage (Hr)

Demographic data

Variables	Intervention (N = 34)	Placebo (N = 43)	Total
Age group			
Age 60 or over	5 (41.66%)	7 (58.33%)	12 (24.2%)
Age under 60	29 (44.61%)	36 (55.38%)	65 (84.41%)
Age	45.1 ± 14.1	46.1 ± 16.1	45.6 ± 15.1
Gender			
female	15 (41.6%)	21 (58.3%)	36 (46.7%)
male	19 (46.3%)	22 (53.6%)	41 (48.5%)
BMI	32.26 ± 8.93	34.49 ± 9.80	33.49 ± 9.43
AHI	63.14 ± 36.71	62.73 ± 34.01	63.02 ± 35.01
Optimal pressure	11.91 ± 4.15	12.81 ± 3.13	12.41 ± 3.63
OSA Severity			
moderate	7 (41.17%)	10 (58.82%)	17 (22.07%)
severe	27 (45.0%)	33 (55.0%)	60 (77.92%)
ESS	10.45 ± 5.32	9.74 ± 5.61	

Primary outcome

Variables	Intervention (N = 34)	Placebo (N = 43)	P value (95% CI)
% used day >4hr	49% (17, 85)	39% (14, 75)	0.62 (-44.24 - 14.24)

Secondary outcome

Variables	Intervention (N = 29)	Placebo (N = 40)	P value
Total nasal symptom score			
First	4 (0, 7)	3 (1, 4)	0.38
Second	3 (0, 5)	3 (0.5, 4.5)	0.81
Third	1.0 (0, 5)	1.5 (0, 5)	0.77
RQQ			
First	66 (46, 88)	50 (38.5, 72.5)	0.07
Second	43 (37, 65)	45.5 (38, 58.5)	0.91
Third	40 (37, 66)	44.5 (38, 57)	0.96
VAS			
First	8 (3, 23)	7 (2, 13)	0.18
Second	4 (2, 22)	6 (2, 12)	0.88
Third	2 (1, 11)	3 (1.5, 12.5)	0.59

Secondary outcome

Variables	Intervention (N = 34)	Placebo (N = 43)	P value
Leakage (L/min)	24.0 (8.4, 36.0)	14.7 (9.6, 38.4)	0.50
% day usage	72.0 (44.82, 96.42)	69.69 (44.82, 89.65)	0.39
average daily usage (Hr)	3.24 (1.58, 6.13)	2.57 (1.41, 5.26)	0.49

Variables	Intervention (N = 29)	Placebo (N = 40)	P value
All side effect	11 (35.48%)	28 (64.52%)	0.19

Discussion

Nasal symptom and quality of life

Reduce symptom of CPAP Rhinitis

Improve PAP adherence

Limitations

- Single center
- Preliminary study
- Withdrawal from intervention group

Conclusion

RESEARCH Question

A combination drugs between INS plus antihistamine is one of an intervention to improve PAP adherence in Naive PAP-treated OSA patients ?

PURPOSE

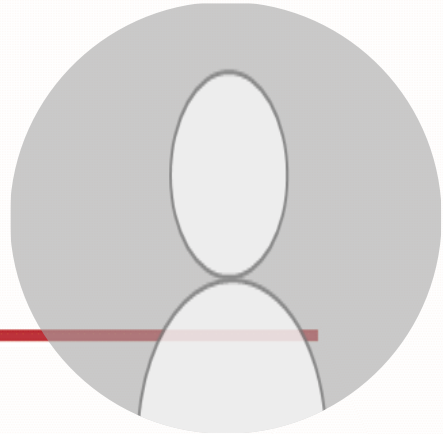
To determine the efficiency of combination drugs between INS plus antihistamine and placebo drugs on PAP adherence and symptoms of CPAP-induced rhinitisi in OSA patients

RESULT

There was a trend towards increasing percent PAP usage > 4 Hr. and fewer symptoms of CPAP-induced rhinitis

Acknowledgement

- This study was funded by Thammasat University Hospital, Thailand
- The research was supported by Sleep center of Thammasat (SCENT) and Medical Diagnostics Unit (MDU), Thammasat University Hospital, Thailand
- Collaboration with Faculty of Pharmaceutical Sciences, Chulalongkorn University



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