

# LE DIS-FUNZIONI NEUROSENSORIALI DELL'ANZIANO IN AMBITO ORL

Venerdì 14 aprile 2023

# OSAS NELL'ANZIANO

DR GIOVANNI CAMMAROTO

UOC ORL, FORLI'

# Il sonno nell'anziano

- Riduzione sonno profondo/Riduzione ore di sonno
- Decubito alterato
- Nicturia da IPB/Ins cardiaca
- Patologia neurodegenerativa



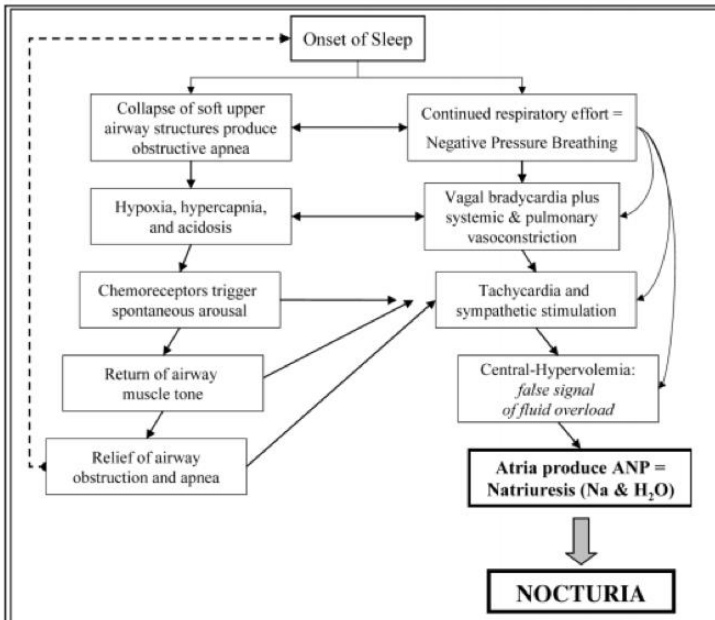
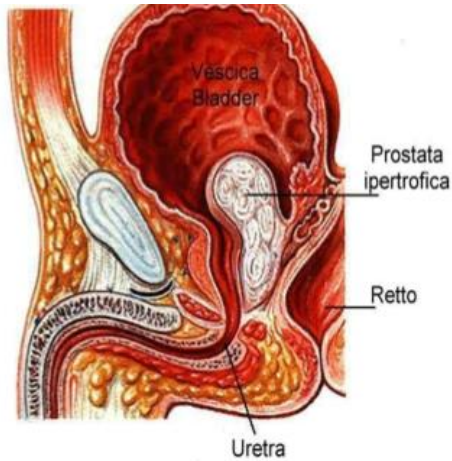


Figure 1—The OSA – Nocturia Model



Il lobo medio prostatico ipertrofico determina una ostruzione al deflusso dell'urina

## Obstructive Sleep Apnea, Nocturia and Polyuria in Older Adults

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**Study Objective:** The purpose of this study was to examine the relationship between nocturia and obstructive sleep apnea (OSA) in community dwelling older men and women

**Design:** A repeated measures design was employed over a 24-hour period.

**Setting:** The study was conducted in a clinical research center.

**Participants:** Thirty community-dwelling elders (mean age=65.5, SD=8.4 years) with symptoms of nocturia and sleep disordered breathing, volunteered to participate. Both men (n=13) and women (n=17) and minority subjects (African-Americans, n=19; Caucasian, n=11) were included in the study.

**Interventions:** NA

**Measurements:** Blood specimens were collected every 4 hours, except for an 8-hour collection period overnight. Urine specimens were collected ad libitum and at the end of each data collection interval. Urine and blood specimens were analyzed for ANP and AVP content. Polysomnography was conducted using a full 18-channel montage. Apnea was defined as a

decrease in airflow of  $\geq 90\%$  for a minimum of 10 seconds. Hypopnea was defined as  $\geq 30\%$  decrease in airflow and desaturations required a  $\geq 3\%$  decrease in oxygen saturation for a minimum of 10 seconds. The apnea hypopnea index (AHI) was calculated as the sum of apneas and hypopneas divided by hours of sleep.

**Results:** Twenty of the thirty subjects were found to have clinically diagnosable OSA (AHI  $\geq 5$ ). AVP excretion was not correlated with changes in AHI levels. Conversely, total urine output, plasma ANP and urine ANP excretion were significantly higher among subjects with higher AHI levels ( $>15$ ).

**Conclusion:** In subjects with elevated AHI ( $>15$ ), nighttime urine production and ANP excretion are elevated.

**Key Words:** obstructive sleep apnea, polyuria, homeostasis, atrial natriuretic factor, vasopressin, nocturia

**Citation:** Umlauf MG; Chasens ER; Greevy RA et al. Obstructive sleep apnea, nocturia and polyuria in older adults. *SLEEP* 2004;27(1):139-44.

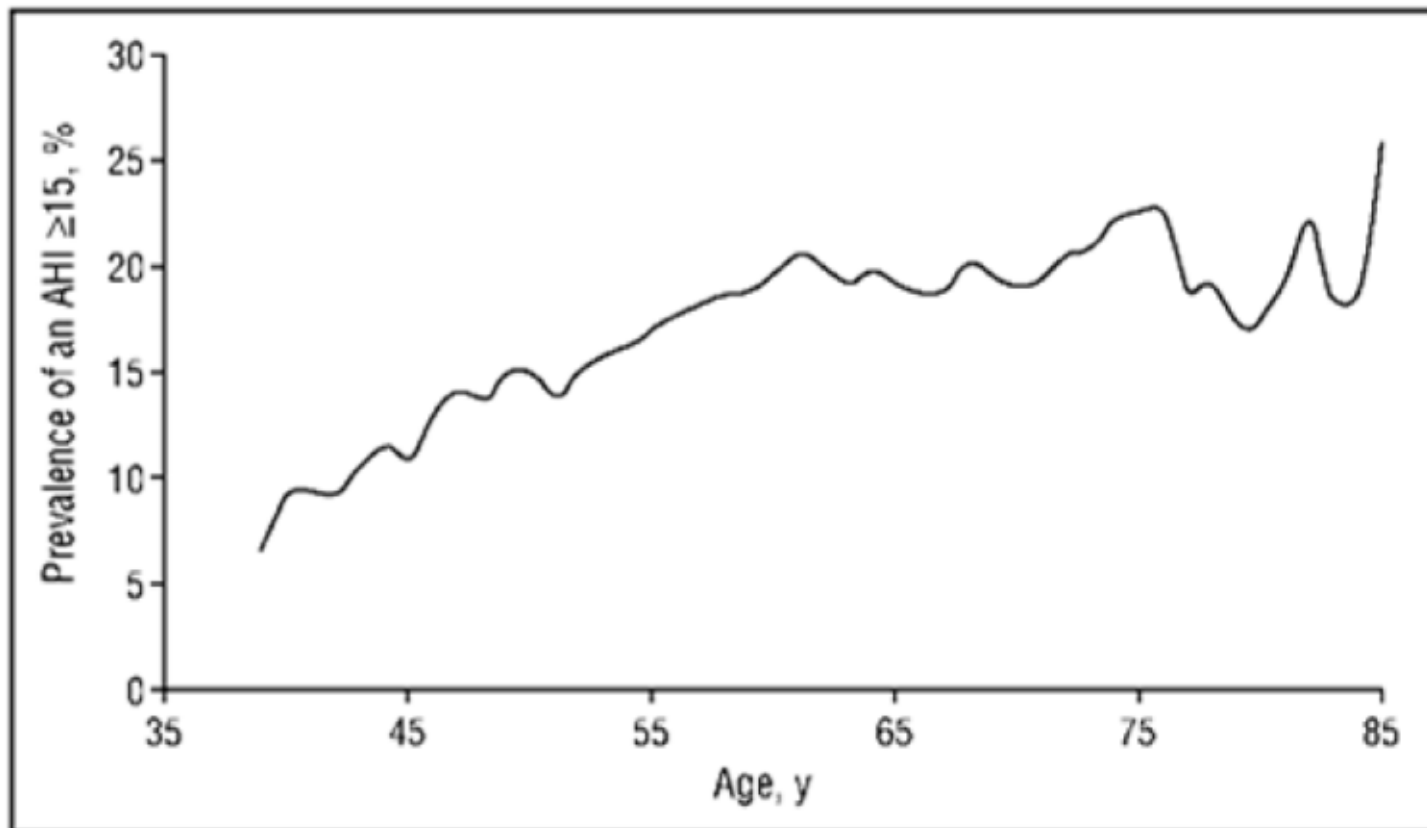
# Sleep Apnea and the Elderly

**Nalaka S. Gooneratne, M.D., M.Sc., A.B.S.M.**

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Associate Director, Clinical and Translation Research Center, University of Pennsylvania

# Prevalence of Sleep Disordered Breathing



-Young et al. Arch Intern Med 2002

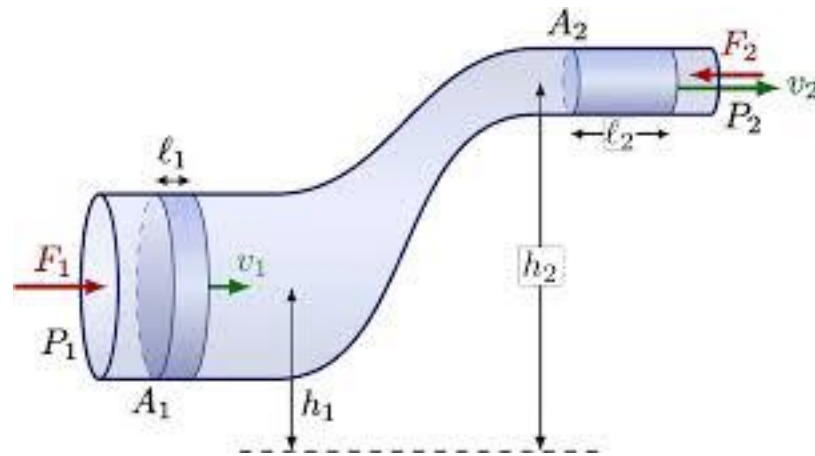
## Mechanism of Age-Dependent SDB

- Muscle fibers
  - Age-associated changes in fiber-type distribution in the genioglossus (tongue) of Wistar rats
  - Results in decreased muscle endurance and increased risk of SDB
  - Oliven et al., Exp Gerontol, 2001
- Repetitive barotrauma model
- Increased rates of Central Sleep Apnea due to CHF, etc.
- Increases in pharyngeal collapsibility and resistance (Eikermann et al., Chest, 2007)

## Risk Factors: Edentulous

- Edentulous patients have higher rates of SDB (AHI $\geq$ 15)
  - Denture use: OR 6.29 (95% CI: 1.71-23.22)
  - BMI: OR 1.15 (95% CI: 0.97-1.37)
  - Endeshaw et al., J Public Health Dent, 2004
- Mechanism
  - Reduced retropharyngeal space (Bucca et al., Resp Res, 2006)
  - Chronic inflammatory changes affecting tongue associated with denture use

# Aging changes night airway dynamics







## The aging effect on upper airways collapse of patients with obstructive sleep apnea syndrome

Claudio Vicini<sup>1,2</sup> · Andrea De Vito<sup>1</sup> · Giannicola Iannella<sup>3</sup> · Riccardo Gobbi<sup>1</sup> · Ruggero Massimo Corso<sup>4</sup> · Filippo Montevercchi<sup>1</sup> · Antonella Polimeni<sup>5</sup> · Marco De Vincentiis<sup>3</sup> · Giuseppe Meccariello<sup>1</sup> · Giovanni D'agostino<sup>1</sup> · Giovanni Cammaroto<sup>1</sup> · Francesco Stomeo<sup>2</sup> · Giuseppe Magliulo<sup>3</sup>




**Table 5** Sites of obstruction, pattern and grade of collapse in according to the VOTE classification proposed by Kezirian et al. [32]

Site of collapse	Grade of collapse according to the VOTE classification	> 65 years 55 patients		< 65 years 50 patients		<i>p</i> Chi-square test
		Number of patients	Percentage	Number of patients	Percentage	
VELUM	0 (no obstruction)	0	–	6	12%	<b>0.009</b>
	1 (partial obstruction)	5	9.1%	9	18%	0.2
	2 (complete obstruction)	50	90.9%	35	70%	<b>0.01</b>
	Concentric	28/55	50.9%	26/42 <sup>a</sup>	61.9%	0.3
	A-P	23/55	41.8%	16/42 <sup>a</sup>	38%	0.8
	Lateral	4/55	7.2%	0	–	0.7
OROPHARYNX LATERAL WALLS <sup>b</sup>	0 (no obstruction)	29	52.7%	14	28%	<b>0.02</b>
	1 (partial obstruction)	14	25.4%	11	22%	0.8
	2 (complete obstruction)	11	20%	25	50%	<b>0.002</b>
TONGUE BASE	0 (no obstruction)	8	14.5%	7	14%	1
	1 (partial obstruction)	22	40%	18	36%	0.6
	2 (complete obstruction)	25	45.5%	25	50%	0.7
EPIGLOTTIS	0 (no obstruction)	28	50.9%	36	72%	<b>0.02</b>
	1 (partial obstruction)	16	29.1%	2	4%	<b>0.0006</b>
	2 (complete obstruction)	11	20%	12	24%	0.6
	A-P	24/27 <sup>b</sup>	88.8%	11/14 <sup>c</sup>	78.5%	0.3
	Lateral	3/27 <sup>b</sup>	11.2%	3/14 <sup>c</sup>	21.5%	0.3



## Aging effect on sleepiness and apneas severity in patients with obstructive sleep apnea syndrome: a meta-analysis study

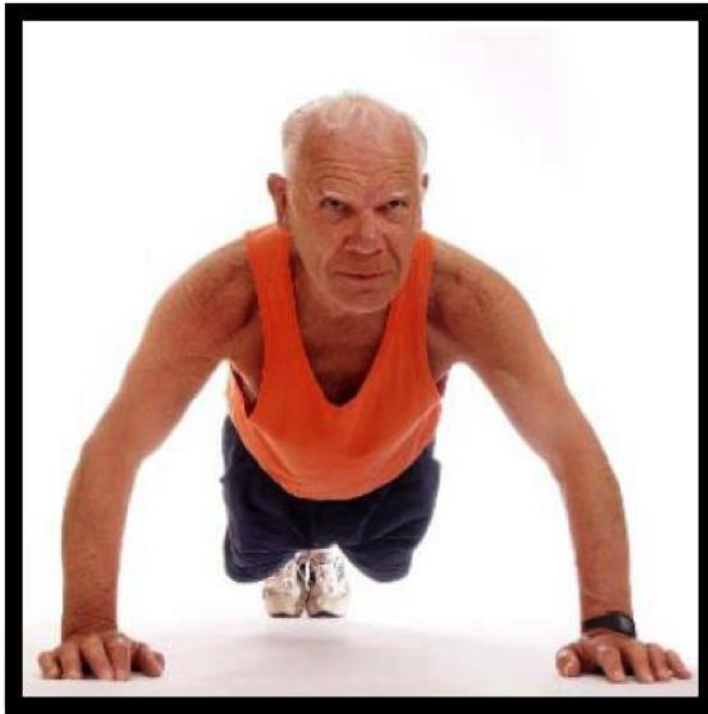
Giannicola Iannella<sup>1,2</sup>  · Claudio Vicini<sup>2,3</sup> · Andrea Colizza<sup>1</sup> · Giuseppe Meccariello<sup>2</sup> · Antonella Polimeni<sup>4</sup> · Antonio Greco<sup>1</sup> · Marco de Vincentiis<sup>1</sup> · Andrea de Vito<sup>2</sup> · Giovanni Cammaroto<sup>2</sup> · Riccardo Gobbi<sup>2</sup> · Chiara Bellini<sup>2</sup> · Elisabetta Firinu<sup>2</sup> · Stefano Pelucchi<sup>3</sup> · Giampiero Gulotta<sup>1</sup> · Irene Claudia Visconti<sup>1</sup> · Milena di Luca<sup>5</sup> · Giuseppe Magliulo<sup>1</sup>



**Conclusion** Although a direct correlation between aging and AHI values would seem to be present, no significant differences in baseline AHI between young (< 65-years-old) and elderly (> 65-years-old) patients emerged in this meta-analysis study. The effects of OSAS on daytime sleepiness seem to be much more prominent in young or middle-aged patients than in elderly patients.

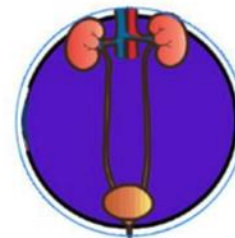
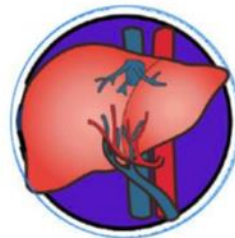
# Managing sleep disorders in the elderly

By Judith Townsend-Roccichelli, PhD, ; Julie T. Sanford, DNS, RN; and  
Elizabeth VandeWaa, PhD



**To operate or not to operate,  
that is the question.**

# COMORBIDITIES



*Cleve Clin J Med (2006) 73:S4-7.*

# H&N SURGERY FOR CANCER IN ELDERLY

ACTA OTORHINOLARYNGOLOGICA ITALICA 2016;36:185-193; doi: 10.14639/0392-100X-817

## LARYNGOLOGY

### Unravelling the risk factors that underlie laryngeal surgery in elderly

*Svelare i fattori di rischio che sottendono la chirurgia laringea negli anziani*

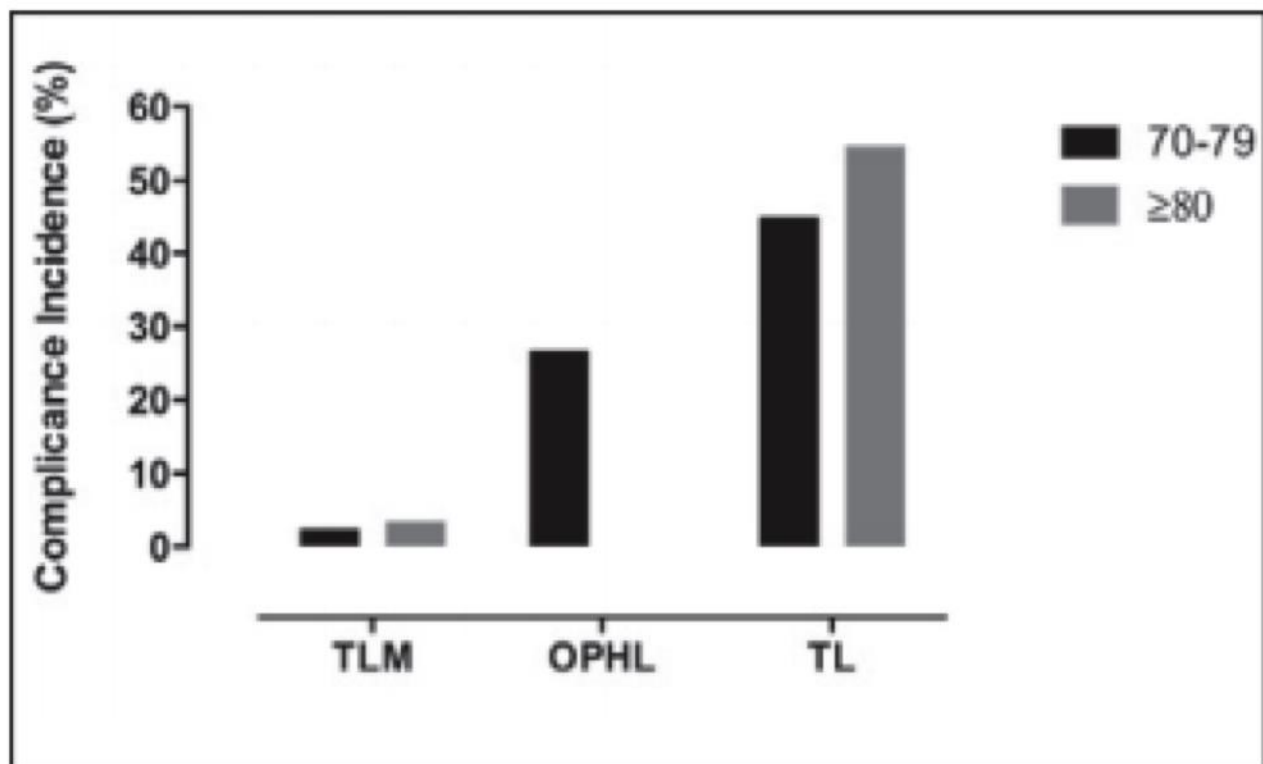
E. CROSETTI<sup>1</sup>, A. CARACCILO<sup>2</sup>, G. MOLTENI<sup>3</sup>, A.E. SPRIO<sup>4</sup>, G.N. BERTA<sup>4</sup>, L. PRESUTTI<sup>3</sup>, G. SUCCO<sup>2</sup>

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#### SUMMARY

Older patients are not considered good candidates to undergo more challenging therapeutic treatments, e.g. highly invasive surgery and complex chemotherapy. However, their exclusion from standard therapeutic options is not justifiable. Herein, we reviewed 212 patients aged  $\geq 70$ , affected with laryngeal squamous cell carcinoma, and treated with transoral laser microsurgery or open neck (partial / total) laryngectomy with radical intent. The main aim was to compare patient outcomes to identify predictive factors that can be used by surgeons to choose the most appropriate treatment option. In our cohort, patients affected with more advanced tumour and hence treated by invasive open neck surgeries (above all TL) are more prone to develop complications and undergo fatal outcome than those with early disease treated by laser microsurgery, independently of age at surgery. In conclusion, elderly patients affected by laryngeal cancer can be treated similarly to younger patients, keeping in mind that more invasive surgeries are associated with a higher risk of developing complications. The advantages of mini-invasive surgery make it a possible first choice treatment in very old and frail patients suffering from laryngeal cancer, especially considering the recent success in treatment of some advanced stage tumours. Furthermore, comorbidities, by themselves, should not be used as exclusion criteria for subjecting an elderly patient to a different treatment that is from standard therapy.

KEY WORDS: Transoral laser microsurgery • Open partial laryngectomy • Supracricoid partial laryngectomy • Total laryngectomy • Laryngeal cancer • Elderly



**Fig. 1.** Incidence of complications on patients treated by transoral laser microsurgery (TLM), open partial horizontal laryngectomy (OPHL), or total laryngectomy (TL).

## Conclusions

In conclusion, we infer that elderly patients affected by laryngeal cancer can be treated just as younger patients, keeping in mind that more invasive surgeries are associated with a higher risk of complications.

Therefore, while for endoscopic surgery there is no reason to limit or “ponder” whether to perform surgery or not for patients of any age, open surgery on patients  $\geq 80$  must be thoroughly evaluated due to the higher rate of complications.

The advantages of mini-invasive surgery place it as a possible first choice treatment in very old and frail patients suffering from laryngeal cancer.



## LITERATURE IN OSA

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# Sleep Surgery in the Elderly: Lessons from the National Surgical Quality Improvement Program

Christopher J. Gouveia, MD<sup>1</sup>, John D. Cramer, MD<sup>1</sup>, Stanley Yung-Chuan Liu, MD, DDS<sup>2</sup>, and Robson Capasso, MD<sup>2</sup>

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**Table 2.** Patient Characteristics by Age Group.

	<65 y (n = 2123)		≥65 y (n = 107)		P Value
	n	%	n	%	
Age, y <sup>a</sup>	42.6 (10.9)		69.6 (5.1)		<.001
Sex					.24
Female	558	26.3	36	33.6	
Male	1565	73.7	71	66.4	
Race					.06
White	1240	71.0	73	79.3	
Black	229	13.1	4	4.3	
Hispanic	183	10.5	12	13.0	
Asian	94	5.4	3	3.3	
Body mass index					.02
<25	200	9.4	16	15.0	
25-30	646	30.4	42	39.3	
30-35	645	30.4	28	26.2	
35-40	351	16.5	16	15.0	
>40	281	13.2	5	4.7	
Smoker in the past year	368	17.3	6	5.6	.002
Diabetes mellitus	159	7.5	16	15.0	.006
Dyspnea	117	5.5	12	11.2	.03
COPD	19	0.9	7	6.5	<.001
Hypertension on medication	653	30.8	68	63.6	<.001
Steroid use chronically	20	0.9	4	3.7	.03
ASA score					<.001
1	112	5.3	4	3.7	
2	1275	60.1	39	36.4	
3	726	34.2	62	57.9	
4	10	0.5	2	1.9	
Operative duration, min <sup>a</sup>	64.4 (50.0)		61.4 (62.6)		.33

Abbreviations: ASA, American Society of Anesthesiologists; COPD, chronic obstructive pulmonary disease.

<sup>a</sup>Average (SD).

**Table 6.** Rate of Complications by Age Group.

Complication	<65 y (n = 2123)		≥65 y (n = 107)		P Value
	n	%	n	%	
No complication	2044	96.3	99	92.5	.05
Morbidity or mortality	79	3.7	8	7.5	
Specific complications					
Death	0	—	1	0.9	
Return to the operating room	45	2.1	2	1.9	
Surgical site infection	15	0.7	0	—	
Reintubation or prolonged ventilation	9	0.4	1	0.9	
Pneumonia	7	0.3	1	0.9	
Urinary tract infection	3	0.1	2	1.9	
Wound dehiscence	3	0.3	2	1.9	
Sepsis or septic shock	4	0.2	0	—	
DVT or PE	2	0.1	1	0.9	
Average length of stay, d	0.9		1.1		.53

Abbreviations: DVT, deep venous thrombosis; PE, pulmonary embolus.

# Terapia non chirurgica



## ORAL APPLIANCES

Oral appliances: These devices, which move the lower jaw up and forward, can be effective, especially in mild to moderate cases.

Guidelines for their use are identical to those in younger people.

In older individuals, however, special attention must be paid to the examination of the jaws and teeth since at least 8 healthy teeth in each of the upper and lower jaws are required to anchor the appliances.

**At this time, patients without adequate dentition cannot be treated with such appliances.**



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### Evidence-Based Recommendations for the Assessment and Management of Sleep Disorders in Older Persons

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<sup>3</sup>UCLA David Geffen School of Medicine and GRECC, VA Greater Los Angeles Healthcare Systems

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<sup>5</sup>Neuroscience Clinical and Translational Center, University of Pittsburgh School of Medicine

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# Problema evidente

20

Clínica de Otorrinolaringología y Otorrinolaringología



# Gold standard

UO Venezia  
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sonno



DOI: 10.1111/eci.12011

## ORIGINAL ARTICLE

## Comorbidities and survival in obstructive sleep apnoea beyond the age of 50

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### ABSTRACT

**Background** Although mortality risk associated with obstructive sleep apnoea (OSA) tends to disappear from the age of 50, it has been suggested that OSA treatment by continuous positive airway pressure (CPAP) improves survival even in older subjects. Life expectancy of subjects with several diseases is worse if OSA coexists. The objectives of this study were to evaluate the relevance of comorbidities in the relationship between OSA and mortality, and in the effect of CPAP on survival, in subjects  $\geq 50$  years old.

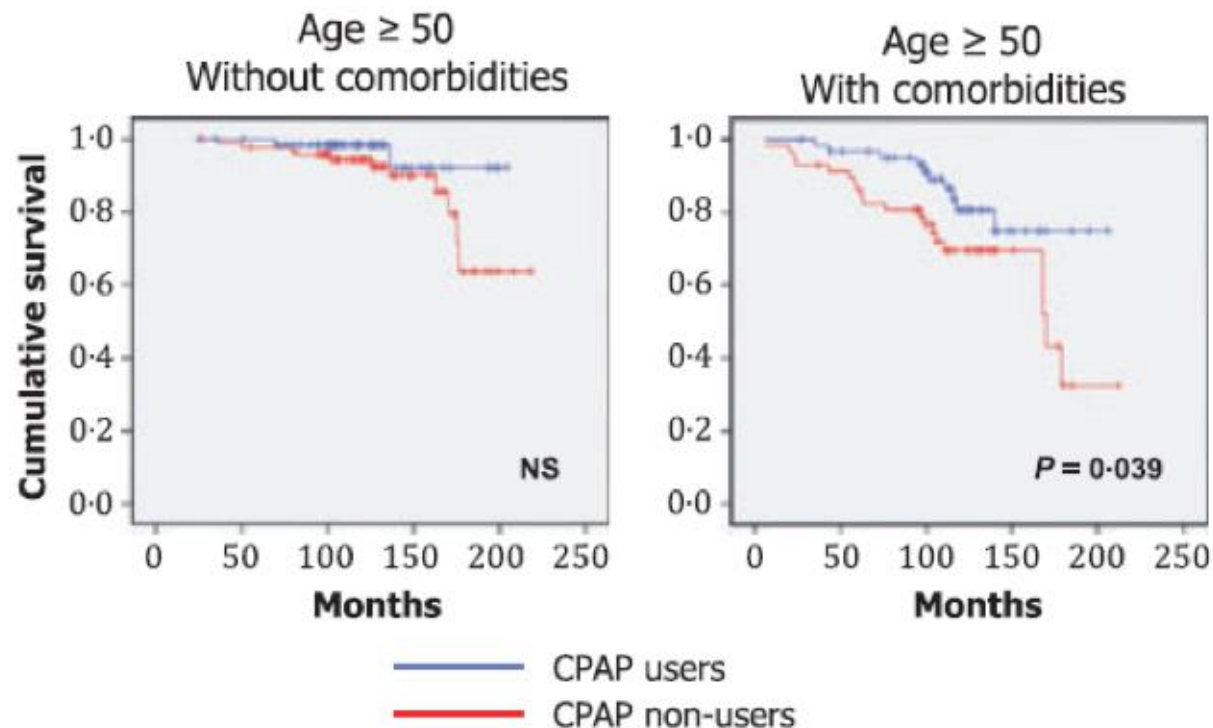
**Methods** Data from 810 patients studied by polysomnography for suspected OSA between 1991 and 2000 were retrospectively evaluated. In 2009, state of survival and use of CPAP were enquired. Three hundred and thirteen subjects were  $< 50$  and 497 were  $\geq 50$  years at diagnosis.

**Results** Age and comorbidities, but not apnoea/hypopnoea index (AHI) or lowest nocturnal arterial oxygen saturation (Nadir  $\text{SaO}_2$ ), predicted mortality in the whole sample. Nadir  $\text{SaO}_2$  was related to mortality among the younger subjects without comorbidities ( $P = 0.01$ ), but not among the older subjects. In the older patients with an AHI  $> 30$  CPAP treatment was associated with a better survival only if comorbidities coexisted.

**Conclusions** Unlike in younger subjects, in subjects  $\geq 50$  years old, comorbidities do not mask an effect of OSA on mortality. Among OSA subjects  $\geq 50$  years old, comorbidities could separate those who may expect an improvement in survival with CPAP treatment from those who may not. Possibly, after the age of 50, OSA per se does not affect survival, but worsens prognosis of subjects with coexisting diseases.

**Keywords** Ageing, continuous positive airway pressure, epidemiology, mortality, obstructive sleep apnoea, treatment.

Eur J Clin Invest 2013; 43 (1): 27–33



**Figure 3** Continuous positive airway pressure (CPAP) treatment and survival in subjects aged  $\geq 50$  with an apnoea/hypopnoea index  $> 30$ . Left panel: without comorbidities; right panel: with comorbidities.




# Compliance with CPAP Therapy in Older Men with Obstructive Sleep Apnea

Patricia Russo-Magno MD, Aidan O'Brien MD, Toni Panciera, Rnp, Rrt,  
Sharon Rounds MD

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Volume 49, Issue 9  
September 2001  
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## Abstract

**OBJECTIVES:** Factors specifically affecting compliance with continuous positive airway pressure (CPAP) in older patients with obstructive sleep apnea (OSA) have not been described. The purpose of this study is to determine which factors are associated with compliance and noncompliance in older patients, a growing segment of the population.

**DESIGN:** A retrospective chart review of older male patients prescribed CPAP therapy for OSA over an 8-year period.

**SETTING:** Veterans Affairs Medical Center.

**PARTICIPANTS:** All patients age 65 and older for whom CPAP therapy had been prescribed for treatment of OSA in the past 8 years.

**MEASUREMENTS:** Records of all older male patients prescribed CPAP therapy for OSA over the last 8 years were reviewed. Compliance was defined by time-counter readings averaging 5 or more hours of machine run-time per night.

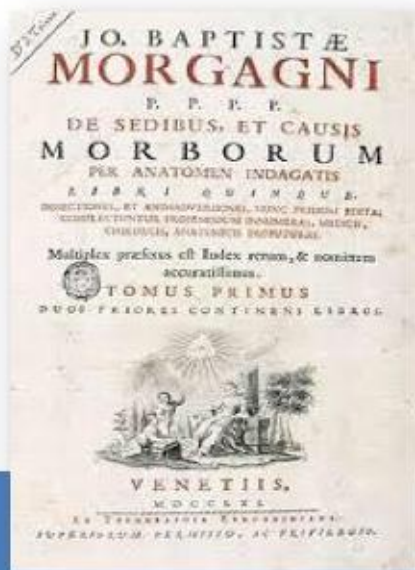
**RESULTS:** Of 33 older male patients with OSA studied, 20 were found to be compliant and 13 noncompliant with nasal CPAP therapy. The mean age ( $\pm$  SEM) at the time of diagnosis of OSA in the compliant group was 68 ( $\pm$ 1) years, whereas that of the noncompliant group was 72 ( $\pm$ 1) years ( $P < .05$ ). Of the compliant patients, 95% attended a CPAP patient education and support group, whereas only 54% of noncompliant patients attended ( $P = .006$ ). Resolution of initial symptoms of OSA with CPAP therapy was significantly associated with compliance. Symptom resolution occurred in 90% of compliant patients and in only 18% of noncompliant patients ( $P < .0002$ ). Factors that were significantly associated with noncompliance with CPAP were cigarette smoking, nocturia, and benign prostatic hypertrophy (BPH). Of noncompliant patients, 82% complained of nocturia, whereas only 33% of compliant patients complained of nocturia ( $P = .02$ ). BPH was diagnosed in 62% of noncompliant patients and in only 15% of compliant patients ( $P = .004$ ). Diuretic use was more common in the compliant group and, therefore, was not a cause of increased nocturia in noncompliant patients.

**CONCLUSION:** In older male patients with OSA, compliance with CPAP therapy is associated with attendance at a patient CPAP education and support group. Resolution of symptoms with therapy also appears to be associated with enhanced compliance. In addition, we found an association between nocturia and the existence of BPH in older men with OSA who are not compliant with nasal CPAP. Larger observational studies should be performed to confirm these findings, and, if so confirmed, then further studies to determine whether treatment of BPH in older men with OSA improves compliance with CPAP.





«His Anatomic Majesty»



GB Morgagni ( born in Forlì, ITALY, Feb 26 th 1682 ) as reconstructed by a complex software devised by Aerospace Tech University in Forlì.

thank  
you!