

Supplement

MATERIAL AND METHODS

Subjects

The subjects in the present study were general population subjects in the Icelandic part of the European Community Respiratory Health Survey (ECRHS, www.ecrsh.org), an international multicentre study of asthma and allergy [1]. A random sample from the National Registry in Iceland of 1800 men and 1800 women aged 20-44 years old was sent a brief questionnaire. Among the 3,600 a new random sample (n=800) was invited to undergo a more detailed clinical examination and 570 of these participated. In 1990, a further 90 were also invited for clinical examination if they had reported asthma or used anti-asthmatic drugs and of these 84 participated. This population of 654 subjects was invited ten years later to ECRHS II for a follow-up study [2] and again to ECRSH III in 2012. Altogether, 123 had refused to participate in previous studies and were not contacted in 2012, 47 had moved away and sixteen had died. Thus, 468 subjects were invited early in 2012 together with a new random sample of 54 subjects that had never been invited before, making a total of 522 subjects.

Table S1: Characteristics of study population included in the sleep study analysis compared to those who refused to participate in a sleep study or had an unusable study. Data shown as mean \pm standard deviation or percentage where appropriate.

	Subjects in analysis	Denied study	Unusable study	p-value
	n=415	n=28	n=11	
Demographics				
Age (yrs.)	54.7 \pm 6.8	53.7 \pm 7.4	56.0 \pm 7.2	0.61
Male	48.4	28.6	45.5	0.13
Body mass index (BMI, kg/m ²)	28.2 \pm 5.0	27.8 \pm 5.3	27.5 \pm 3.7	0.81
Smoking: Current (%)	16.6	11.1	18.2	0.51
Former (%)	44.6	55.6	63.6	
Never (%)	38.8	33.3	18.2	
Ever had hypertension:	30.6	28.6	36.4	0.89
Symptoms				
Snoring \geq 3 x week	42.3	25.0	25.0	0.20
Nocturnal sweating \geq 3 x week	10.2	4.3	0.0	0.36
Dry mouth when awakening \geq 3 x week	19.0	9.5	14.3	0.53
Morning headache \geq 1 x week	15.3	9.1	20.0	
Difficulties initiating sleep \geq 3 x week	12.6	8.7	18.2	0.73
Difficulties maintaining sleep \geq 3 x week	37.6	18.2	20.0	0.10
Early morning awakenings \geq 3 x week	13.5	8.7	36.4	0.07
Nocturnal GER symptoms \geq 1 x week	6.1	9.1	9.1	0.80
RLS symptoms	15.9	20.8	9.1	0.67

Abbreviations: GER, gastroesophageal reflux; RLS, restless leg syndrome.

Table S2: A comparison of the subjects previously untreated OSA, as measured by $AHI \geq 15$ ($n=64$), divided into those still on OSA treatment 2 years later ($n=18$) and other subjects ($n=46$). All of these subjects were informed of their OSA status and invited for an interview with a sleep specialist to discuss treatment options.

	Accepted PAP treatment	Not on treatment	<i>p-value*</i>
	n=18	n=46	
Demographics			
Age (yrs.)	56.1 ± 6.3	58.0 ± 5.7	0.24
Males	66.7	69.6	0.82
Body mass index (BMI, kg/m ²)	32.3 ± 6.4	29.2 ± 5.0	0.04
Smoking: Current	22.2	17.4	0.88
Former	50.0	50.0	
Never	27.8	32.6	
Ever had hypertension	22.2	32.6	0.41
Sleep study			
Apnea-hypopnea index*	27.1 ± 10.7	23.3 ± 10.4	0.16
Oxygen desaturation index*	23.1 ± 8.1	20.5 ± 10.2	0.22
Hypoxia time in %*	15.6 ± 19.7	9.9 ± 17.5	0.09
Minimum oxygen saturation in %*	79.5 ± 5.3	80.8 ± 5.2	0.36
Symptoms			
Snoring ≥3 x week	87.5	70.0	0.17
Nocturnal sweating ≥3 x week	26.7	4.9	0.02
Dry mouth when awakening ≥3 x week	35.7	21.6	0.30
Morning headache ≥1 x week	20.0	12.2	0.46
Difficulties initiating sleep ≥3 x week	29.4	11.9	0.11
Difficulties maintaining sleep ≥3 x week	56.3	31.0	0.08
Early morning awakenings ≥3 x week)	17.7	19.1	0.90
Nocturnal GER symptoms ≥1 x week	20.0	4.9	0.08
RLS symptoms (%)	31.3	19.1	0.32
Sleepiness			

Epworth sleepiness scale score	9.5 ± 5.1	6.0 ± 3.7	0.008
Excessive sleepiness (ESS ≥ 10, %)	46.7	16.7	0.02
Mean reaction speed (1/RT)	4.0 ± 0.4	4.1 ± 0.4	0.39
Fastest 10% reaction speed (ms)	5.1 ± 0.4	5.2 ± 0.5	0.50
Slowest 10% reaction speed (ms)	2.7 ± 0.4	2.7 ± 0.5	0.75
Minor lapses (Reaction time >500 ms) [§]	2.3 ± 1.1	2.3 ± 1.8	0.92
Total errors (False starts and wrong buttons) [§]	2.0 ± 1.7	2.9 ± 1.7	0.82
Lapses and errors [§]	5.3 ± 2.1	5.2 ± 2.8	0.93
PVT slope (time on task decrement)	-0.008 ± 0.05	-0.02 ± 0.04	0.53

[§] The data were square root transformed or cubic transformed for statistical analysis as appropriate to normalize distribution.

[§] Transformed using square root of X plus square root of (X + 1).

Abbreviations: GER, gastroesophageal reflux; RLS, restless legs syndrome.

Table S3: The 15 subjects currently on treatment for OSA.

Subjects	Gender	Age	BMI	Treatment	Years since diagnosis	Baseline data – from diagnosis			
						AHI	ODI	ESS*	BMI
1	Male	62.2	31.1	PAP	14	8.0	23.3	-	29.7
2	Female	55.2	33.7	PAP	8	16.5	21.3	10	37.5
3	Male	54.7	34.6	PAP	6	36.6	22.9	15	30.0
4	Male	48.1	35.3	PAP	6	65.0	56.0	3	36.0
5	Male	61.8	40.7	PAP	16	106.0	46.0	-	37.8
6	Male	57.0	44.6	PAP	2	31.6	25.8	10	39.7
7	Male	49.7	31.2	MAD	9	44.1	27.8	14	29.6
8	Female	46.4	30.4	MAD	2	18.9	16.4	3	30.0
9	Male	51.0	31.0	PAP	7	55.6	35.5	5	28.7
10	Female	51.8	29.3	PAP	1	15.3	7.6	17	26.3
11	Female	59.5	43.4	PAP	9	21.5	22.8	-	40.6
12	Male	62.5	38.0	PAP	1	47.1	26.7	7	38.8
13	Male	60.6	38.6	PAP	7	8.6	6.0	13	35.0

14	Male	49.8	33.1	PAP	2	33.2	34.3	15	31.1
15	Male	54.5	30.7	PAP	12	15.1	15.4	10	29.9
Average ±	11M	55.0	35.0	13 PAP					
SD	4 F	±5.4	± 4.9	2 MAD	6.8 ± 4.7	34.9 ± 26.2	25.9 ± 13.2	10.2 ± 4.8	33.4 ± 4.7

*n=11 with complete data used for statistical analysis. The Epworth Sleepiness Scale (ESS) was not in clinical use prior to 2004.
Abbreviations: OSA, obstructive sleep apnea; BMI, body mass index; PAP, positive airway pressure; MAD, mandibular advancement device; AHI, apnea-hypopnea index; ODI, oxygen desaturation index; ESS, Epworth Sleepiness Scale.

REFERENCES

1. Burney PG, Luczynska C, Chinn S, Jarvis D. The European Community Respiratory Health Survey. *Eur Respir J* 1994; 7(5): 954-960.
2. Committee ECRHSIS. The European Community Respiratory Health Survey II. *Eur Respir J* 2002; 20(5): 1071-1079.