**Participant flow**

**Part 1 and 2**

Assessed for eligibility (n= 378 )

Excluded (n= 343)

¨  Not meeting inclusion criteria (n= 247 )

¨  Declined to participate (n= 27)

¨  Other reasons (n= 69), study nurse unavailable

nCPAP therapy adherent after three months (n= 25)

Included(n= 35)

nCPAP therapy non- adherent after three months (n= 10)

Excluded (n= 14)

¨  Declined to participate (n= 14)

Three weeks subtherapeutic nCPAP (n= 6)

Three weeks maintenance nCPAP (n= 5)

Randomization

Analysed

randomized part (n= 11)

Analysed

observational part (n= 35)

**Baseline characteristics**

**Part 1**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Entire group | Adherent\*  | Non-adherent\* |
| Baseline characteristics | n=35 | n=25 | n=10 |
| Age, years | 53 (44 to 60) | 53 (51 to 60) | 50 (44 to 59) |
| Gender, female | 4 (11) | 2 (8) | 2 (20) |
| BMI, kg/m2 | 36 (33 to 40) | 33.7 (30.8 to 40) | 31.6 (23 to 36.1) |
| Current smoker  | 10 (28) | 5 (20) | 5 (50) |
| AHI, per hour | 55 (36 to 70) | 63 (38 to 76) | 40 (36 to 55) |
| AHI ≥ 30 | 32 (91) | 23 (92) | 9 (90) |
| 30 > AHI ≥ 15 | 3 (9) | 2 (8) | 1 (10) |
| SaO2 drop ≥4%, events/hour | 58 (39 to 69) | 64 (40 to 78) | 46 (39 to 50) |
| ESS score | 9 (7 to 11) | 9 (7 to 10) | 9 (7 to 15) |
| Comorbidity |  |  |  |
| Ischaemic heart disease | 4 (11) | 3 (12) | 1 (10) |
| Hypertension | 16 (46) | 11 (44) | 5 (50) |
| Diabetes mellitus | 6 (17) | 5 (20) | 1 (10) |
| Peripheral vascular disease | 1 (3) | 0 (0) | 1 (10) |
| Cerebral vascular disease | 0 (0) | 0 (0) | 0 (0) |

**Baseline characteristics**

**Part 2**

|  |  |  |
| --- | --- | --- |
|  |  |  |
| Table . Demographic and clinical data of the randomized study population |
|  |  |  |
|  | Sham | Maintenance |
| Baseline characteristic | n=6 | n=5 |
|  |  |  |
| Age, years | 63 (53 to 69) | 59 (43 to 60) |
| Gender, female | 1 (17) | 1 (20) |
| BMI, kg/m2 | 42 (36 to 47) | 36 (33 to 42) |
| Current smoker  | 0 (0) | 1 (20) |
| AHI, per hour | 50 (35 to 70) | 65 (46 to 70) |
| AHI ≥ 30 | 5 (83) | 4 (80) |
| 30 > AHI ≥ 15 | 1 (17) | 1 (20) |
| SaO2 drop ≥4%, events/hour | 62 (56 to 78) | 58 (29 to 60) |
| ESS score | 6 (4 to 7) | 7 (6 to 8) |
| Comorbidity |  |  |
| Ischaemic heart disease | 1 (17) | 1 (20) |
| Hypertension | 3 (50) | 2 (40) |
| Diabetes mellitus | 2 (33) | 0 (0) |
| Peripheral vascular disease | 0 (0) | 0 (0) |
| Cerebral vascular disease | 0 (0) | 0 (0) |
|   |   |  |
| BMI: body mass index, AHI: apnea-hypopnea index; ESS: Epworth sleepiness scale; Data presented as median (IQR) or number (%). |
|
|

**Outcome measures**

**Part 1**

|  |  |  |  |
| --- | --- | --- | --- |
|   | Baseline | After three months of CPAP | p |
| Entire group | n=35 | n=35 |   |
|  |  |  |  |
| Odor treshold | 7.7 (7 to 9) | 8.7 (7.5 to 10.2) | 0.041 |
| Odor discrimination | 12 (11 to 13) | 12 (11 to 14) | 0.353 |
| Odor identification | 12 (11 to 14) | 13 (12 to 14) | 0.101 |
| TDI-score | 32.5 (30.7 to 34) | 34.5 (31.5. to 36.5) | 0.001 |
| Sense of smell self estimation (VAS 0 to 10) | 6.7 (5 to 7) | 7 (5.5 to 8) | 0.109 |
| ESS | 9 (7 to 11) | 4.5 (3 to 7) | <0.001 |
|  |  |  |  |
| Adherent patients | n=25 | n=25 |   |
|  |  |  |  |
| Odor treshold | 7.7 (7.5 to 8.5) | 9 (7.7 to 10.2) | 0.058 |
| Odor discrimination | 12 (11 to 13) | 12 (11 to 14) | 0.635 |
| Odor identification | 12 (11 to 14) | 13 (12 to 14) | 0.055 |
| TDI-score | 32.5 (30.7 to 33.5) | 34.2 (30.2 to 37) | 0.007 |
| Sense of smell self estimation (VAS 0 to 10) | 6.5 (6 to 7) | 6.5 (6 to 7) | 0.034 |
| ESS | 9 (7 to 10.5) | 5 (3 to 7) | <0.001 |

**Outcome measures**

**Part 2**

|  |
| --- |
| Table . Olfactory performance and sleepiness after the randomized three weeks phase of the study |
|   | Shamn=6 | Mainenancen=5 | p |
|  |  |  |  |
| Odor treshold | 6.5 (5 to 7.5) | 8.5 (7.5 to 10) | 0.125 |
| Odor discrimination | 12.5 (10 to 13) | 13 (10 to 14) | 0.662 |
| Odor identification | 13.5 (11 to 15) | 13 (10 to 13) | 0.536 |
| TDI-score | 32 (28 to 35.5) | 35 (28.5 to 37) | 0.662 |
| ESS | 5 (4 to 7) | 7 (6 to 8) | 0.125 |
|  |  |  |  |
|  TDI: threshold, discrimination and identification overall score, ESS: Epworth sleepiness scale, Data presented as median (IQR). |

**Adverse events**

No adverse events were associated with either part of this study.