



XXVIII DIADA PNEUMOLÒGICA
Girona 2010



TRASTORNS RESPIRATORIS DEL SON

**Actualització crítica de la
bibliografia**

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CRITERIS DE CERCA

- **LIMITS**



Articles SLEEP APNEA	LLIURE	HUMANS ADULTS (ANIMALS)	REVISTA CORE	ASSAIG RANDOM. CONTROLAT
1 ANY	1600	570 (+11)	82	9
2 ANYS	3724	2089 (+16)	280	18
5 ANYS	7275	3399 (+44)	467	56

- **TIPUS D'INFORMACIÓ:**

- Articles originals
- Metanàlisis
- Revisions

- **CRITERI CLÍNIC PENUMOLÒGIC: *Què ens preocupa?***

- Fisiopatologia
- **DIAGNÒSTIC**
- **CONSEQÜÈNCIES CARDIOVASCULARS**
- **TRACTAMENT (CPAP NASAL)**
- Altres (curiositats)



DIAGNÒSTIC

Diagnosis and Initial Management of Obstructive Sleep Apnea without Polysomnography

A Randomized Validation Study

Figure 1. Design of the clinical study.

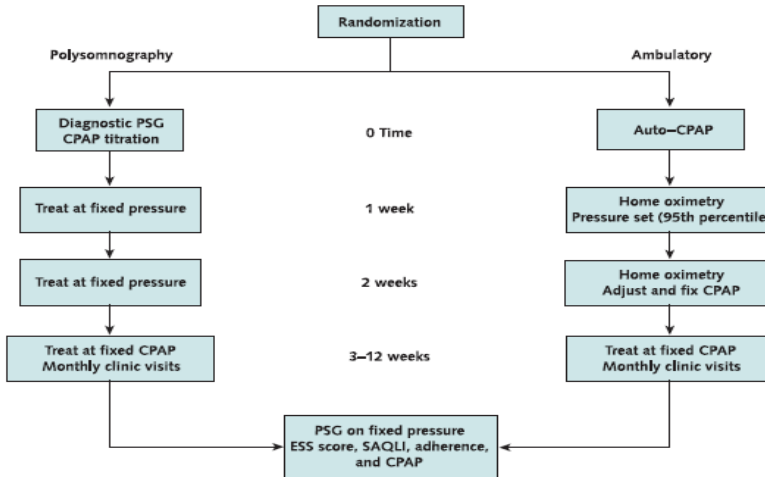
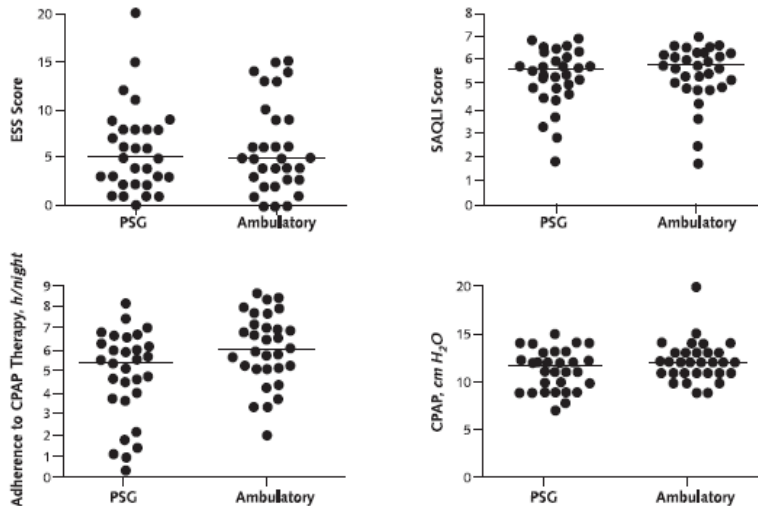


Figure 4. Secondary outcomes on continuous positive airway pressure (CPAP) after 3 months of treatment in the polysomnography (PSG) (n = 30) and ambulatory (n = 31) groups.



La major part de pacients amb alta probabilitat de SAHS no necessiten PSG i el seu maneig amb PR domiciliària pot ser correcte.

Mulgrew AT. et al. Ann Intern Med. 2007; 146:157

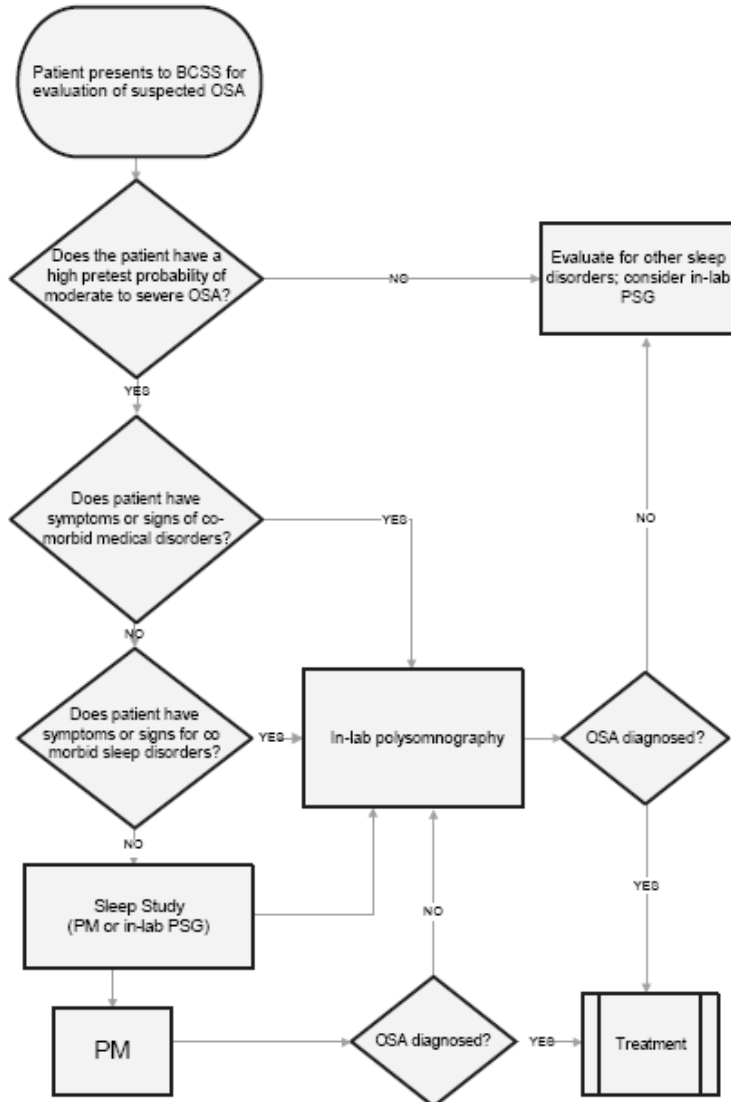


Clinical Guidelines for the Use of Unattended Portable Monitors in the Diagnosis of Obstructive Sleep Apnea in Adult Patients

Portable Monitoring Task Force of the American Academy of Sleep Medicine

Task Force Members: Nancy A. Collop, M.D.¹ (Chair); W. McDowell Anderson, M.D.²; Brian Boehlecke, M.D., M.S.P.H.³; David Claman, M.D.⁴; Rochelle Goldberg, M.D.⁵; Daniel J. Gottlieb, M.D., M.P.H.⁶; David Hudgel, M.D.⁷; Michael Sateia, M.D.⁸; Richard Schwab, M.D.⁹

Portable Monitoring Decision Tree



La major part de pacients amb alta probabilitat de SAHS no necessiten PSG i el seu maneig amb PR domiciliària pot ser correcte.

Journal of Clinical Sleep Medicine. 2007; 3, N 7



SAHS

Conseqüències cardio-vasculars/ tractament amb CPAP nasal

- **HTA**
- **Síndrome metabòlica**
 - (HTA, dislipèmia, diabetis, obesitat)
- **Ictus**
- **Insuficiència cardíaca**
- **Mortalitat**



**Estudis randomitzats
i controlats**

**SAHS- CONSEQÜÈNCIES
C-V/TRACTAMENT**

EFICÀCIA TRACTAMENT

**Estudis prospectius
(longitudinals)**

CAUSA-EFECTE

**Estudis animals
Mediadors biològics**
(inflamació, endoteli...)

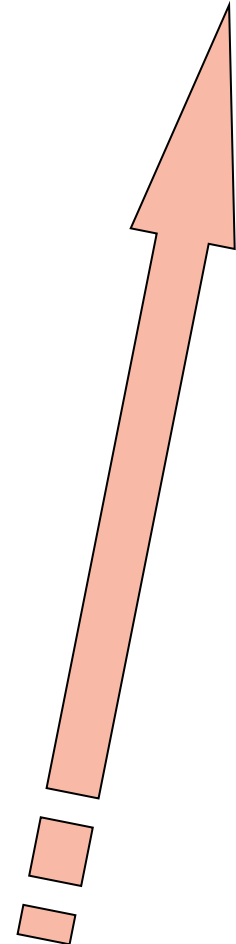
FISIO-PATOLOGIA

**Estudis
transversals,
Cas Control**

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HIPERTENSIÓ

Assajos
randomitzats
i controlats

EFICÀCIA TRACTAMENT

Estudis prospectius
(longitudinals)

CAUSA-EFECTE

Estudis animals
Mediadors biològics
(inflamació, endoteli...)

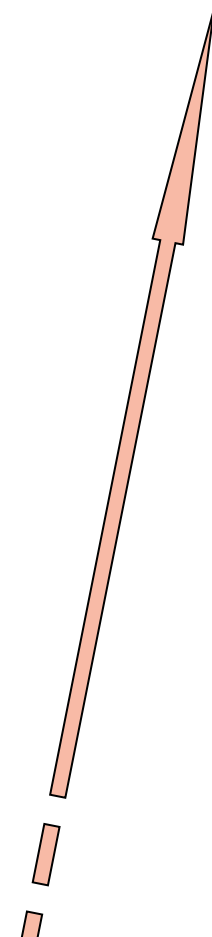
FISIO-PATOLOGIA

Estudis transversals,
Cas Control

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ESTUDIS EPIDEMIOLÒGICS: TRANSVERSALS

Table 1
Epidemiological studies of the association between apnea-hypopnea index (AHI) and systemic hypertension (SH).

Reference	Population	Design	Subjects	Sex	Age, yrs	Odds ratio (95% CI) for hypertension	Parameters and adjustments
Stradling and Crosby ¹¹	Sleep clinic	Cross-sectional	748	M	35-65	Not stated	No. Number of oxygen desaturations > 4% as diagnosis of OSAH. No independent association with SH
Grunstein et al. ¹²	Sleep clinic	Cross-sectional	1464	M	15-82	Not stated	40.9% with SH. Independent dose-response relationship between AHI and morning SH
Hoffstein ¹³	Sleep clinic	Cross-sectional	1026	M	12-81	Not stated	Adjusted by age, gender and BMI. AHI independent predictor of SH
Carlson et al. ¹⁴	Sleep clinic	Cross-sectional	297	M	20-77	2.1 (1.1-4.1)	AHI risk factor for SH independently of age and obesity
Grunstein et al. ¹⁵	Sleep clinic	Cross-sectional	1324	M	37-57	Not stated	Adjusted by age, obesity, tobacco and alcohol, symptoms related to OSAH were associated with elevated DBP
Young et al. ¹⁶	State employees	Cross-sectional	617	M	30-60	1.8 (1.3-2.4)	AHI ≥ 15 vs. 0
Grote et al. ¹⁷	Sleep clinic	Cross-sectional	1087	M	50.2	4.1 (2.7-6.5)	Adjusted by age, BMI, tobacco, alcohol and cholesterol. AHI ≥ 40 vs. ≤ 5 was an independent predictor of SH
Lavie et al. ¹⁸	Sleep clinic	Cross-sectional	1949	M	25-85	Not stated	Adjusted by age, gender and BMI. Each 10 point increase of AHI the risk of SH increases 11% (Beta 0.011)
Bixler et al. ¹⁹	General	Cross-sectional	741	M	20-100	6.8 (2.0-26.4)	AHI > 15
Nieto et al. ²⁰	Heterogeneous	Cross-sectional	3238	M	>40	1.4 (1.0-1.8)	Interaction with age, BMI and gender
Peppard et al. ²¹	State employees	Longitudinal	390	M	30-60	2.9 (1.5-5.6)	Adjusted by BMI, neck circumference, waist and hip perimeter, tobacco and alcohol: AHI ≥ 30 vs. <1.5
Grote et al. ²²	Sleep clinic	Cross-sectional	539	M	49 ± 11	Not stated	Adjusted by SH, BMI, neck circumference, waist and hip perimeter, age, gender, tobacco and alcohol AHI > 15 vs. 0
Durán et al. ²	Hypertension unit	Cross-sectional	52	F			All patients with SH. Adjusted by age. SH severity increases as AHI increases
	General	Cross-sectional	1050	M	30-70	2.3 (0.9-6.0)	Adjusted by age, BMI, neck circumference, tobacco and alcohol.
			1098	F			AHI > 15 vs. <5
Hedner et al. ²³	General population selected	Case-control	174	M	40-65	2.6 (1.4-6.2)	Adjusted by age
			170	F		0.7 (0.3-1.6)	

AHI, apnea-hypopnea index; BMI, Body mass index; DBP, Distolic

LONGITUDINALS

PROSPECTIVE STUDY OF THE ASSOCIATION BETWEEN SLEEP-DISORDERED BREATHING AND HYPERTENSION

Wisconsin Sleep Study

4 years follow-up

Peppard et al. NEJM. 2000; 342: 1378

AHI	n	OR (95%)
0	187	1
0.1 – 4.9	507	1.42 (1.13-1.78)
5 - 15	132	2,03 (1.29-3.14)
> 15	67	2.89 (1.46 - 5.64)

Prospective Study of Sleep-disordered Breathing and Hypertension

The Sleep Heart Health Study

The Sleep Heart Health Study

5 years follow-up

O'Connor et al. AJRCCM. 2009; 179:1159

AHI	n	OR (95%)
0 - 4,9	541	
5 - 15	378	0.92 (0.67-1.27)
15 - 29.9	164	1.13 (0.76 - 1.68)
> 30	65	1.18 (0.64 - 2.19)

AHI	n	OR (95%)
0 - 4,9	887	
5 - 15	213	0.89 (0.59-1.34)
15 - 29.9	58	0.93 (0.46-1.90)
> 30	21	2.71 (1.24-5.93)

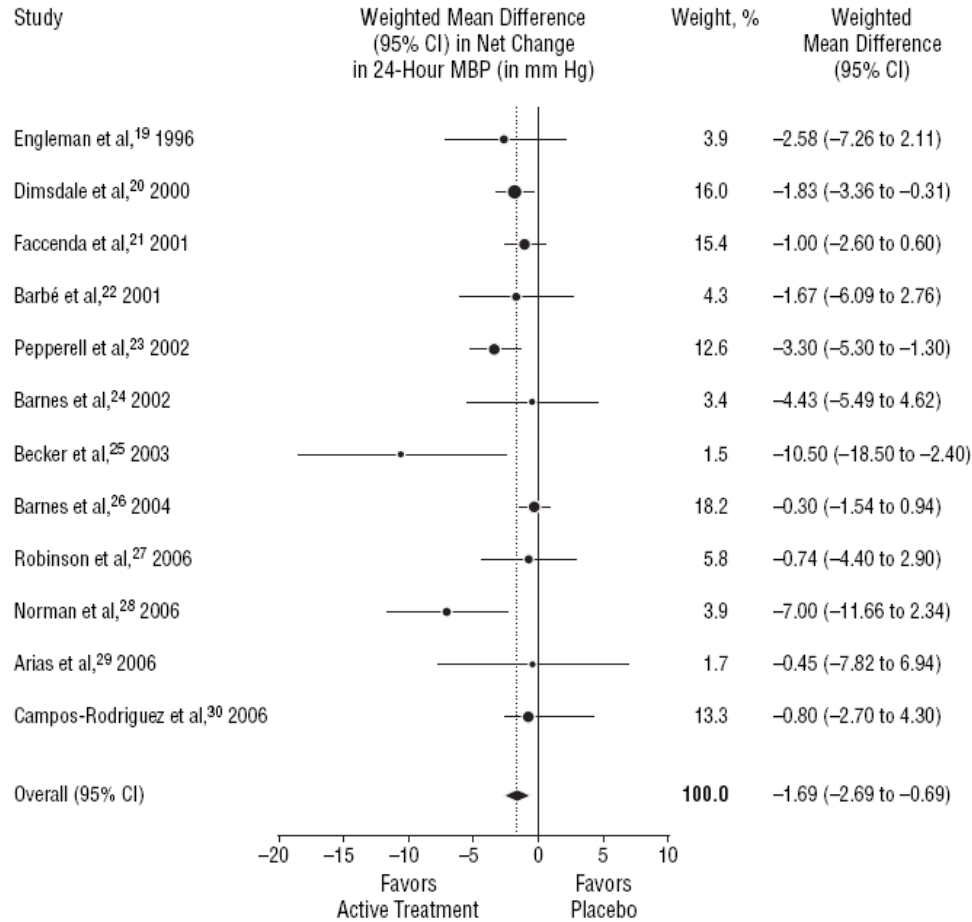


OBESITAT COM A FACTOR CONFONEDOR

IMC > 27.3

The Impact of Continuous Positive Airway Pressure on Blood Pressure in Patients With Obstructive Sleep Apnea Syndrome

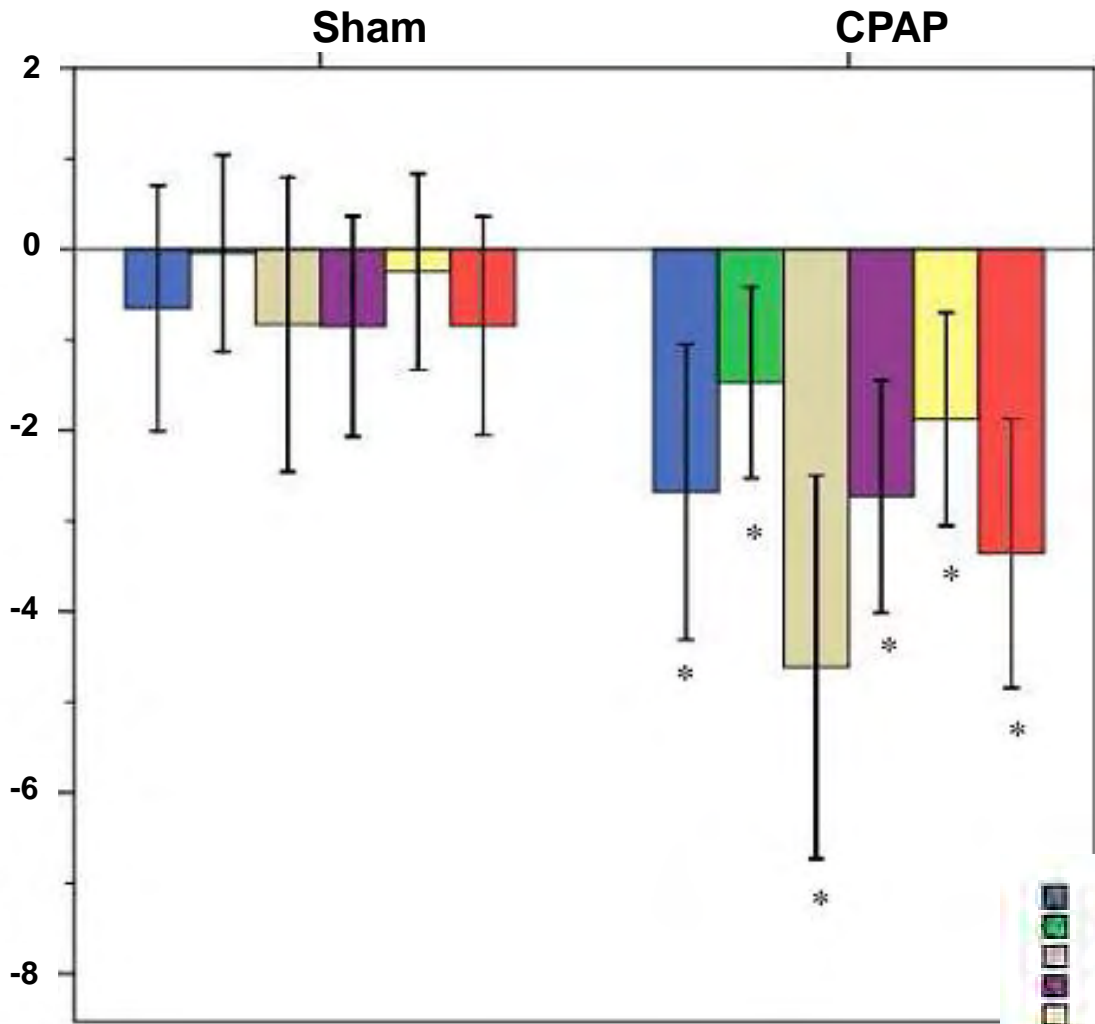
Evidence From a Meta-analysis of Placebo-Controlled Randomized Trials



Tests for Heterogeneity $\chi^2_{11}=18.53, P=.07; I^2=41\%$
 Tests for Overall Effect $z=-3.31; P=.001$

572 pacients de 12 Assajos Controlats i Randomitzats
MAPA:
Disminució 1.69 mmHg
(95% IC: -2.69 i -0.69)

CPAP as a treatment of patients with the "novo" hypertension. A multicenter randomized trial



Efecte de 3 mesos de CPAP en la PA de pacients amb SAHS hipertensos. (N:359)

Randomitzats. CPAP (n = 169) Sham (n = 171).

- DIURNAL SYSTOLIC BLOOD PRESSURE
- DIURNAL DIASTOLIC BLOOD PRESSURE
- DIURNAL MEAN BLOOD PRESSURE
- NOCTURNAL SYSTOLIC BLOOD PRESSURE
- NOCTURNAL DIASTOLIC BLOOD PRESSURE
- NOCTURNAL MEAN BLOOD PRESSURE

Effects of CPAP compliance on blood pressure

Efectes d'1 any de tractament amb CPAP sobre la PA en pacients amb SAHS sense somnolència i hipertensos. 359 pacients: Randomitzats a CPAP (n = 178) o tractament conservador (n = 181).

Adjusted multilevel regression model

Compliance (h/n)	SBP	p	DBP	p
< 3.6 vs Control	-0.19 (1.6)	0.9	-1.33 (1.1)	0.2
3.6-5.6 vs Control	-1.9 (1.4)	0.19	-1.0 (0.92)	0.3
> 5.65 vs Control	-3.29 (1.3)	0.01	-2.71 (0.8)	0.001

En resum: SAHS-HTA

- **Estudis transversals demostren que la SAHS està associada a HTA mentre que els longitudinals i la resposta al tractament suggereixen una relació causa-efecte.**
- **El tractament amb CPAP nasal redueix la Pressió Arterial: en conjunt la reducció mitjana és d'uns 2 mm Hg amb CPAP, la qual cosa, però, comporta una reducció del risc cardio-vascular i cerebro-vascular i del risc de mort.**
- **L'efecte és superior en aquells que tenen una SAHS greu (IAH>30) o HTA de difícil control.**
- **Es podria considerar el tractament en pacients amb SAHS greu i HTA, sense símptomes (sense somnolència).**



SÍNDROME METABÒLICA

Assajos
Random.
i controlats

Estudis
prospectius
(longitudinals)

Estudis animals
Mediadors biològics
(*inflamació, endoteli...*)

Estudis: transversals
Cas Control

EFICÀCIA TRACTAMENT ???

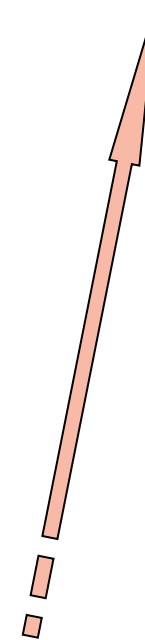
**POCA INFORMACIÓ
CAUSA-EFECTE**

FISIO-PATOLOGIA

ASSOCIACIÓ

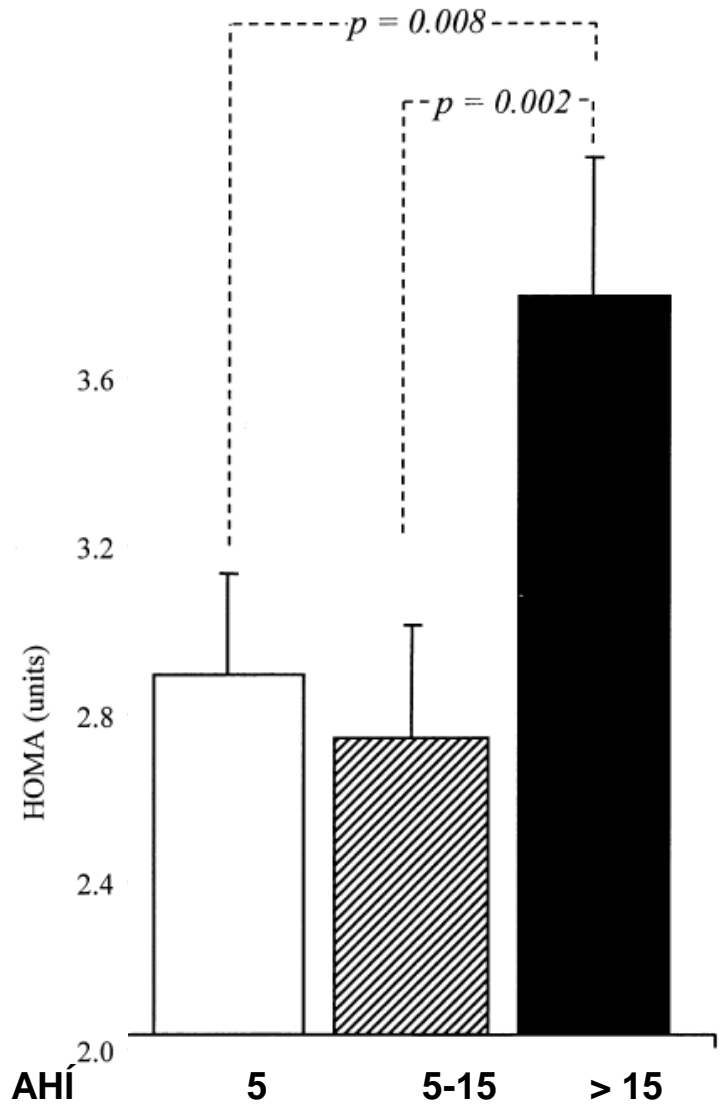
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Sleep-Disordered Breathing, Glucose Intolerance, and Insulin Resistance

S. METABÒLICA Transversal



The Sleep Heart Health Study. N: 2656

La SAHS s'associa a disfunció metabòlica després d'ajustar per diversos factors de confusió.

Association of Sleep Apnea and Type II Diabetes

A Population-based Study

Wisconsin Sleep Cohort

**TRANVERSAL/
LONGITUDINAL**

TRANVERSAL (n: 1387)

IAH > 15: 15 % diabetis

IAH < 5: 2,8 % diabetis

TABLE 4. ODDS RATIOS FOR 4-YR INCIDENCE OF PHYSICIAN-DIAGNOSED DIABETES FOR TWO LEVELS OF SLEEP-DISORDERED BREATHING

	Odds Ratio	95% Confidence Interval	p Value
Adjusted for sex and age			
AHI 5–15 vs. AHI < 5	2.81	1.51–5.23	0.001
AHI ≥ 15 vs. AHI < 5	4.06	1.86–8.85	0.0004
Adjusted for sex, age, and body habitus*			
AHI 5–15 vs. AHI < 5	1.56	0.80–3.02	0.19
AHI ≥ 15 vs. AHI < 5	1.62	0.67–3.65	0.24

Definition of abbreviation: AHI = apnea–hypopnea index.

* Body habitus measures: waist girth.

Reichmuth KJ. Et al. Am J Respir Crit Care Med 2005; 172:1590

Conclusions: La diabetis és més prevalent en els pacients amb SAHS i aquesta relació és independent d'altres factors de risc. Tanmateix, no està clar que la SAHS sigui un factor causal de diabetis.

EFFECTES DE LA CPAP SOBRE EL METABOLISME DE LA GLUCOSA

TABLE 3. STUDIES EXAMINING THE EFFECT CONTINUOUS POSITIVE AIRWAY PRESSURE TREATMENT ON GLUCOSE METABOLISM

	Treatment Period	Study Population	Measures of Glucose	Main Results
POSITIUS	Brooks and colleagues (51)	10 Severely obese patients with diabetes with OSA	Hyperinsulinemic euglycemic clamp	Improvement in insulin sensitivity
	Harsh and colleagues (54)	40 Patients without diabetes with OSA	Hyperinsulinemic euglycemic clamp	Improvement in insulin sensitivity (at 2 d and 3 mo)
	Harsh and colleagues (52)	9 Patients with diabetes with OSA	Hyperinsulinemic euglycemic clamp	Improvement in insulin sensitivity (at 3 mo)
	Babu and colleagues (55)	25 Patients with diabetes with OSA	72-h interstitial glucose/Hemoglobin A1c	Improvement in 1-h postprandial glucose and decrease in hemoglobin A1c
	Hassaballa and colleagues (142)	38 Patients with diabetes with OSA	Hemoglobin A1c	Slight decrease in hemoglobin A1c
	Lindberg and colleagues (53)	28 Men with OSA/28 Matched control men without OSA	Fasting insulin and HOMA	Reductions in fasting insulin levels and insulin resistance
NEGATIUS	(59)	8 Patients with OSA	Profiles of glucose and insulin at night	No change in nocturnal glucose and insulin profiles
	Cooper and colleagues (60)	6 Obese men without diabetes with OSA	Profiles of glucose and insulin at night	No change in nocturnal glucose and insulin profiles
	Stoohs and colleagues (47)	5 Patients with OSA	Fasting glucose and insulin	Increase in fasting and nocturnal glucose levels
			Profiles of glucose and insulin at night	No change in fasting or nocturnal insulin levels
	Saarlainen and colleagues (143)	7 Patients with OSA	Hyperinsulinemic euglycemic clamp	No improvement in insulin sensitivity
	Ip and colleagues (61)	9 Patients with OSA	Fasting glucose and insulin	No change in fasting glucose and insulin levels
	Sumurra and colleagues (144)	16 Patients with OSA	Hyperinsulinemic euglycemic clamp OGTT	No change in insulin sensitivity and glucose tolerance
	Czupryniak and colleagues (62)	9 Patients without diabetes with OSA	Nocturnal interstitial glucose Fasting insulin and HOMA	Increase in nocturnal glucose No difference in fasting insulin levels and insulin resistance
	Coughlin and colleagues (12)	34 Obese patients with OSA	HOMA	No change in insulin sensitivity with therapeutic CPAP compared with placebo CPAP
	West and colleagues (63)	42 Patients with OSA	Hemoglobin A1c, HOMA, and euglycemic clamp	No change in hemoglobin A1c or insulin sensitivity with therapeutic CPAP compared with placebo CPAP

Definition of abbreviations: CPAP = continuous positive airway pressure; HOMA = homeostatic model assessment; OGTT = oral glucose tolerance test; OSA = obstructive sleep apnea.

En resum: SAHS- S. METABÒLICA

- Estudis transversals demostren que la SAHS està associada a la resistència a la insulina, però no **s'ha** confirmat una relació causa-efecte en estudis longitudinals ni per la influència del tractament.
- Els efectes de diversos factors de confusió, especialment l'obesitat, no permeten en el moment actual establir una relació clara entre la SAHS i la Síndrome Metabòlica.
- Manquen estudis randomitzats i controlats amb més mostra i a més llarg termini amb control de compliment del tractament.



Assajos
randomitzats
i controlats

EFICÀCIA TRACTAMENT ???

Estudis
prospectius
(longitudinals)

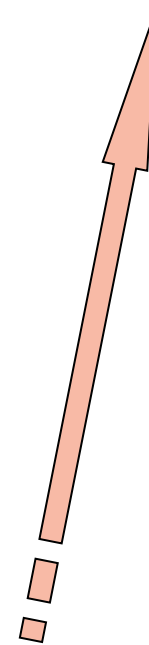
**POCA INFORMACIÓ
CAUSA-EFECTE**

Estudis animals
Mediadors biològics
(*inflamació, endoteli...*)

FISIO-PATOLOGIA

Estudis: transversals
Cas Control

ASSOCIACIÓ

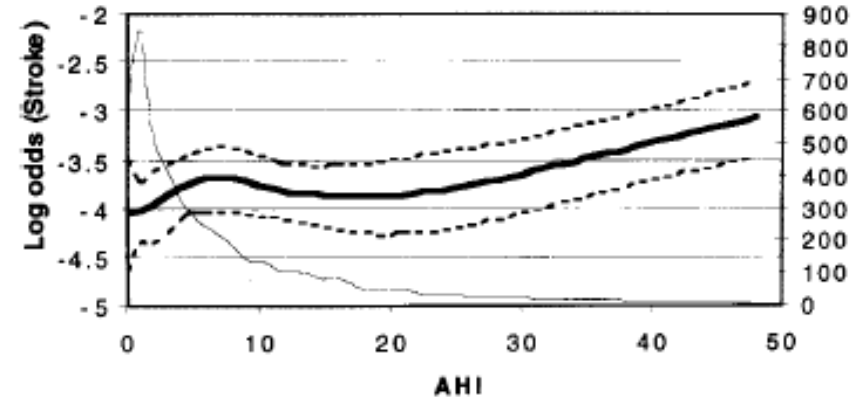


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Sleep-disordered Breathing and Cardiovascular Disease

Cross-sectional Results of the Sleep Heart Health Study



SHHS

Sahar E., et al. Am. J. Respir. Crit. Care Med. 2001, 163:19.

Association of Sleep-disordered Breathing and the Occurrence of Stroke

WISCONSIN

Artz M. et al. Am J Respir Crit Care Med. 2005; 172: 1447

TABLE 2. ADJUSTED ODDS RATIOS FOR THE PREVALENCE OF STROKE FOR SUBJECTS GROUPED BY THE APNEA-HYPOPNEA INDEX

AHI (events/h)	Model 1A		Model 2A		Model 3A	
	OR (95% CI), adjusted for age, sex, BMI, alcohol, and smoking	p Value	OR (95% CI), adjusted for age, sex, BMI, alcohol, smoking, and hypertension	p Value	OR (95% CI), adjusted for age, sex, BMI, alcohol, smoking, diabetes, and hypertension	p Value
< 5*	1.0		1.0		1.0	
≥ 5 to < 20	0.50 (0.11-2.33)	0.38	0.48 (0.10-2.27)	0.36	0.49 (0.10-2.81)	0.36
≥ 20	4.33 (1.32-14.24)	0.02	3.87 (1.19-12.63)	0.02	3.83 (1.17-12.56)	0.03

Definition of abbreviations: AHI = apnea-hypopnea index; BMI = body mass index; CI = confidence interval; OR = odds ratio.
 * This category served as the reference group.

ORIGINAL ARTICLE

Obstructive Sleep Apnea as a Risk Factor for Stroke and Death

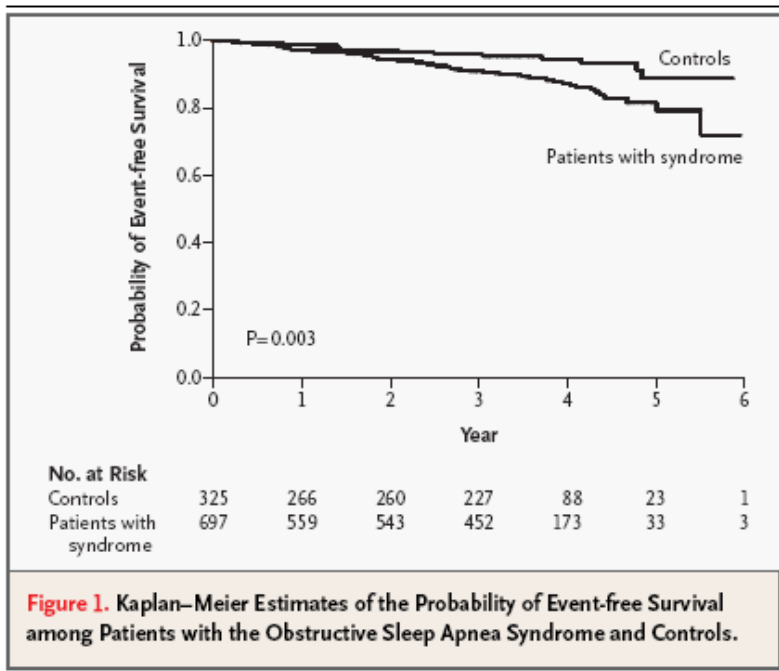


Table 3. Trend Analysis for the Relationship between Increased Severity of the Obstructive Sleep Apnea Syndrome and the Composite Outcome of Stroke or Death from Any Cause (N=1022).*

Severity of Syndrome	Stroke or Death		Mean Follow-up Period yr	Hazard Ratio (95% CI)
	No. of Events	No. of Patients		
AHI ≤3 (reference score)	13	271	3.08	1.00
AHI 4-12	21	258	3.06	1.75 (0.88-3.49)
AHI 13-36	20	243	3.09	1.74 (0.87-3.51)
AHI >36	34	250	2.78	3.30 (1.74-6.26)

* P=0.005 by the chi-square test for linear trend. AHI denotes apnea-hypopnea index, and CI confidence interval.

Obstructive Sleep Apnea Is a Risk Factor for Death in Patients With Stroke

A 10-Year Follow-up

Carin Sahlin, BSc; Olov Sandberg, MD, PhD; Yngve Gustafson, MD, PhD; Gösta Bucht, MD, PhD; Bo Carlberg, MD, PhD; Hans Stenlund, PhD; Karl A. Franklin, MD, PhD

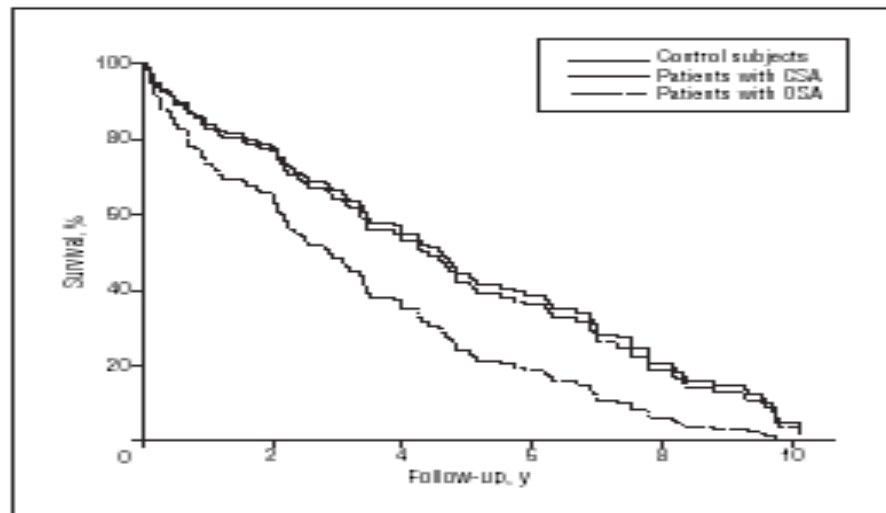
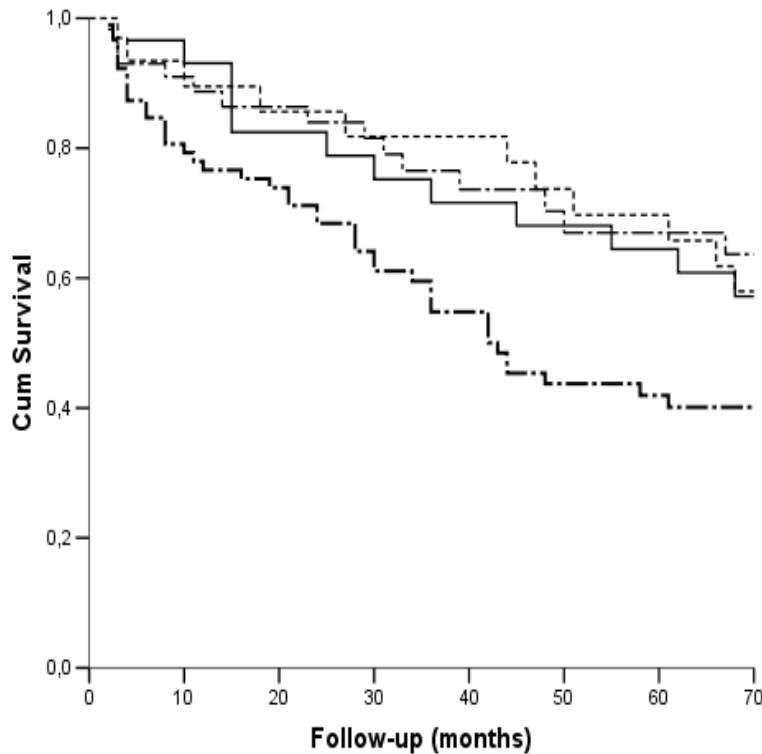


Figure 2. Survival curves calculated from a Cox proportional hazards regression model after adjustments for age, sex, body mass index, current smoking, hypertension, diabetes mellitus, atrial fibrillation, Mini-Mental State Examination score, and Barthel index of activities of daily living. Mortality was higher among patients with obstructive sleep apnea (OSA) vs control subjects (adjusted hazard ratio, 1.76; 95% confidence interval, 1.05-2.95; $P=.03$); there was no difference in mortality between patients with central sleep apnea (CSA) and controls ($P=.80$).

Continuous Positive Airway Pressure Treatment Reduces Mortality in Patients with Ischemic Stroke and Obstructive Sleep Apnea A 5-Year Follow-up Study



IAH 0-9 (n=31; 11 deaths)

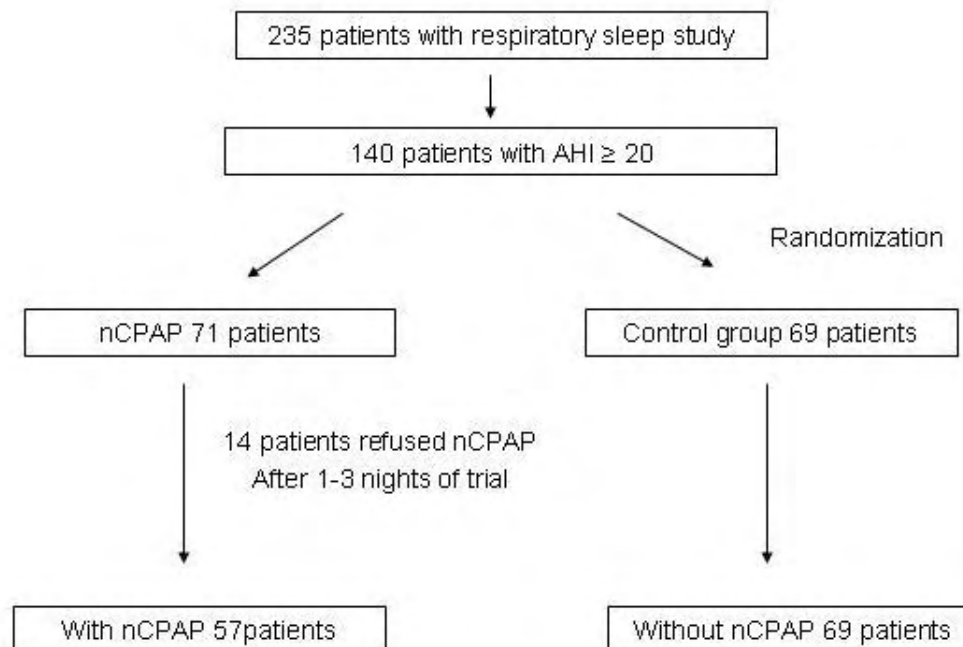
IAH 10-19 (n=39; 15 deaths)

IAH ≥20 with CPAP (n=28; 12 deaths)

IAH ≥20 without CPAP (n=63; 43 deaths)

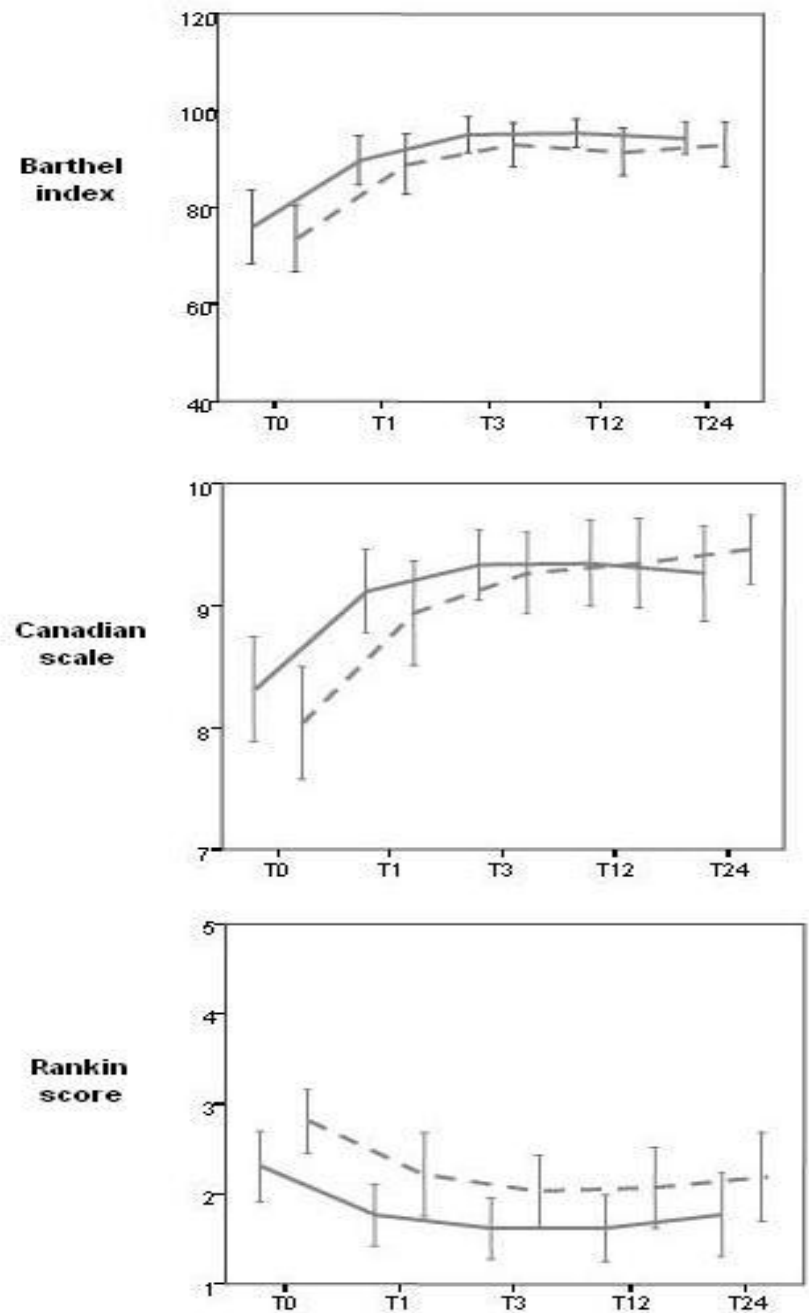
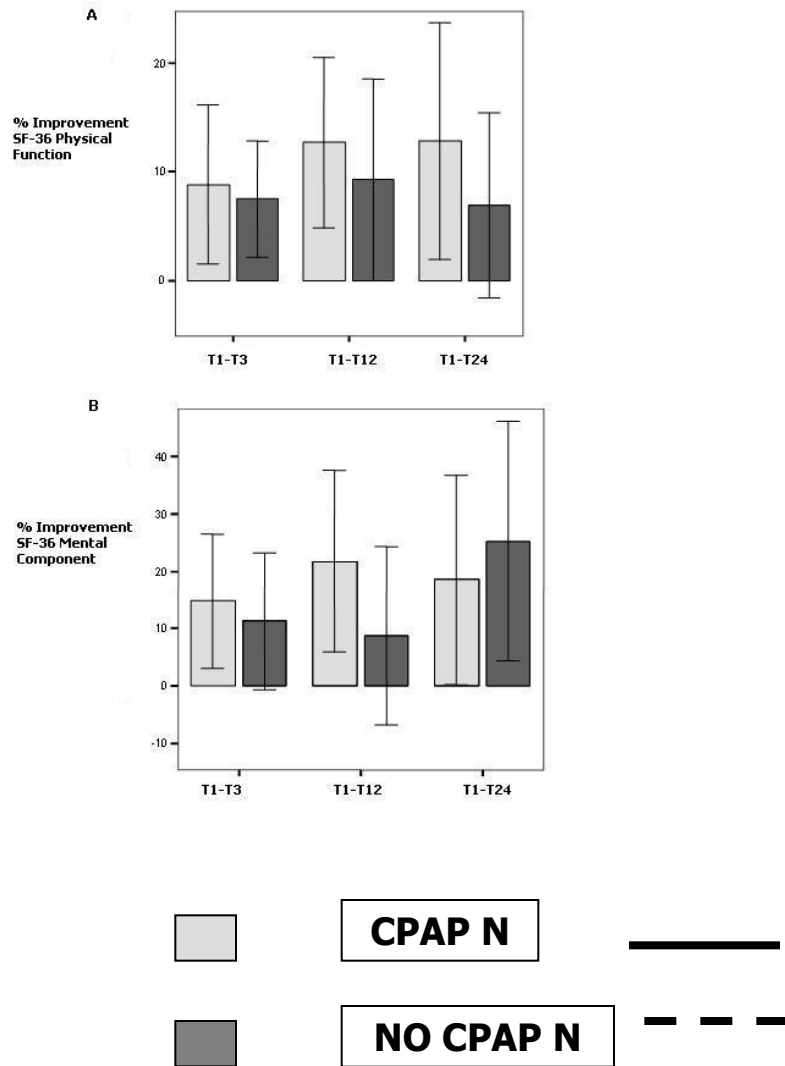
Early treatment of obstructive apnea and stroke outcome after 2 years: a randomized controlled trial.

Olga Parra, Ángeles Sánchez-Armengol, Marc Bonnin, Adrià Arboix, Francisco Campos-Rodríguez, José Pérez-Ronchel, Joaquín Durán-Cantolla, Germán de la Torre, José R. González Marcos, Mónica de la Peña, M. Carmen Jiménez, Fernando Masa, Ignacio Casado, M. Luz Alonso, José L. Macarrón



Early treatment of obstructive apnea and stroke outcome after 2 years: a randomized controlled trial

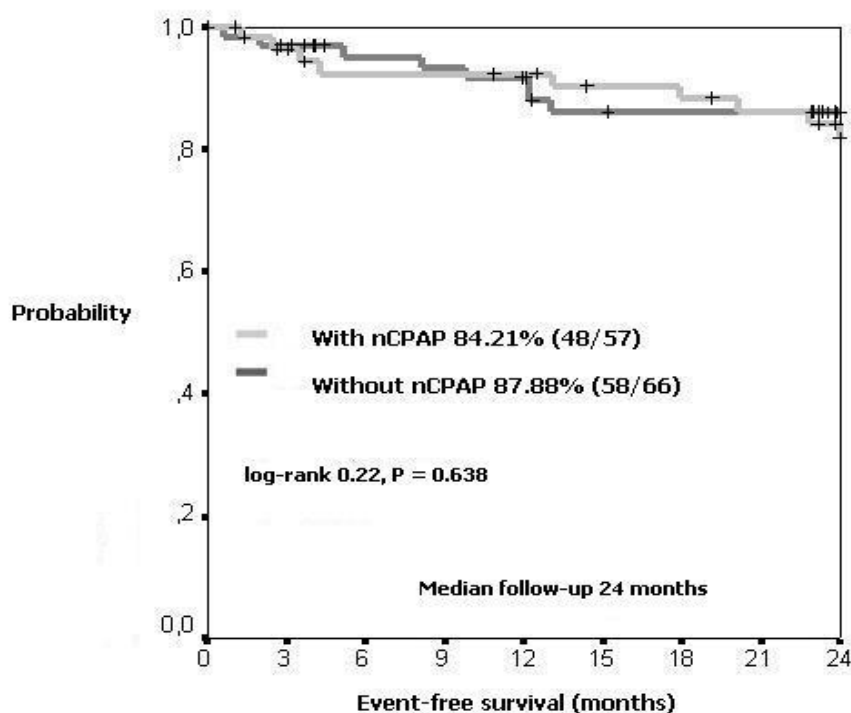
O. Parra et al



Early treatment of obstructive apnea and stroke outcome after 2 years: a randomized controlled trial

O.Parra et al.

Supervivència lliure d'events en el grup amb CPAPn i en el controls.



En resum: SAHS-ICTUS

- Hi ha dades que suggereixen associació
- Indicis de causalitat
- La influència del tractament amb CPAP nasal, un cop establert l'Ictus, no està gens clara.



INSUFICIÈNCIA CARDÍACA

EFICÀCIA TRACTAMENT ???

CAUSA-EFECTE

FISIO-PATOLOGIA

ASSOCIACIÓ

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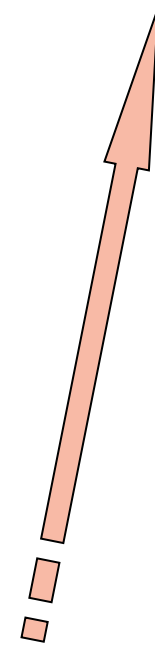
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**Assajos
randomitzats
i controlats**

**Estudis
prospectius
(longitudinals)**

**Estudis animals
Mediadors biològics
(*inflamació, endoteli...*)**

**Estudis: transversals
Cas Control**



Continuous Positive Airway Pressure for Central Sleep Apnea and Heart Failure

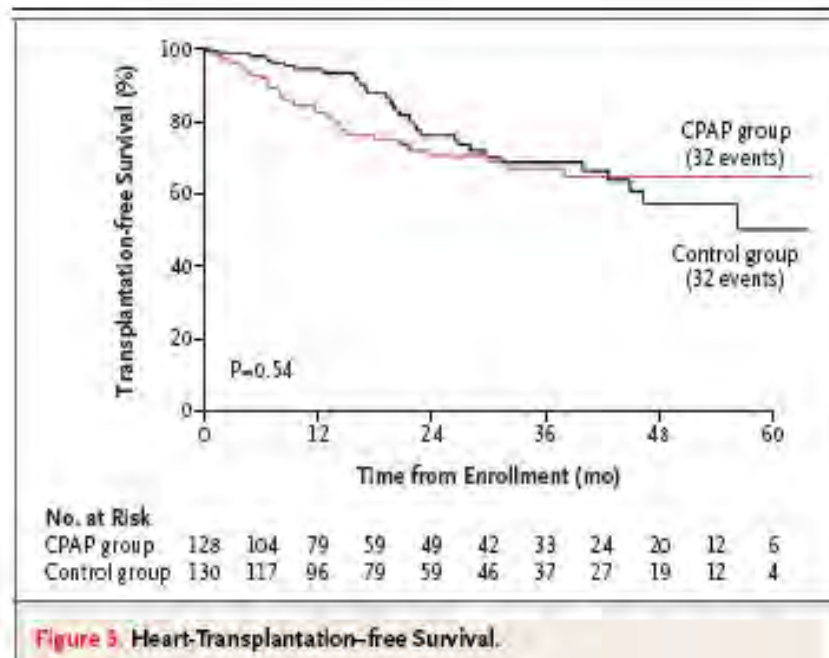
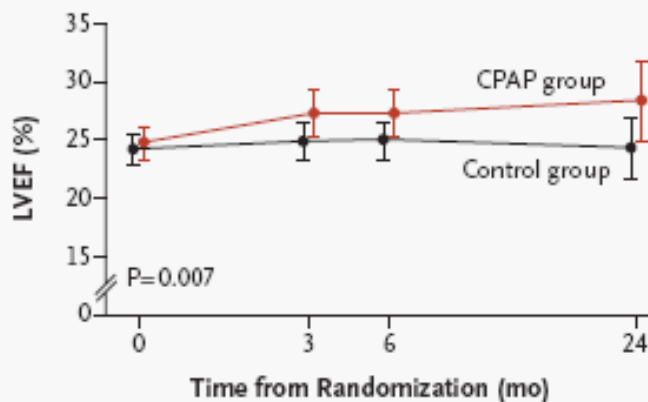
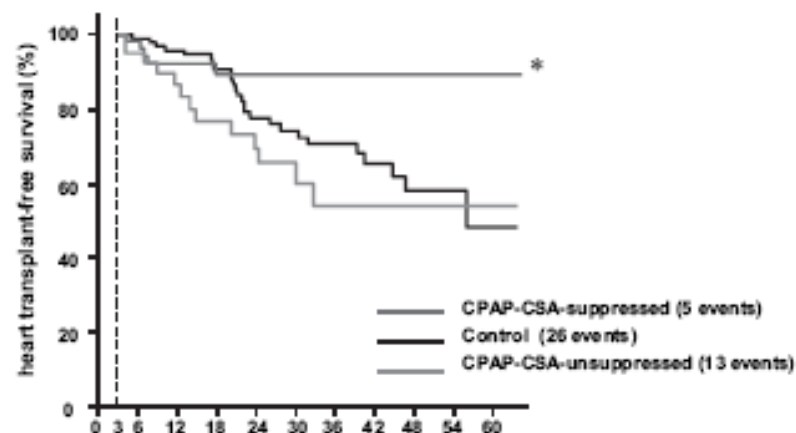
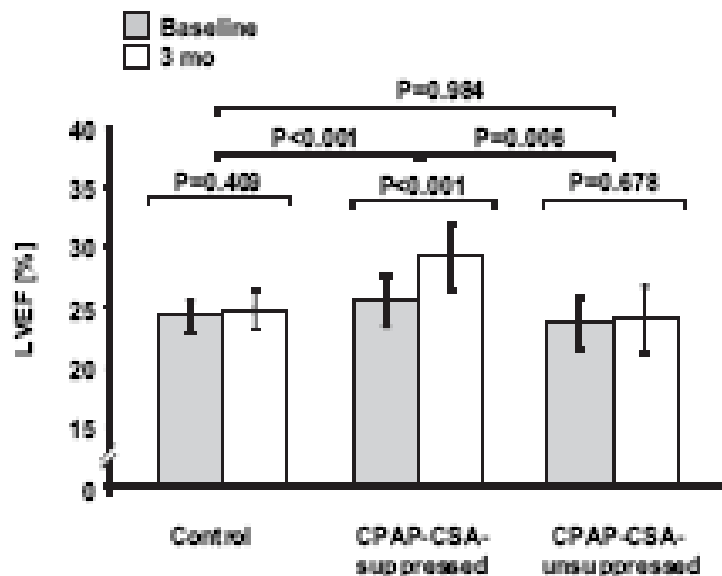


Figure 3. Heart-Transplantation-free Survival.

**Multicèntric, 258 pacient (SAHS i pacients amb CA-CSR)
Efectes positius sobre FEVE, el resultat primari:
taxa combinada de mort i transplantament
no millora i té efectes potencialment deleteris.
S'ATURA L'ESTUDI**

Suppression of Central Sleep Apnea by Continuous Positive Airway Pressure and Transplant-Free Survival in Heart Failure

A Post Hoc Analysis of the Canadian Continuous Positive Airway Pressure for Patients With Central Sleep Apnea and Heart Failure Trial (CANPAP)



	Time from enrollment (mo)											
number at risk	0	3	6	12	18	24	30	36	42	48	54	60
CPAP-CSA-suppressed (n=67)	67	51	38	31	27	23	21	15	11	7	3	
Control (n=110)	110	99	83	71	59	41	33	22	15	9	3	
CPAP-CSA-unsuppressed (n=43)	43	36	27	22	18	12	9	6	6	4	2	

Aquells que normalitzen CSA (<15) i, per tant la CPAP és eficaç, milloren la supervivència.

En resum: SAHS- INSUFICIÈNCIA CARDÍACA

- CANPAP. Bradley D. et al. (*N Engl J Med.* 2005; 353: 2025-33.)
- CANPAP posthoc analysis. Artz M. et al (*Circulation.* 2007; 115: 3173-3180.)

*Recomana: "**CPAP should be used for Central Sleep Apnea in Congestive Heart Failure Patients**"*

(Journal of Clinical Sleep Medicine. 2006; 2 (4))

- Javiheri S.

*Recomana: "**CPAP should not be used for Central Sleep Apnea in Congestive Heart Failure Patients**"*

(Journal of Clinical Sleep Medicine. 2006; 2(4))

"En aquells no responedors, probablement per predomini d'apnees centrals, valorar altres formes de ventilació."



MORTALITAT CARDIO-VASCULAR

EFICÀCIA TRACTAMENT ???

CAUSA-EFECTE

FISIO-PATOLOGIA

ASSOCIACIÓ

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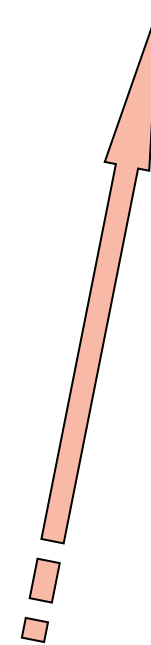
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A**

Assats
randomitzats
i controlats

Estudis
prospectius
(longitudinals)

Estudis animals
Mediadors biològics
(*inflamació, endoteli...*)

Estudis: transversals
Cas Control



"RISC RELATIU DE MORT CARDIO-VASCULAR EN LA SAHS. Models ajustats".

RR (95% IC)

— 2.87 —

— 3.30 —

— 5.20 —

— 2.09 —

IAH

> 30

> 36

> 30

> 30

Referència

Marín. Lancet. 2005
RR mort cardio-vascular

Yaggi. NEJM. 2005
RR mort o Ictus

Young (Wisconsin). Sleep. 2008;
31: 1071.
RR de mort SAHS no tractats

Punjabi(SHHS).PloS Med 2009
6: e1000132 .
RR de mort en homes 40-70

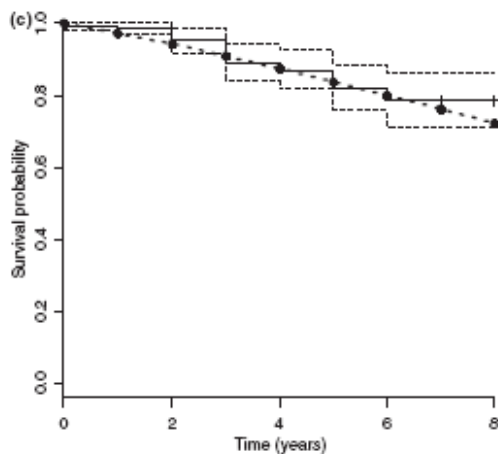
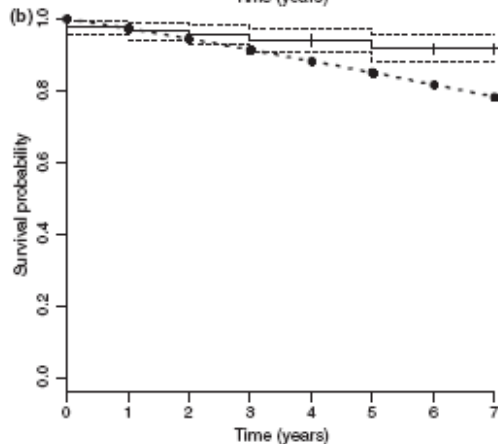
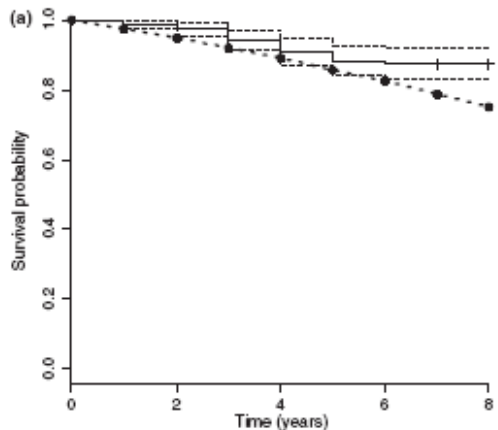
0 1 2 3 4 5 6 7 8 9 10



MORTALITAT

Unexpected survival advantage in elderly people with moderate sleep apnoea

PERETZ LAVIE and LENA LAVIE



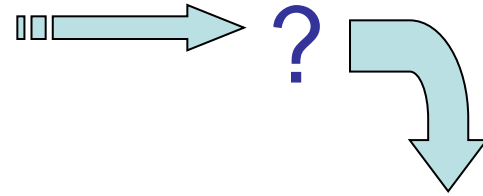
Efecte protector en pacients de més de 70 anys amb IAH 20-40
?

En resum: SAHS- MORTALITAT

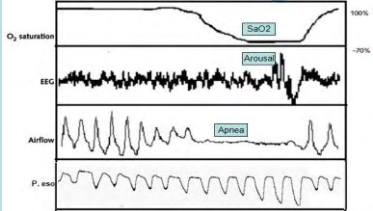
- Indicis de causalitat.
- Ho mirem com vulguem els diferents articles coincideixen a demostrar que **l'IAH >30 s'associa** a un major risc de mortalitat cardio-vascular.
- Pot haver-hi influència del tractament amb CPAP nasal en la mortalitat cardio-vascular, especialment en SAHS greu.



CPAP NASAL

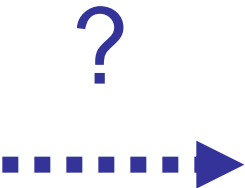


APNEES
DESSATURACIÓ
DESPERTARS
PRESSIONS
NEGATIVES




SOMNOLÈNCIA
TS. NEURO-
COGNITIUS


MEDIADORS
INFALMATORIS
PROCOAGULANTS
ESTRÈS OXIDATIU
DISFUNCIÓ
ENDOTELIAL
FCS. PROARTERIO
ESCLERÒTICS



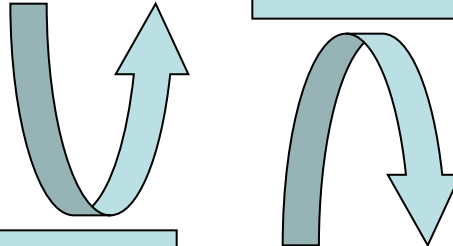
SDRE.
METABÒLICA
ICTUS



I. CARDÍACA



HTA
MORBI-MORTALITAT
CARDIO- VASCULAR



FACTORS DE CONFUSIÓ: OBESITAT!!!

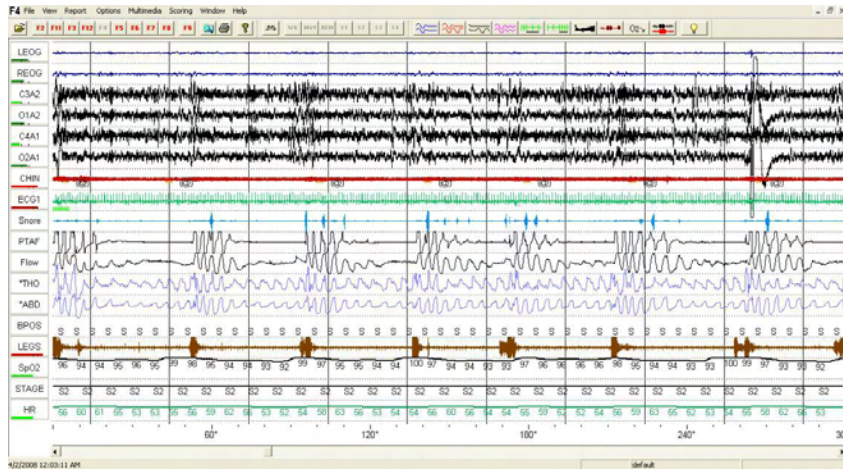
FACTORS GENÈTICS PROTECTORS

TEMPS 

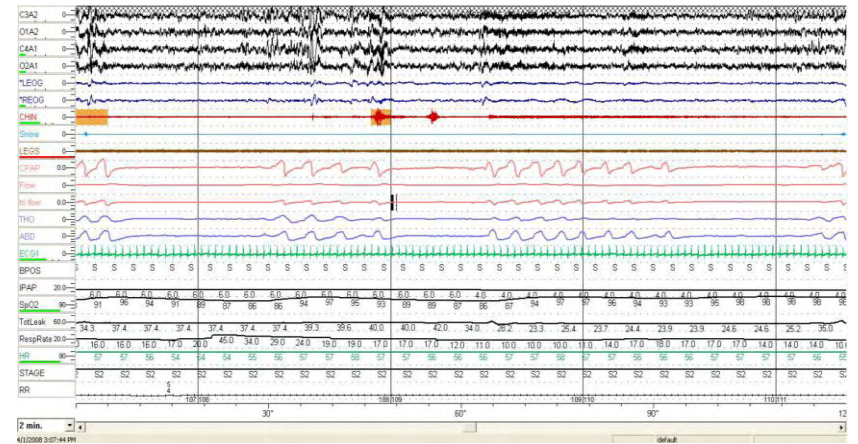
COMPLEX SLEEP APNEA

"APNEA DEL SON COMPLEXA" (Javaheri S. et al. J Clin Sleep Med. 2008;4:305)

POLISOMNOGRAFIA BASAL



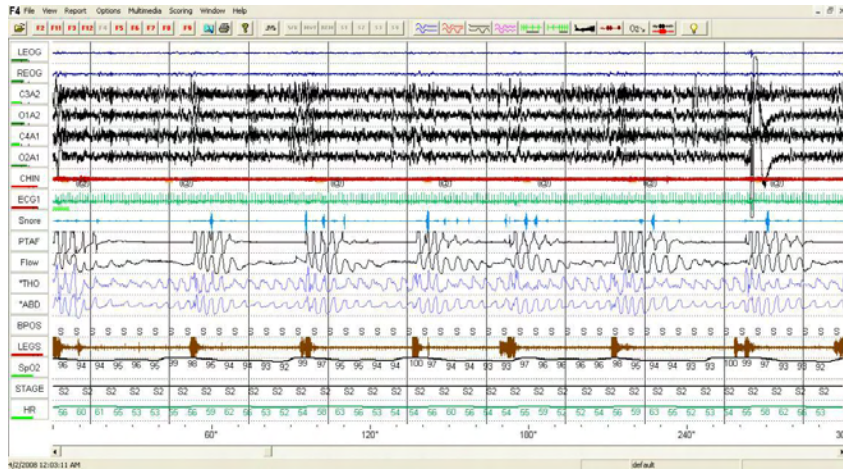
DETERMINACIÓ CPAP: APNEES CENTRALS



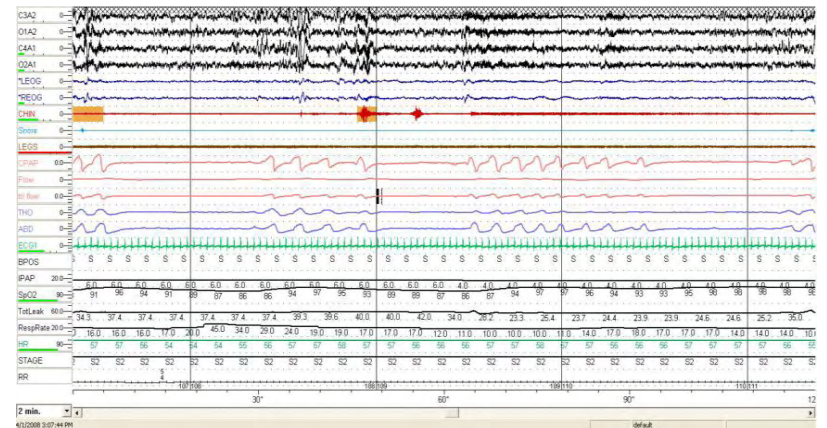
COMPLEX SLEEP APNEA

"APNEA DEL SON COMPLEXA" (Javaheri S. et al. J Clin Sleep Med 2008; 4:305)

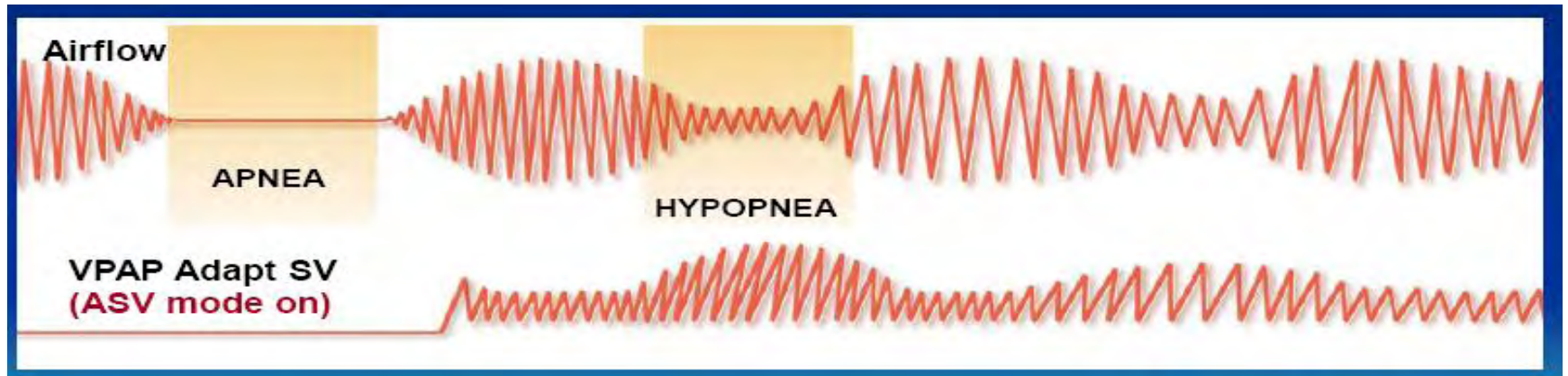
POLISOMNOGRAFIA BASAL



DETERMINACIÓ CPAP: APNEES CENTRALS



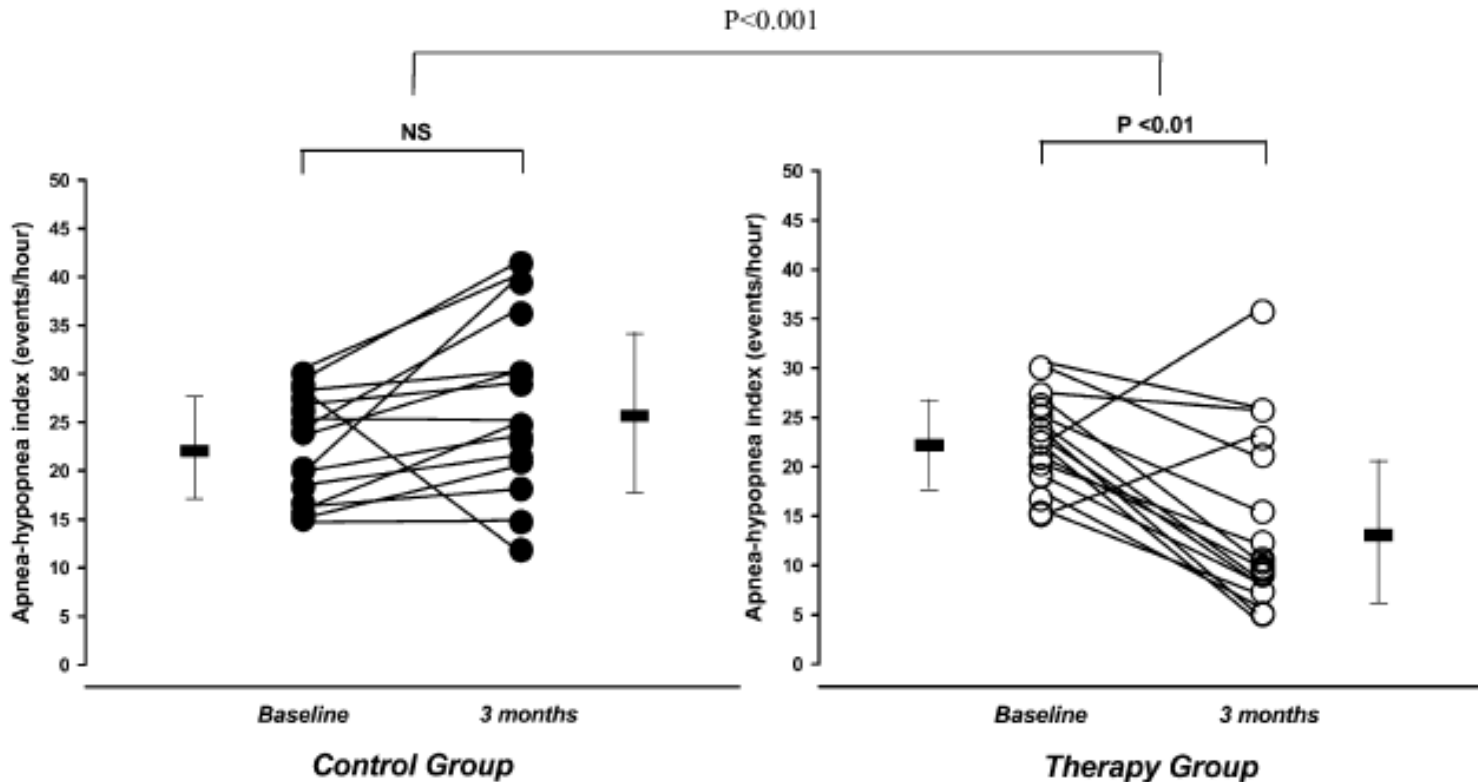
"VENTILACIÓ AMB PRESSIÓ SUPORT ADAPTATIVA"



Effects of Oropharyngeal Exercises on Patients with Moderate Obstructive Sleep Apnea Syndrome

Kátia C. Guimarães¹, Luciano F. Drager¹, Pedro R. Genta¹, Bianca F. Marcondes¹, and Geraldo Lorenzi-Filho¹

¹Sleep Laboratory, Pulmonary Division, Heart Institute (InCor), University of São Paulo Medical School, São Paulo, Brazil



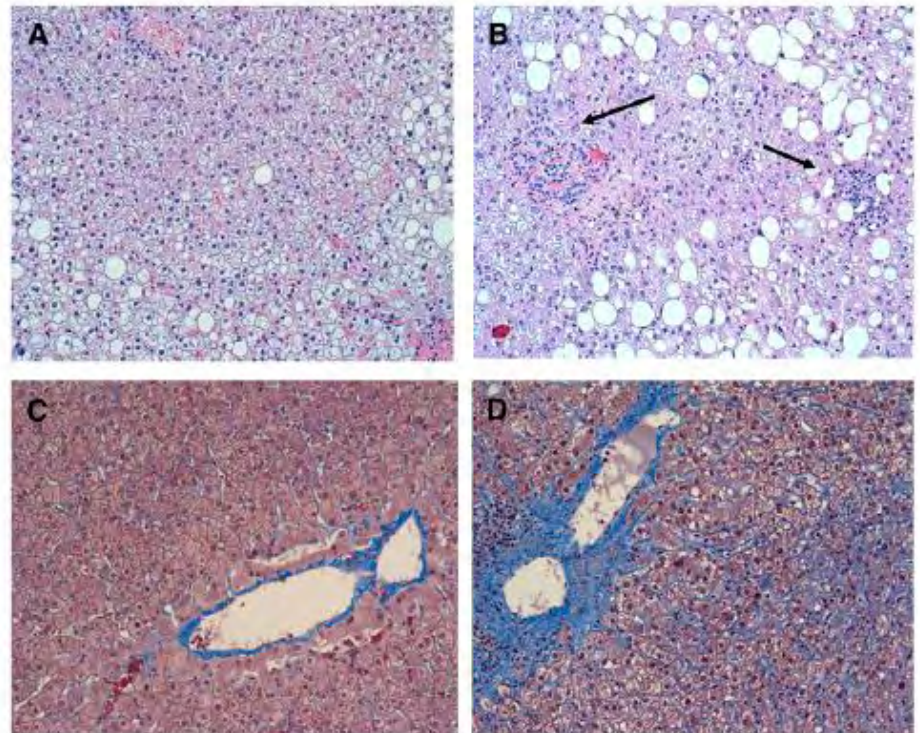
30 minuts 3 mesos

Am J Respir Crit Care Med. 2009; 179: 962-966

Obstructive Sleep Apnea, Insulin Resistance, and Steatohepatitis in Severe Obesity

Vsevolod Y. Polotsky¹, Susheel P. Patil¹, Vladimir Savransky¹, Alison Laffan¹, Shannon Fonti¹, Leigh A. Frame¹, Kimberly E. Steele², Michael A. Schweitzer², Jeanne M. Clark^{3,4}, Michael S. Torbenson⁵, and Alan R. Schwartz¹

Obesitat i RI s'associen a EHNA
Dessaturació s'associa a
canvis histològics.
Sense correlació amb IAH





http://dels.nas.edu/ilar_n/ilarjournal/50_3/html/

ILAR Journal Vol. 50(3)
Sleep-Disordered Breathing: Exploring a Human Disorder Using Animal Models

ALTRES ARTICLES RECOMANATS: Revisions

- **SÍNDROME METABÒLICA I SAHS:**

- Levy P, Bonsignore MR, Eckel J. Eur Respir J. 2009; 34: 243-26.
- Tasali E, Ip M. Proc Am thorac Soc. 2008; 5: 207-217.

- **INFLAMACIÓ, ESTRÈS OXIDATIU I SAHS:**

- Lavie L. Sleep Med rev. 2003; 7:35-51.
- Gozal D. Am J Respir Crit Care Med. 2008; 177:369-375.
- Erna S., Miroslaw A, Gilason MT, teff KL, Pack A. Sleep. 2009; 32:447-440.





SALUT

- **La Lleona de Girona, també en quarantena**

MESURA: El consistori ha decidit treure els graons que faciliten l'accés a l'escultura perquè creu que fer un petó al cul de la figura pot ser un focus del virus A (H1N1)

TRADICIÓ: Els visitants segueixen una llegenda que assegura que així tornaran a la ciutat



