



Riunione annuale SIN Calabria
La diagnosi clinica e di laboratorio delle diverse
malattie responsabili di decadimento cognitivo

Università Magna Graecia di Catanzaro
Aula D2

Catanzaro, 23 novembre 2019

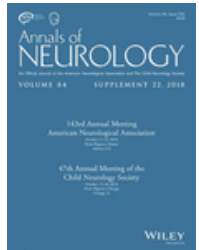


PROF. ALDO QUATTRONE

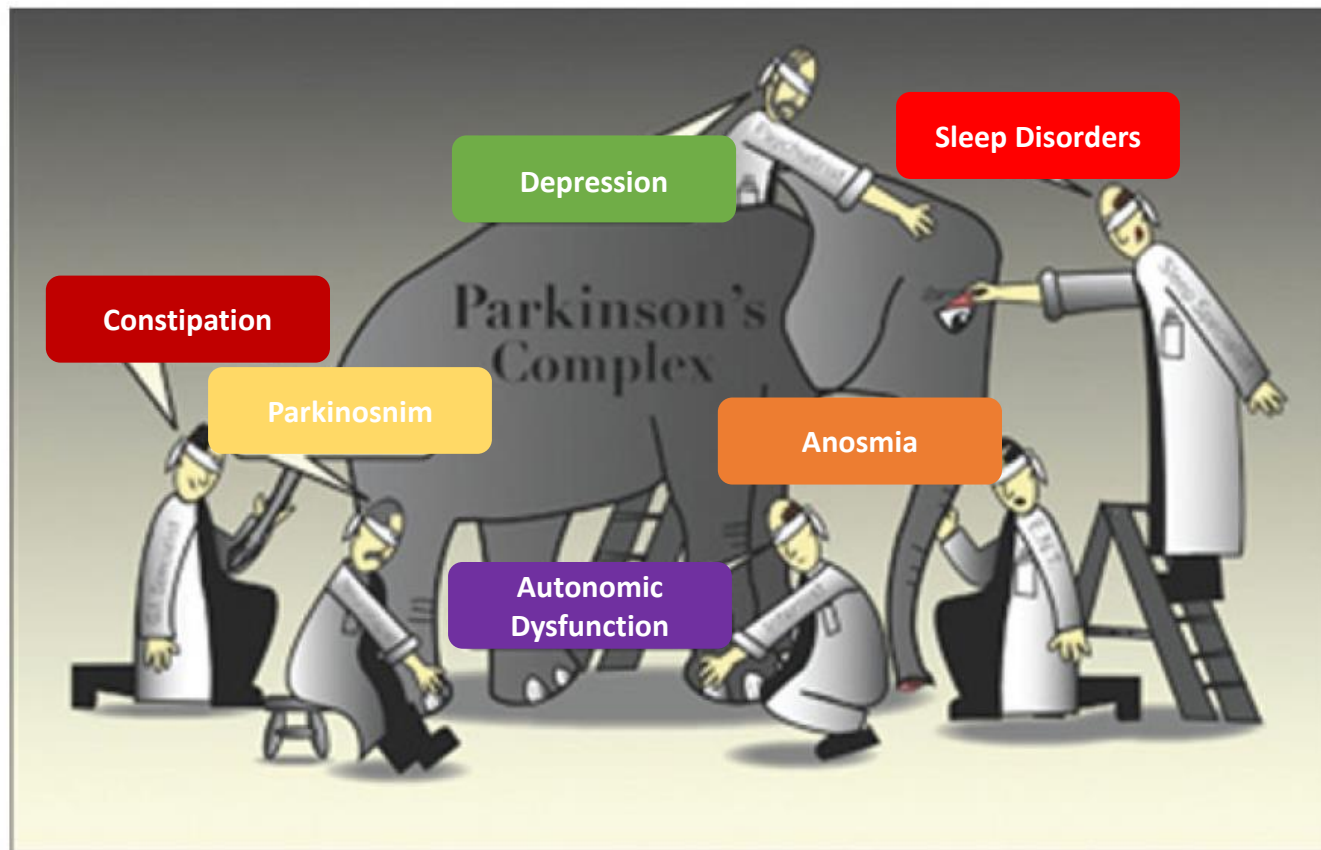
**Professore emerito di
Neurologia, Responsabile Unità
di Ricerca «Neuroimmagini»,
CNR e Centro Neuroscienze
Università Magna Graecia
Catanzaro**

The Parkinson's Complex: Parkinsonism Is Just the Tip of the Iceberg

J. William Langston, MD



2006



CLINICAL REVIEW

2018

Sleep disorders and Parkinson disease; lessons from genetics

Ziv Gan-Or ^{a,b,c,*}, Roy N. Alcalay ^d, Guy A. Rouleau ^{a,b,c}, Ronald B. Postuma ^c



The Sydney Multicenter Study of Parkinson's Disease: The Inevitability of Dementia at 20 years

Mariese A. Hely, MBBS,^{1*} Wayne G.J. Reid, PhD,¹ Michael A. Adena, PhD, ASTAT,²
Glenda M. Halliday, PhD,³ and John G.L. Morris, MD¹

¹*Department of Neurology, Westmead Hospital, Westmead, New South Wales, Australia*

²*Covance Pty Ltd, Braddon, Australian Capital Territory, Australia*

³*Prince of Wales Medical Research Institute, Randwick, New South Wales, Australia*

Abstract: After 20 years follow-up of newly diagnosed patients with Parkinson's disease (PD), 100 of 136 (74%) have died. The mortality rate fell in the first 3 years of treatment, then rose compared to the general population, the standardized mortality ratio from 15 to 20 years reaching 3.1. Drug induced dyskinesia and end of dose failure were experienced by most patients, but the main current problems relate to the non-levodopa responsive features of the disease. Dementia is present in 83% of 20-year survivors. Dementia correlates with increasing age and probably reflects an interplay of multiple pathologies. Seventeen people with dementia had postmortems. Eight had diffuse Lewy bodies as the only

cause of dementia, while others had mixed neuropathology. Only one person lives independently and 48% are in nursing homes. Excessive daytime sleepiness is noted in 70%, falls have occurred in 81%, freezing in 81%, fractures in 35%, symptomatic postural hypotension in 48%, urinary incontinence in 71%, moderate dysarthria in 81%, choking in 48%, and hallucinations in 74%. The challenge is to understand the cellular mechanisms underlying the diverse features of advanced PD that go far beyond a lack of dopamine. © 2008 Movement Disorder Society

Key words: Parkinson's disease; progression; dementia; mortality

Excessive daytime sleepiness can affect 20–50% of Parkinson's disease



2003

Increased daytime sleepiness in Parkinson's disease: a questionnaire survey.

Högl B¹, Seppi K, Brandauer E, Glatzl S, Frauscher B, Niedermüller U, Wennig G, Poewe W.

Abstract

We evaluated the frequency and severity of excessive daytime sleepiness in an outpatient population with Parkinson's disease in comparison to age-matched controls and examined its relationship with antiparkinsonian drug therapy and sleep history. Increased daytime sleepiness and involuntary sleep episodes have been described in Parkinson's disease, but the etiology is not completely understood. The Epworth Sleepiness Scale (ESS), a validated questionnaire for daytime sleepiness, was prospectively administered to 99 consecutive outpatients with Parkinson's disease and 44 age-matched controls. In addition, a short sleep-screening questionnaire was used. **The ESS revealed significantly increased daytime sleepiness in PD patients compared to controls (7.5 +/- 4.6 vs. 5.8 +/- 3.0, P = 0.013).** The ESS score was abnormally high (10 or more) in 33 % of PD patients and 11.4% of controls (P = 0.001). ESS was not different between PD patients on levodopa monotherapy and those on levodopa and dopamine agonists, or between patients taking ergoline or non-ergoline dopamine agonists. In PD patients and in controls, sleepiness was significantly associated with reported heavy snoring. Increased daytime sleepiness is more frequent in patients with PD than in elderly controls. Similar to controls, increased daytime sleepiness in PD patients is correlated with heavy snoring.



Functional Neurology

[Funct Neurol](#). 2017 Jul-Sep; 32(3): 137–141.

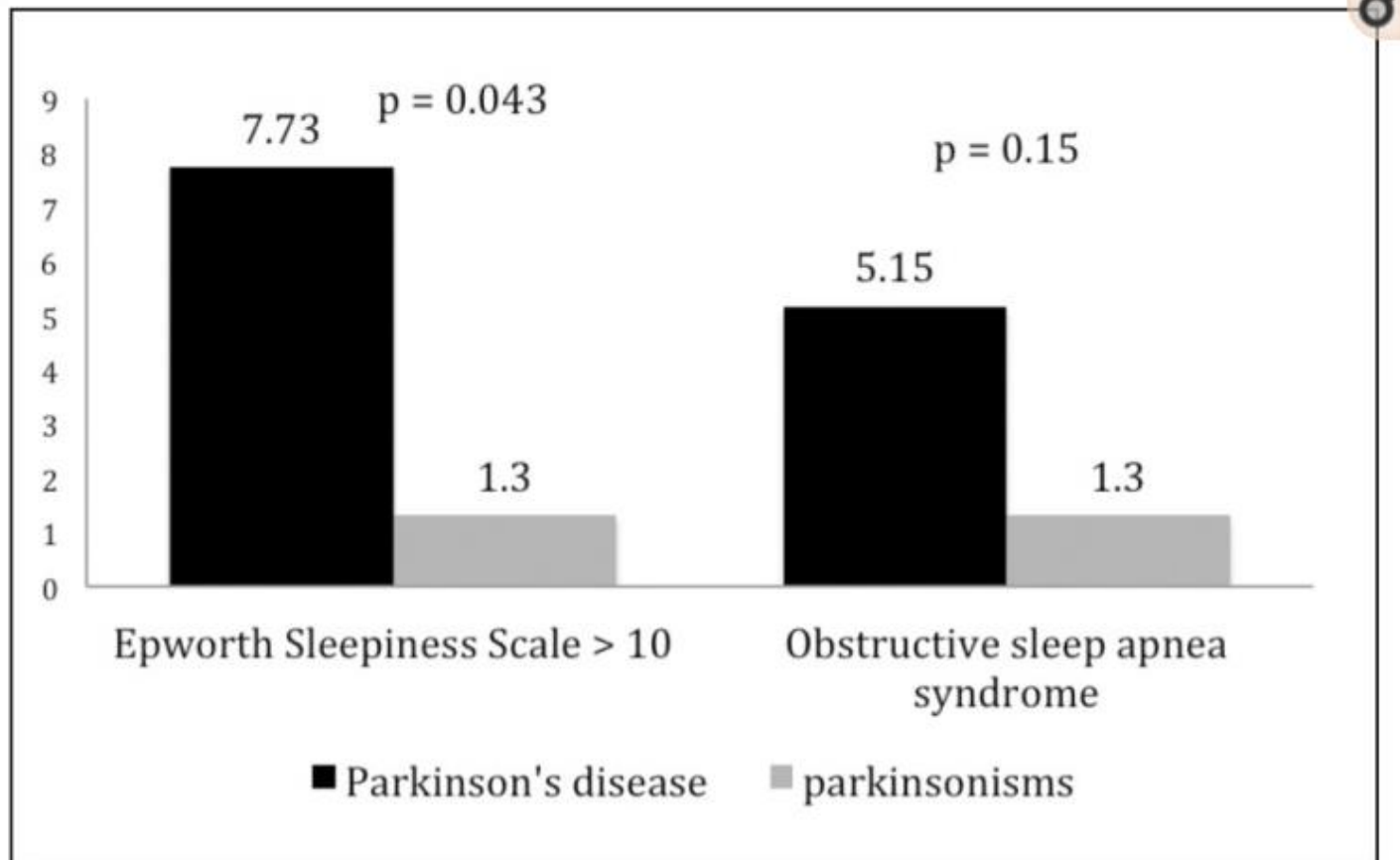
Published online 2017 Oct 18.

doi: [\[10.11138/FNeur/2017.32.3.137\]](https://doi.org/10.11138/FNeur/2017.32.3.137)

PMCID: PMC5726349

PMID: [29042002](#)

Obstructive sleep apnea syndrome in Parkinson's disease and other parkinsonisms





ELSEVIER

Contents lists available at [ScienceDirect](http://www.sciencedirect.com)

Sleep Medicine

journal homepage: www.elsevier.com/locate/sleep



2016

Original Article

Obstructive Sleep Apnea and Cognition in Parkinson's disease



Alexandrea L. Harmell ^{a,b}, Ariel B. Neikrug ^c, Barton W. Palmer ^{a,b,d,e}, Julie A. Avanzino ^{b,d}, Lianqi Liu ^b, Jeanne E. Maglione ^{b,d,e}, Loki Natarajan ^f, Jody Corey-Bloom ^g, Jose S. Loredó ^{e,h}, Sonia Ancoli-Israel ^{a,b,d,h,*}

The prevalence of OSA in PD is estimated to be around 20%–60%

Highlights

- Patients with Parkinson's disease and obstructive sleep apnea score significantly lower than those with Parkinson's disease without obstructive sleep apnea on tests of cognitive function.
- Obstructive sleep apnea is a significant predictor of poor cognition.
- Treating obstructive sleep apnea in Parkinson's disease does not result in improvements in cognition.



[J Clin Sleep Med](#). 2018 May 15; 14(5): 819–828.

PMCID: PMC5940433

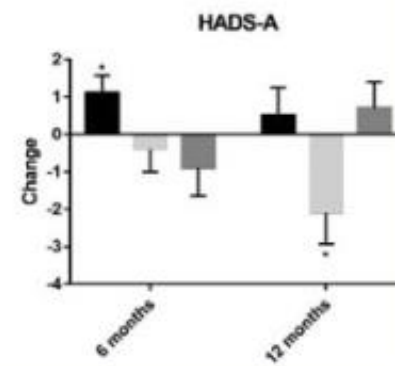
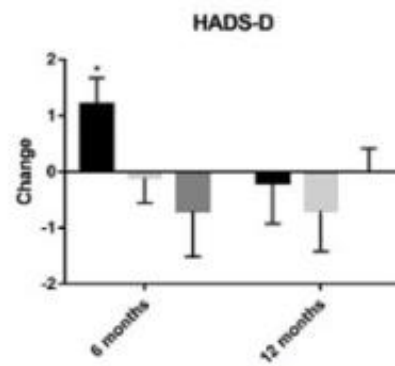
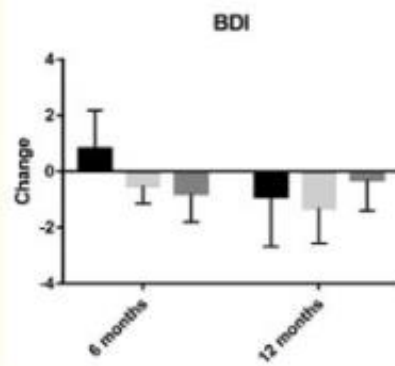
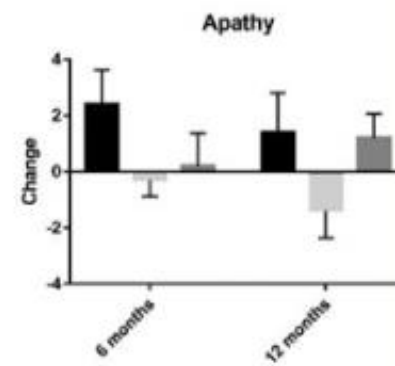
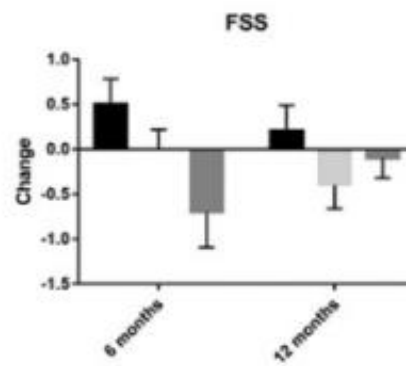
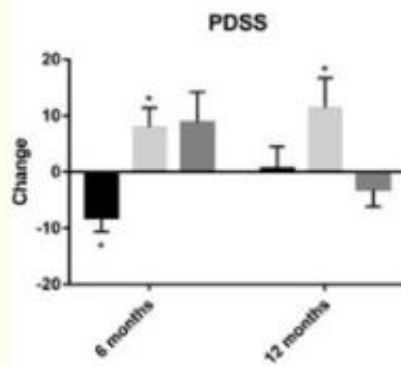
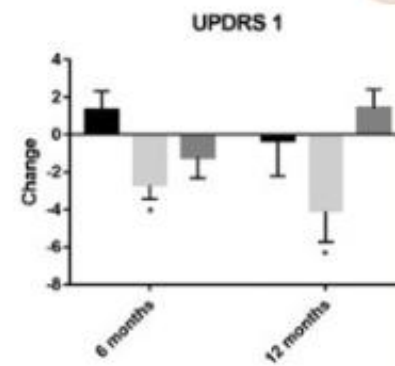
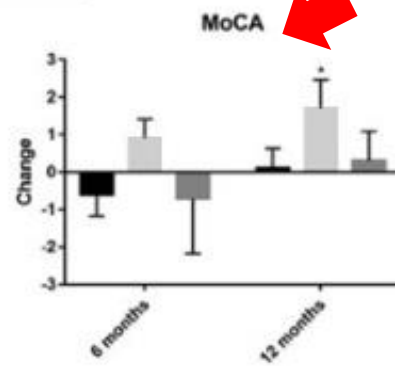
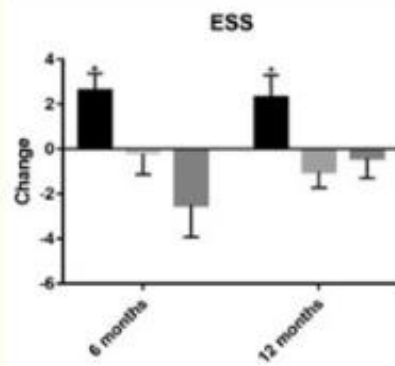
Published online 2018 May 15. doi: [10.5664/jcsm.7114](https://doi.org/10.5664/jcsm.7114)

PMID: [29734988](https://pubmed.ncbi.nlm.nih.gov/29734988/)

Change in Cognition and Other Non-Motor Symptoms With Obstructive Sleep Apnea Treatment in Parkinson Disease

[Marta Kaminska](#), MD, MSc,^{1,2} [Victoria P. Mery](#), MD,³ [Anne-Louise Lafontaine](#), MD, MSc,⁴ [Ann Robinson](#),¹
[Andrea Benedetti](#), PhD,^{1,5} [Priti Gros](#), MD,⁶ and [R. John Kimoff](#), MD^{1,2}

► [Author information](#) ► [Article notes](#) ► [Copyright and License information](#) [Disclaimer](#)



Change in Cognition and Other Non-Motor Symptoms With Obstructive Sleep Apnea Treatment in Parkinson Disease

Marta Kaminska, MD, MSc^{1,2}; Victoria P. Mery, MD³; Anne-Louise Lafontaine, MD, MSc⁴; Ann Robinson¹; Andrea Benedetti, PhD^{1,2}; Priti Gros, MD⁵; R. John Kimoff, MD^{1,2}

¹Respiratory Epidemiology and Clinical Research Unit, Research Institute of the McGill University Health Centre - Montreal, Quebec, Canada; ²Respiratory Division and Sleep Laboratory, McGill University Health Centre - Montreal, Quebec, Canada; ³Clinica Alemana de Santiago, Facultad de Medicina, Universidad del Desarrollo, Santiago, Chile;

⁴Montreal Neurological Hospital, McGill University Health Centre - Montreal, Quebec, Canada; ⁵Department of Medicine and Department of Epidemiology, Biostatistics and Occupational Health, McGill University - Montreal, Quebec, Canada; ⁶University of Toronto, Ontario, Canada

Study Objectives: Parkinson disease (PD) non-motor symptoms are associated with sleep disorders and impair quality of life. Our objective was to assess the effect of obstructive sleep apnea (OSA) treatment using continuous positive airway pressure (CPAP) on PD non-motor symptoms.

Methods: In this prospective observational study, 67 patients with idiopathic PD underwent polysomnography. Those with moderate-severe OSA were offered CPAP therapy. Subjects were divided into those without OSA (OSA-), and those with OSA (OSA+). Analyses were conducted for 6 and 12 months' follow-up data. At 6 months, those who had used CPAP at home for at least 1 month were considered CPAP users (OSA+CPAP+), whereas those who did not try it, or declined further treatment following a short trial were considered non-users (OSA+CPAP-). For the 12-month analysis, only those still actively using CPAP at 12 months were included in the OSA+CPAP+ group. Non-motor symptom measurements were: Epworth Sleepiness Scale, Montreal Cognitive Assessment (MoCA), Unified Parkinson's Disease Rating Scale part 1 (UPDRS1), Parkinson's Disease Sleep Scale (PDSS), Fatigue Severity Scale, Apathy Scale, Beck Depression Inventory, and Hospital Anxiety and Depression Scale (HADS).

Results: Sixty-five participants were re-assessed at least once. At 6 months, 30 participants were categorized as OSA+CPAP+, 11 OSA+CPAP-, and 18 OSA-. At 12 months, 21 were categorized as OSA+CPAP+, 21 OSA+CPAP-, and 17 OSA-. The UPDRS1 and PDSS improved from baseline in OSA+CPAP+ at 6 months (-2.7, standard deviation [SD] 4.0, $P = .001$, and 7.9, SD 19.0, $P = .03$, respectively) and 12 months (-4.1, SD 5.4, $P = .002$, and 11.4, SD 24.4, $P = .04$, respectively), but not in other groups. The MoCA and HADS-A improved in OSA+CPAP+ at 12 months (1.7, SD 3.5, $P = .04$, and -2.1, SD 3.8, $P = .02$, respectively). The MoCA improved in those with low baseline MoCA and those with REM sleep behavior disorder. Mean CPAP use in users at 12 months was 3 hours 36 minutes per night.

Conclusions: CPAP treatment of OSA in PD is associated with improved overall non-motor symptoms, sleep quality, anxiety, and global cognitive function over a 12-month period.

Keywords: cognitive function, CPAP, non-motor symptoms, obstructive sleep apnea, Parkinson disease, RBD

Citation: Kaminska M, Mery VP, Lafontaine AL, Robinson A, Benedetti A, Gros P, Kimoff RJ. Change in cognition and other non-motor symptoms with obstructive sleep apnea treatment in Parkinson disease. *J Clin Sleep Med*. 2018;14(5):819-828.

MEDICAL DEVICE FOR DETECTION OF SLEEP DISORDERS IN LATE-STAGE PARKINSON DISEASE

PROTOTIPO INIZIALE




sensors

Sensors. 2018;13:18(3)



Article

Comparison between Electrocardiographic and Earlobe Pulse Photoplethysmographic Detection for Evaluating Heart Rate Variability in Healthy Subjects in Short- and Long-Term Recordings

Basilio Vescio ¹, Maria Salsone ², Antonio Gambardella ³  and Aldo Quattrone ^{2,*}

Cardiac sympathetic index identifies patients with Parkinson's disease and REM behavior disorder

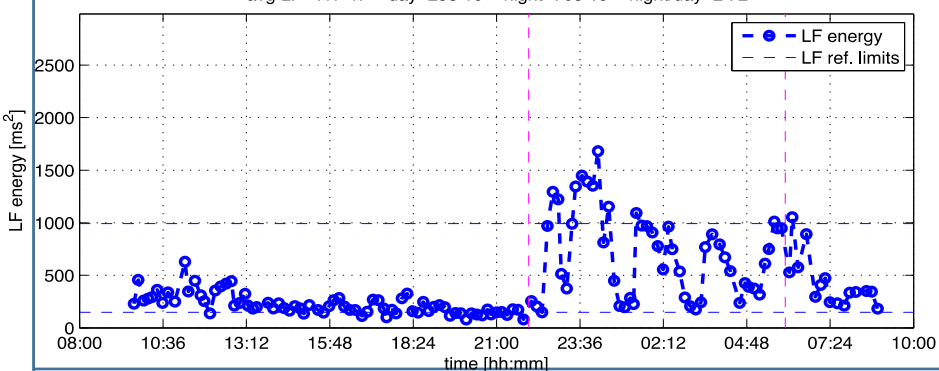


Maria Salsone^a, Basilio Vescio^a, Alessandra Fratto^b, Miriam Sturniolo^b,
Gennarina Arabia^b, Antonio Gambardella^b, Aldo Quattrone^{a,b,*}

SISTEMA NERVOSO SIMPATICO

PAZIENTE CON PD+RBD

avg.LF=417.47 – day=258.16 – night=703.19 – night/day=2.72

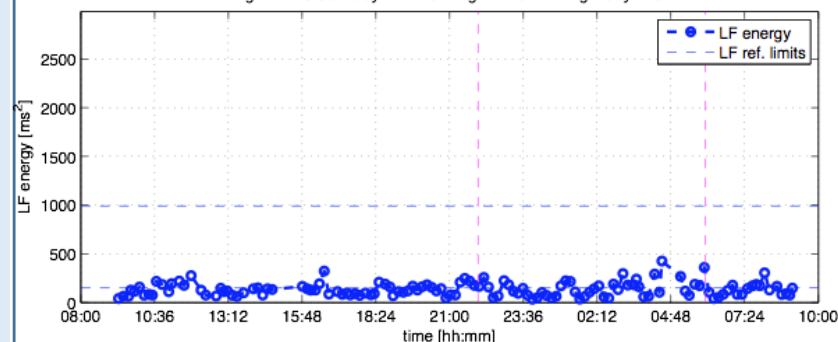


LF night/LF day

2.72

PAZIENTE CON PD

avg.LF=143.35 – day=142.20 – night=145.17 – night/day=1.02



LF night/LF day

1.02

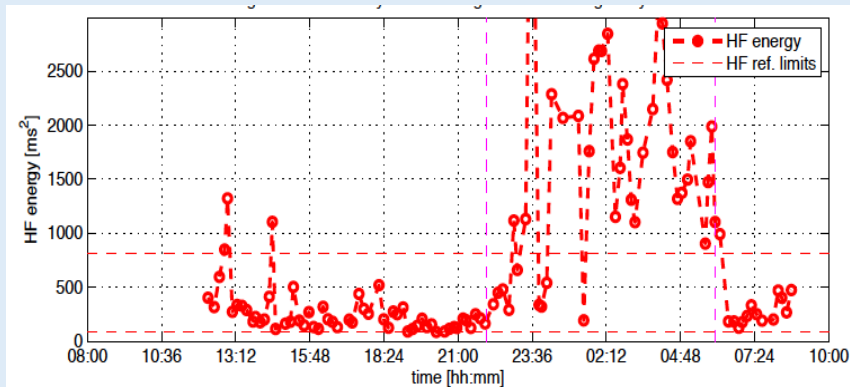
RESEARCH ARTICLE

Cardiac parasympathetic index identifies subjects with adult obstructive sleep apnea: A simultaneous polysomnographic-heart rate variability study

Maria Salsone¹, Basilio Vescio², Andrea Quattrone³, Ferdinando Roccia⁴, Miriam Sturniolo³, Francesco Bono³, Umberto Aguglia³, Antonio Gambardella³, Aldo Quattrone^{1,5*}

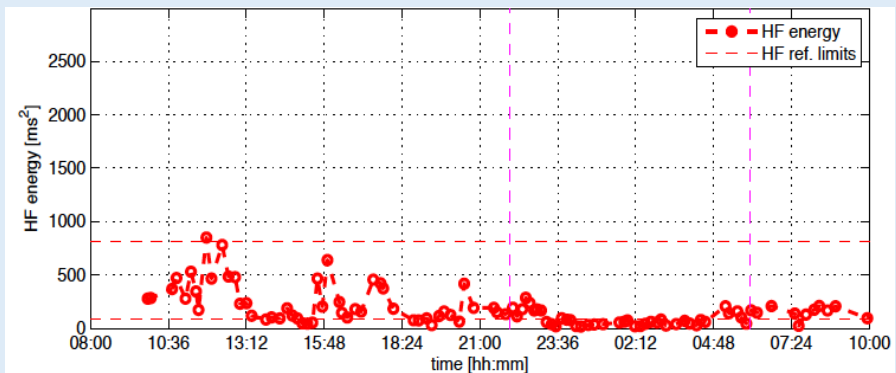
SISTEMA NERVOSO PARASIMPATICO

PAZIENTE CON OSA



HF night/HF day
5.58

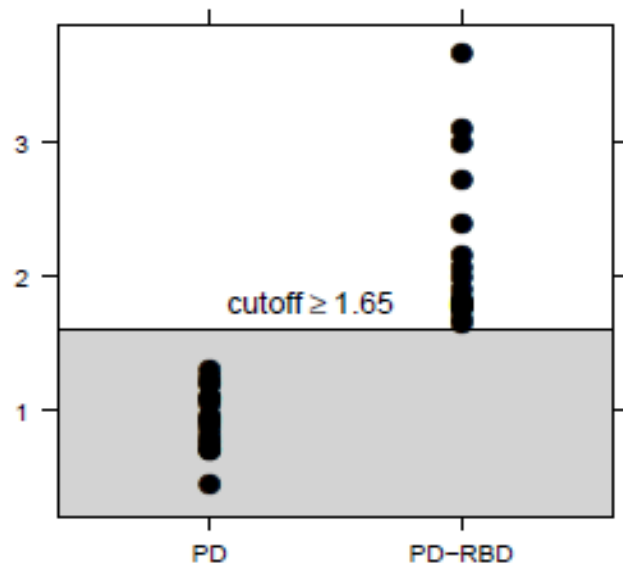
CONTROLLO SANO



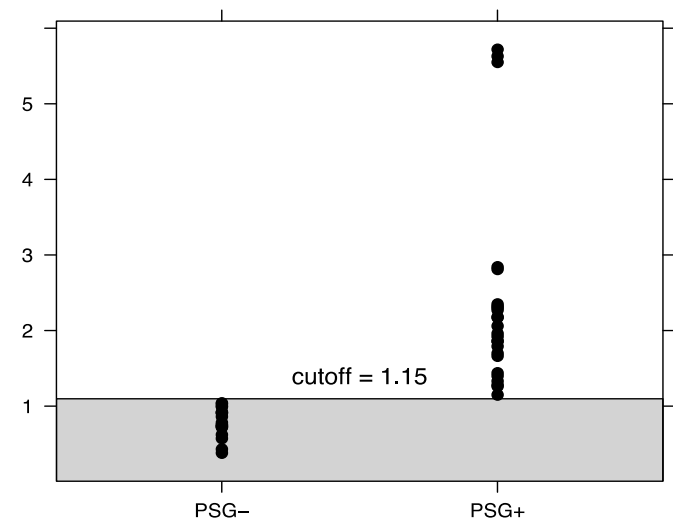
HF night/HF day
0.38

CARDIAC AUTONOMIC INDEXES

Cardiac Sympathetic Index



Cardiac Parasympathetic Index



MINIATURIZZAZIONE

PROTOTIPO INIZIALE



PROTOTIPO INTERMEDIO



INVENTORI

A. Quattrone
A. Gambardella
M. Salsone
B: Vescio

PROTOTIPO FINALE



European Patent No. EP3267880

IL NOSTRO STRUMENTO VS ALTRI SISTEMI

Performances of Cardiac Autonomic Indexes, Epworth Sleepiness Scale, Nocturnal Oxymetry and portable Monitors in differentiating OSA patients from controls

<i>OSA patients vs Controls</i>	Cutoff	Sensitivity (%)	Specificity (%)	Accuracy (%)
Cardiac Parasympathetic Index*	≥1.15	100	100	100
Cardiac Sympathetic Index*	≥1.08	84	72.2	79.1
Epworth Sleepiness Scale*	≥11	56	83.3	67.4
Nocturnal Oxymetry **	-	55	88	
Portable Monitor II***	-	64-86	98-100	85
Portable Monitor III***	-	50-97	90-93	86-99

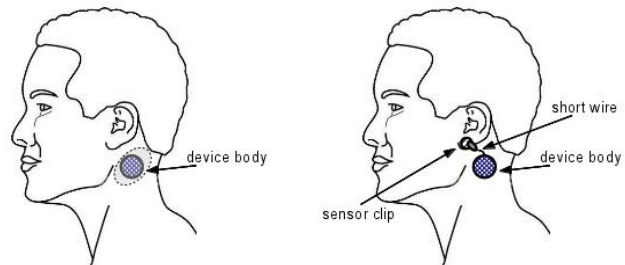
* Quattrone A et al., PloS One 2018; 13:18(3) doi:101371/Journal.pone.0193879.

** Van Eyck A et al, Sleep Med 2015; 16(11): 10.1016./J.Sleep.2015.07.023.

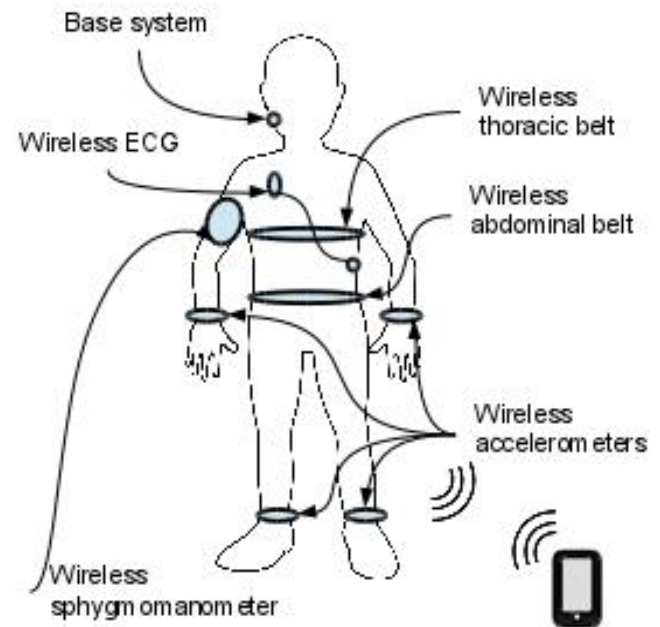
*** Jonas D. et al., JAMA 2017; 317 (4):415-433. doi:10.1001/Jama.2016.19635.

SCREENING PER LA DIAGNOSI DI OSA NEL PARKINSON

SCREENING



DIAGNOSI





2016

DALLA RICERCA ALL'INNOVAZIONE TECNOLOGICA: MINI-HOLTER PER LO SCREENING DEI DISTURBI DEL SONNO



2018



2018



European Patent No. EP3267880



A. Quattrone, A. Gamblardella, M. Salsone,
B. Vescio

**XLVI CONGRESSO
SOCIETÀ ITALIANA
DI NEUROLOGIA**

**Genova, 10-13 Ottobre 2015
Magazzini del Cotone**



Premi SIN per la ricerca ed innovazione tecnologica