

Uykuda Solunum Bozuklukları

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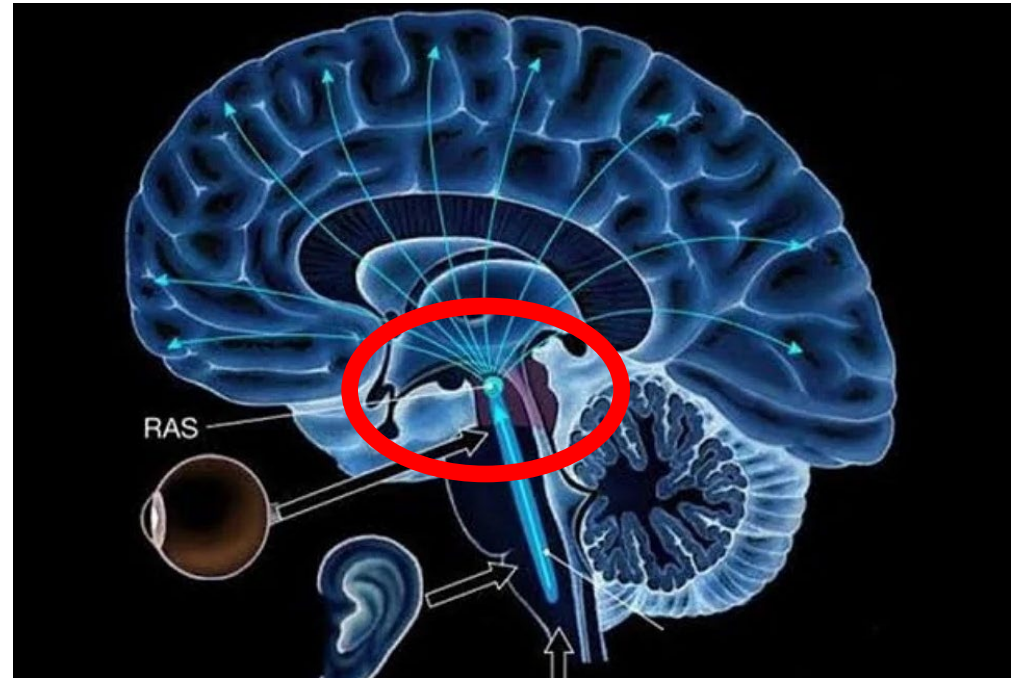
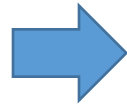
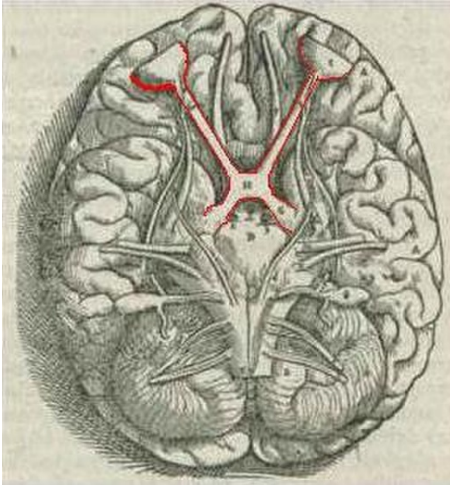
UYKU

- Tüm canlılar uyur
- Memeliler için uyku; Çevre ile iletişimin *geçici, kısmi, periyodik* olarak kesilmesi

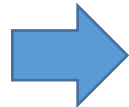


UYKU

Zamanlama



Sirkadien ritim



Adenozin
metabolizması



UYKU

Değişimler

- Sys vazodilatasyon
- Dipping
- Hormonal regülasyon(Gherilin, leptin, vaspin, lipokin, glukagon, kortizol,GH)
- Duygusal unutkanlık
- Uzun hafıza

Parasempatik hakimiyet/antiinsülin aktivite/Sex hormon depresyonu

Evre 1

Evre 2

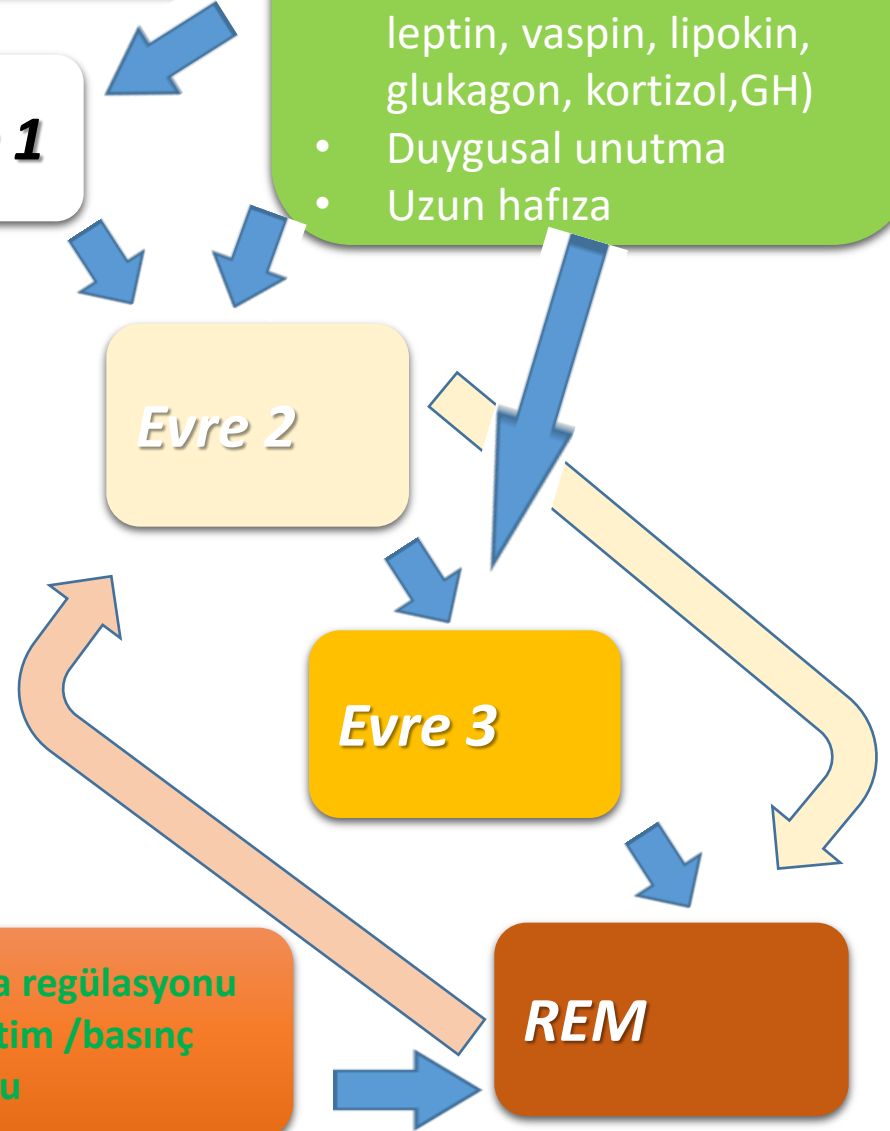
Evre 3

REM

EEG dalga değişimi

Talamus üzerinden motor sinir arkının bloklanması

- Uzun hafıza regülasyonu
- Kardiyak ritim /basınç regülasyonu



UYKU

Solunum ritmi ve hızı bozulur

ÜSY'da direnç artar

Kan basıncı değişiklikleri

Serebral kan akımı ve
metabolizma

Santral solunum yanıtı azalır

Uykuyla İlişkili Solunum Hastalıkları

Uluslararası Uyku Bozuklukları Sınıflaması (ICSD- 3)

1.İnsomniler

2.Uykuyla İlişkili Solunum

3. Hipersomni
hastalıklar

4. Sirkadiyen ritm

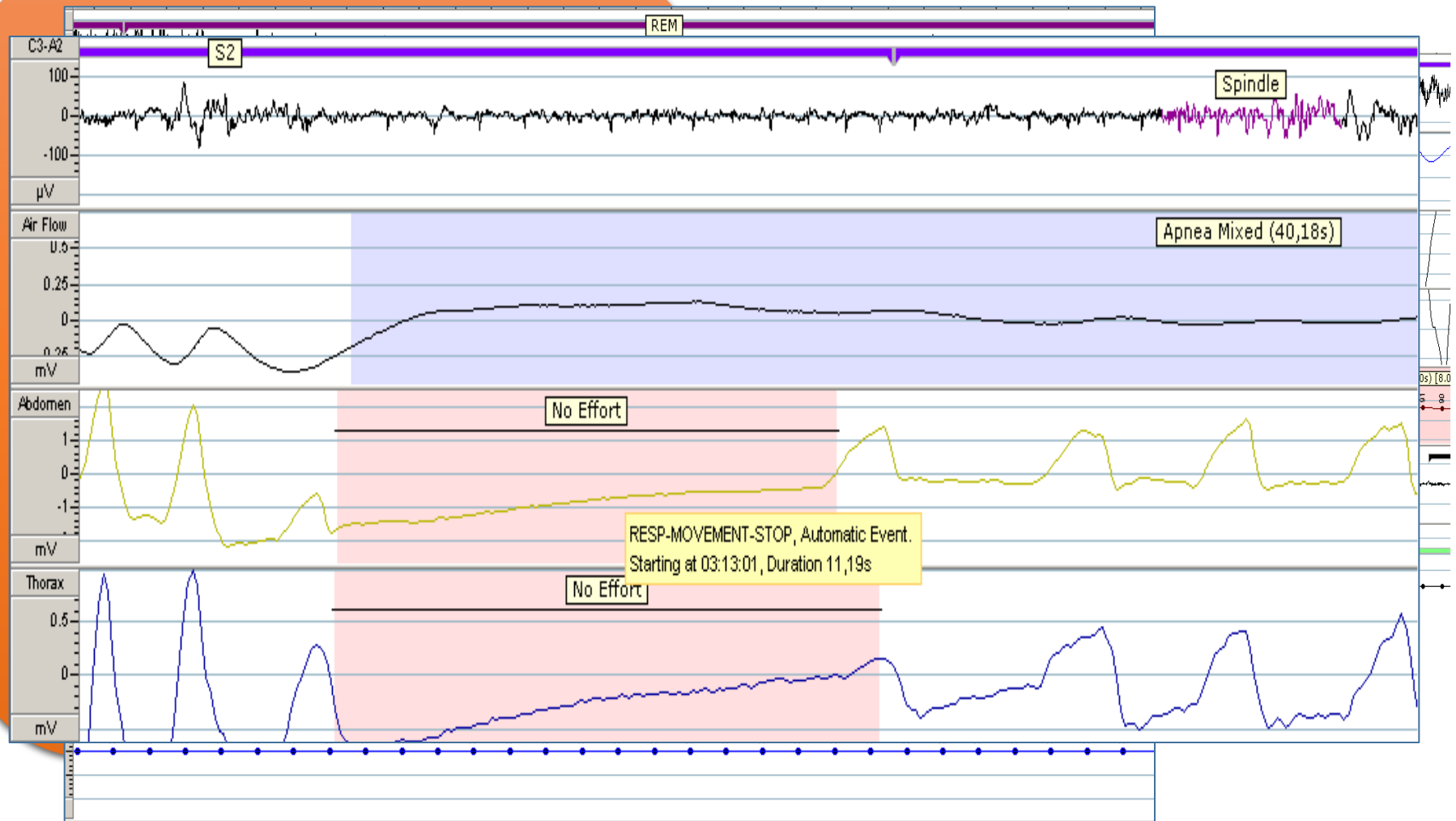
5.Parasomniler

6.Uyku ile ilişkili ha

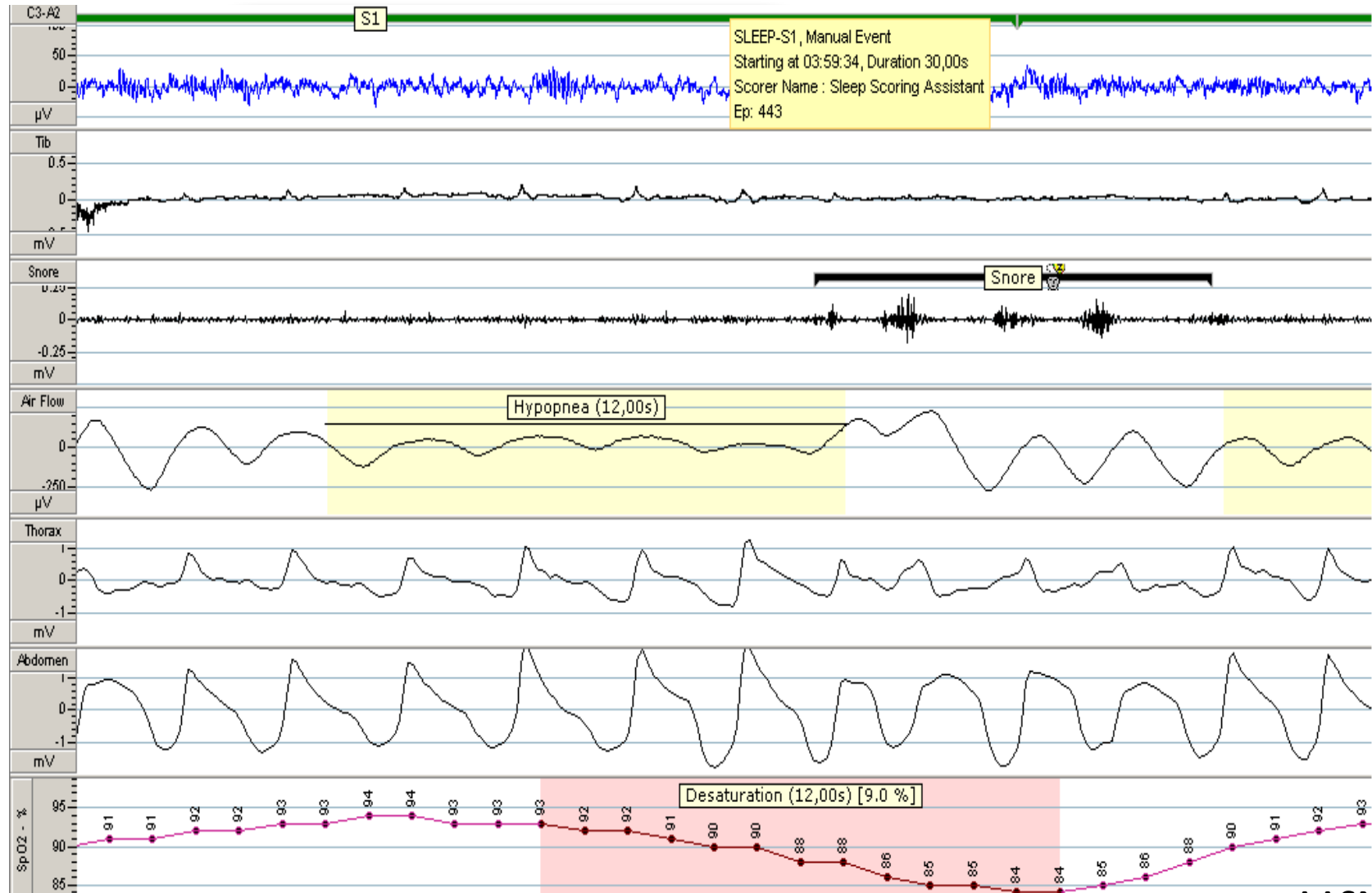
7. Diğer uyku hastalıkları

- ✓ Obstruktif uyku apne sendromu
- ✓ Santral uyku apne sendromları
- ✓ Uyku ilişkili hipoventilasyon hastalıkları
- ✓ Uyku ilişkili hipoksemi hastalığı
- ✓ İzole semptomlar ve normal varyasyonlar
 - ✓ Horlama
 - ✓ Katatreni

Terminoloji

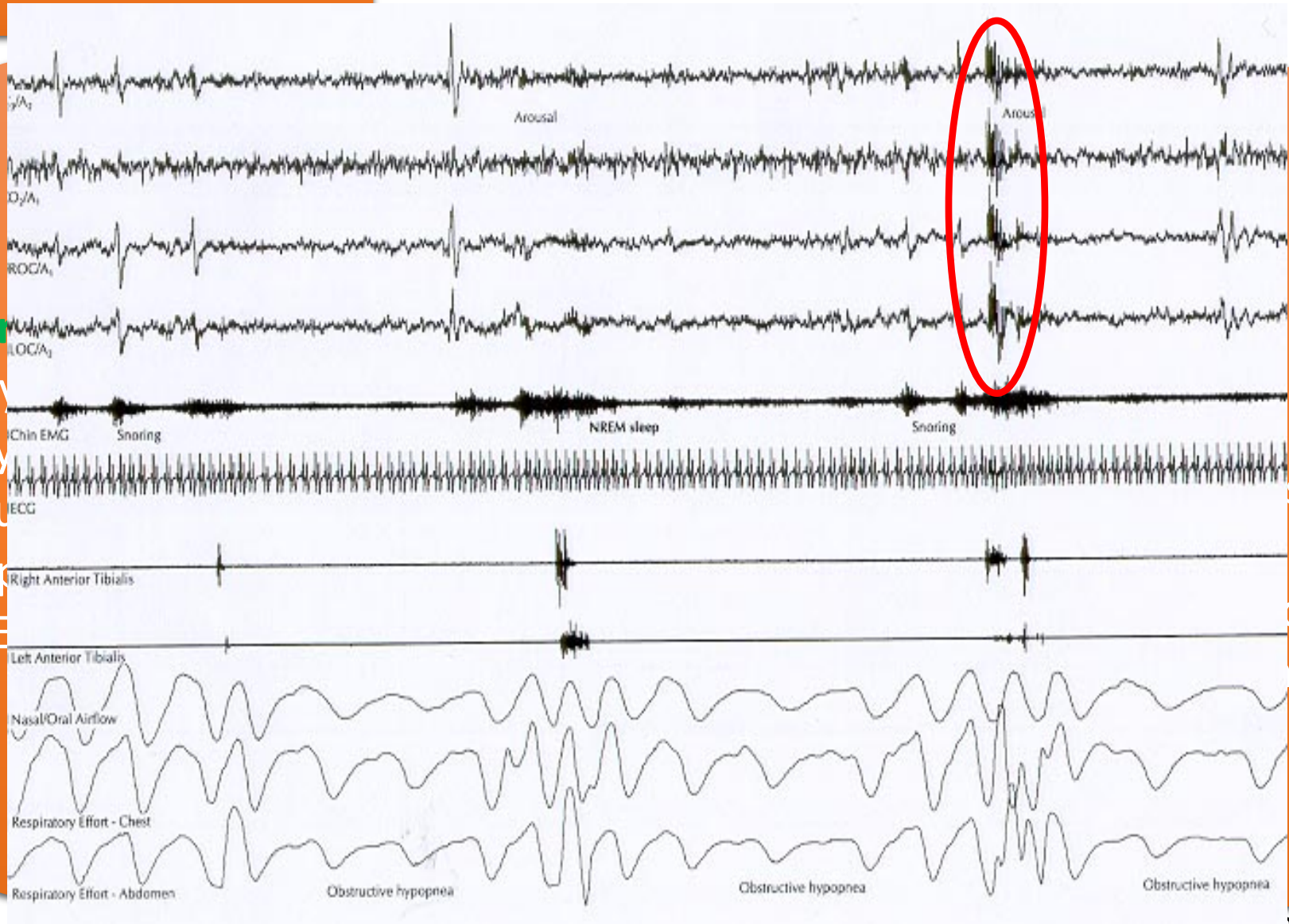


Terminoloji



Terminoloji

Ar
Uy
uy
du
Ar
EE



Terminoloji

Apne İndeksi: Uykuda saat başına düşen apne sayısı

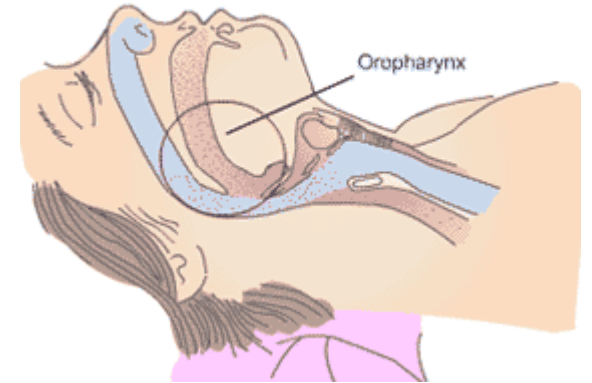
AHI: Uykuda saatteki Apne+ Hipopne sayısı

RDI: Uykuda saatteki Apne+ Hipopne sayısı+ RERA

OSA

OSA

Uyku sırasında tekrarlayan üst solunum yolu (ÜSY) obstrüksiyonu episodları ve sıklıkla kan oksijen saturasyonunda azalma ile karakterize bir sendromdur



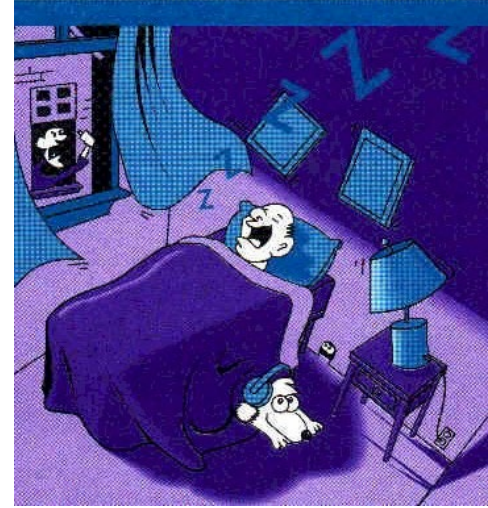
EPİDEMİYOLOJİ

- Obstrüktif uyku apne sendromu % 15 oranında görülür
- OSAS' ın, orta yaş erkeklerde (40-60 y) prevalansı % 4-8 dir



Risk faktörleri

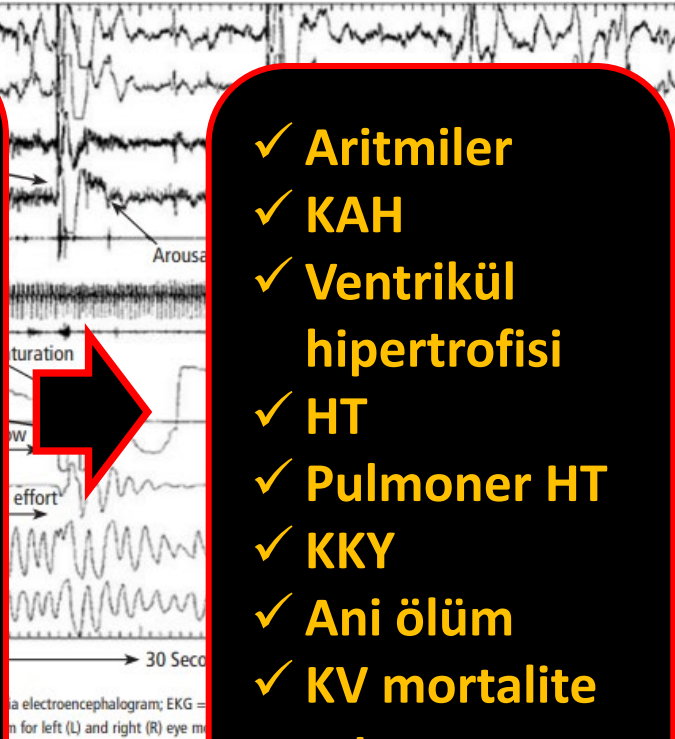
- Yaş
- Cinsiyet
- Obesite
- Horlama
- İlaçlar
- Genetik



Obesity

Patofizyoloji

- ✓ İntermitant hipoksi
- ✓ Toraks içi negatif basınç artışı
- ✓ Atrium duvarındaki transmural basınç
- ✓ Sempatik aktivasyon
- ✓ VK ve periferik direnç artışı
- ✓ Oksidatif stres
- ✓ Endotel disfonksiyonu



- ✓ Aritmiler
- ✓ KAH
- ✓ Ventrikül hipertrofisi
- ✓ HT
- ✓ Pulmoner HT
- ✓ KKY
- ✓ Ani ölüm
- ✓ KV mortalite artışı

OSA Semptom ve Bulguları

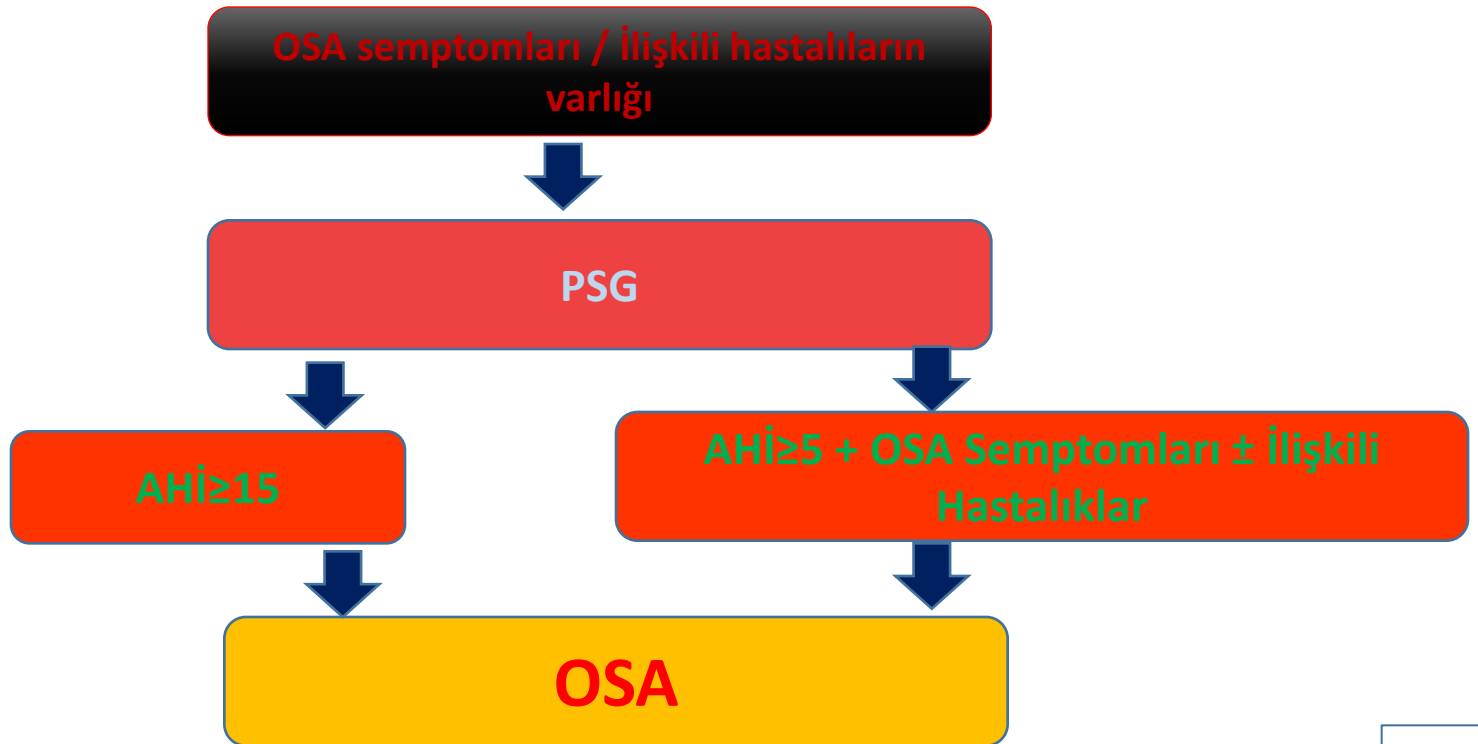
Gece semptomları

- Tanıklı apne
- Horlama
- Dinlendirmeyen uyku
- Gece terlemesi
- Noktüri, enürezi
- İnsomniya
- Nondipper hipertansiyon

Gündüz Semptomları

- Yorgunluk
- Baş ağrısı
- Ağız kuruluğu
- Konsantrasyon bozukluğu
- Hafıza değişiklikleri
- Duygu durum bozukluğu
- Hormonal anomaliler

Tanı



ICSD-3

$AH\dot{I} < 5 \longrightarrow \text{NORMAL}$

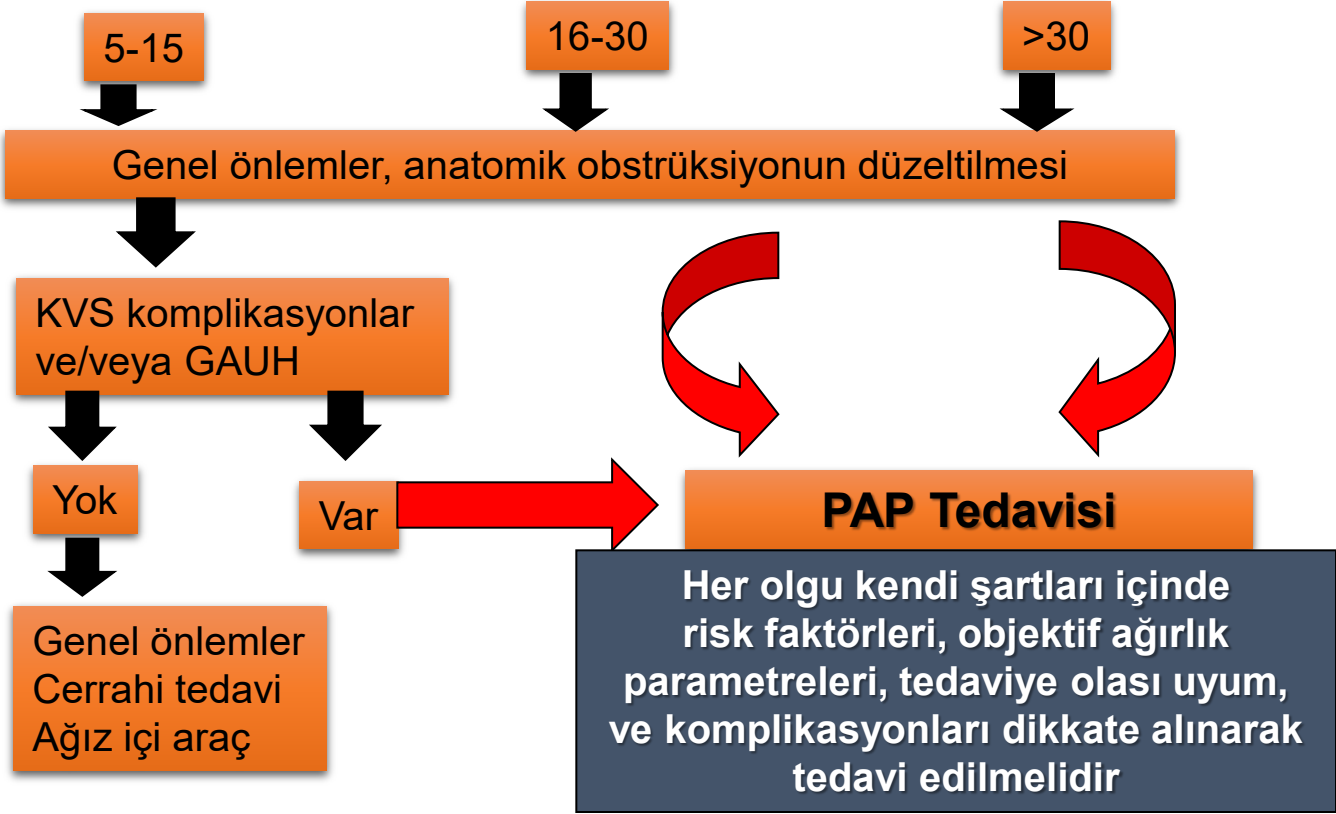
$AH\dot{I} \ 5 - 15 \longrightarrow \text{HAFİF}$

$AH\dot{I} \ 16 - 30 \longrightarrow \text{ORTA}$

$AH\dot{I} > 30 \longrightarrow \text{AĞIR}$

Tedavi

AHi



PAP Tedavisi

- CPAP (%78,6 Başarılı)
- APAP
- BPAP
 - Dakika hacmini artırır
hipokapni yapar
 - CompSAS'ta kullanılmaz
- BPAP –ST
- ASV
- AMV

OSA Sonuçları

1. Kardiyovasküler
2. Endokrinolojik
3. Nefrolojik
4. Gastrointestinal
5. Hematolojik
6. Psikiyatrik
7. Göz
8. Sosyo-ekonomik
9. Ani ölüm

OUAS ve HT

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sleep apnea and hypertension

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OUAS ve HT Fizyopatoloji

- Sempatik aktivite artışı

Narkiewicz K. *Circulation* 1999; 99 :1183–118

- İntratorasik basınç artışı nedeni ile vagal uyarı

Conti JB. *J Am Coll Cardiol* 2005; 45 :30–32

- Artan negatif intratorasik basıncın AV duvar üzerindeki mekanik etkileri

Franz MR. *Cardiovasc Res* 1996; 32 :15–24

- Desaturasyon
- Hiperkapni, Asidoz
- Renin-Angiotensin-Aldosteron Sistem aktivasyonu

Mehra R. *Am J Respir Crit Care Med*. 2006 Apr 15; 173(8): 910–916

OUAS ve HT

Article

Blood Pressure Non-Dipping and Obstructive Sleep Apnea Syndrome: A

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Abstract: Aim: We examined the prevalence of non-dipping (ND) pattern in patients with obstructive sleep apnea (OSA) by comparing the rates of non-dipping (ND) pattern in patients with OSA from different clinical studies. Methods: The PubMed, OVID-MEDLINE, and Cochrane were searched for appropriate articles without time restriction. Studies were identified by the keywords “sleep quality”, “non dipping”, “blood pressure”, “BP”, and “ambulatory blood pressure”. Results: The prevalence in patients with OSA was 59.1% (95% CI: 53.0% to 65.2%) compared to non-OSA controls (33.0% to 69.0%).

- ✓ **Meta-analiz**
- ✓ **14 çalışma**
- ✓ **24/h tansiyon holter ve PSG yapılmış**
- ✓ **1562 OSA/957 nonOSA**
- ✓ **OSA hastalarının %59,1'i Nondipper**
- ✓ **OSA'da Non dipper OR;1,59**
- ✓ **Orta ve Ağır OSA'da OR:1,67**

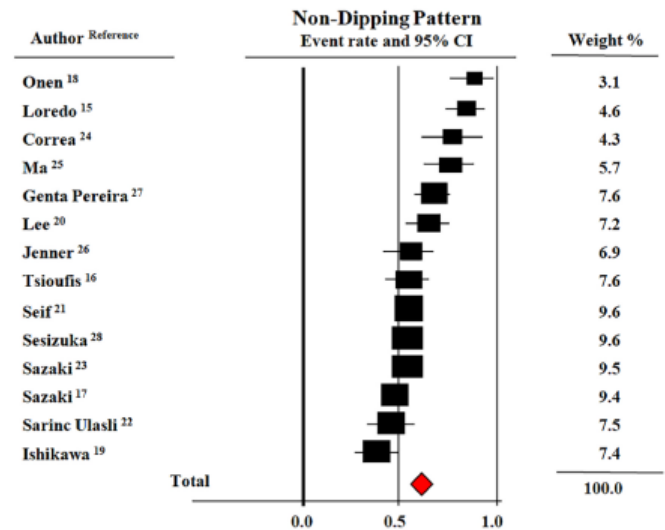


Figure 2. Forest plot of prevalence rates of a non-dipping pattern during 24-h blood pressure monitoring in patients with obstructive sleep apnea (OSA) [15–28]. Data from 14 studies and 1562 participants. Random model ($I^2 = 79\%$).

OUAS ve HT

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JAMA. 2012 May 23; 307(20): 2169–2176. doi:10.1001/jama.2012.3418.

Association Between Treated and Untreated Obstructive Sleep Apnea and Risk of Hypertension

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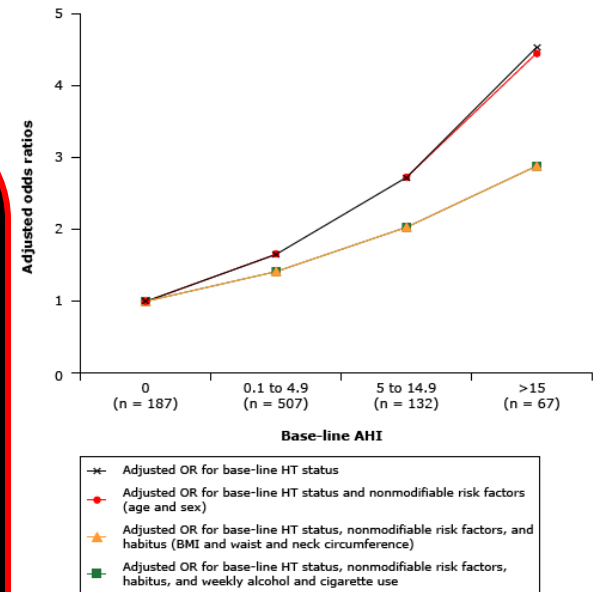
Abstract

Context—Systemic hypertension is prevalent in patients with obstructive sleep apnea (OSA). Short-term studies indicate that continuous positive airway pressure (CPAP) reduces blood pressure in patients with hypoxemic OSA.

Objective—To determine whether CPAP treatment reduces the risk of incident hypertension.

Design, Setting, and Participants—A

- ✓ 1900 kişinin ort. 12 yıl takibinde (22800 hasta-yılı)
- ✓ 100 hasta-yılında;
 - ✓ OSA olmayanlarda yeni hipertansiyon 2.19
 - ✓ OSA olanlarda 3.34
 - ✓ CPAP tedavisi alanlarda ise 3.06



OUAS ve HT

Özet

- ✓ Hafif derecede tedavi edilmeyen OSA'da bile HT riski 2,8 kat artıyor
- ✓ OUAS hastalarının %40-59'unda HT
- ✓ Esansiyel HT hastalarında %30-50
- ✓ Dirençli hipertansiyonda %80 OSA
- ✓ OSA ağırlığı ile HT Riski artıyor
- ✓ nonDipper HT çok daha sık görülmekte
- ✓ PAP tedavisi OSA gelişimini azaltmakta

OUAS ve Aritmi

Association of Nocturnal Arrhythmias with Sleep-disordered Breathing

The Sleep Heart Health Study

Reena Mehra, Emel
Jayakumar Sahadev

Departments of Medicine,
Boston, MA

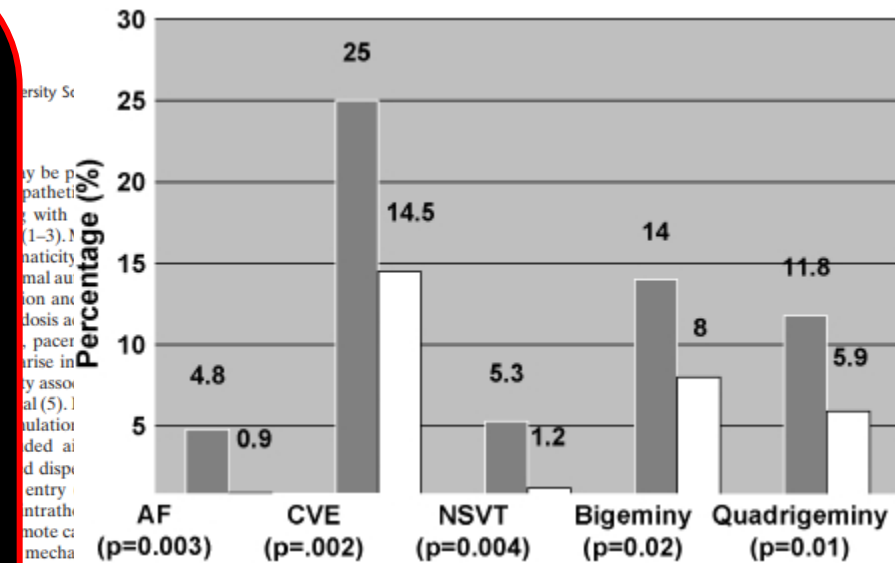
Rationale: Sleep-disordered breathing and sympathetic milieu for cardiac arrhythmias is higher in subjects with sleep-disordered breathing.

Objective: We postulated that the prevalence of nocturnal arrhythmias is higher in subjects with sleep-disordered breathing.

Methods: The prevalence of participants from matched on age, sex, and BMI (2) 30 and (2) 30 (respiratory disturbance index ≥ 30) and (2) 30 (respiratory disturbance index < 30).

Results: Atrial fibrillation, complex ventricular ectopy or bigeminy or trigeminy in subjects with sleep-disordered breathing without sleep-disordered breathing and adjusted for atrial fibrillation; 5.3% in subjects with sleep-disordered breathing and 0.9% in subjects without sleep-disordered breathing had four times the odds of nonsustained

- ✓ The Sleep Heart Health Study
- ✓ Uyku laboratuvarına başvuran;
 - ✓ $AHI > 30$ n:228
 - ✓ $AHI < 5$ n:338
- ✓ Yaş, cinsiyet, VKİ, KAH, etnisite eşitlendikten sonra;
 - ✓ AF or:4,04
 - ✓ VT or:3,4
 - ✓ Ventriküler ektopi or:1,74



OUAS ve KY

Özet

- ✓ OSA AF'nin tüm formlarının oluşma riskini artırıyor
- ✓ AF'nin semptomlarını artırıyor
- ✓ AF atak riskini artırıyor
- ✓ Komplikasyonlarını artırıyor
- ✓ Hastaneye yatışları artırıyor
- ✓ Ölüm riskini artırıyor
- ✓ PAP tedavisi ile kalıcı AF gelişimi azalıyor
- ✓ Egzersiz ve kilo kontrolü PAP'ın etkinliği destekliyor

OUAS ve KY



ELSEVIER

European Journal of Heart Failure 9 (2007) 251–257

The European Journal of Heart Failure

www.elsevier.com/locate/ejheart

Sleep-disordered breathing in patients with symptomatic heart failure A contemporary study of prevalence in and characteristics of 700 patients

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Dieter Horstkotte^a, Volker Töpfer

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^b Department of Pneumology and Sleep Medicine, Ruhrlandklinik, University of

Received 1 April 2006; received in revised form 28 June 2006; accepted
Available online 5 October 2006

Abstract

Aim: Evaluation of the prevalence and nature of sleep-disordered breathing (SDB) in patients receiving therapy according to current guidelines.

Methods and results: We prospectively screened 700 patients with CHF (NYHA class $\geq$ II, polygraphy (Embletta™). Furthermore, echocardiography, cardiopulmonary exercise and 6

Table 1
Demographic and clinical data for all 700 CHF patients

	No SDB (n=169)	OSA (n=253)	CSA (n=278)
Age, years	61.45±11.0	65.02±9.5 ^a	65.86±10.5 ^a
Sex, f/m	67/102	36/217	36/242
Underlying disease			
DCM	97 (57.4%)	112 (44.3%)	104 (37.4%)
CAD	57 (33.7%)	115 (45.5%)	151 (54.3%)
CAD+VHD	7 (4.1%)	5 (2.0%)	11 (4.0%)
VHD	8 (4.7%)	11 (4.4%)	12 (4.3%)
NYHA class	2.57±0.51	2.57±0.50	2.90±0.50 ^{a,b}
BMI, kg/m ²	25.77±3.7	27.84±4.7 ^a	26.30±4.1 ^b
Diabetes	22%	37%	29%
Nycturia	1.3±0.9	1.6±1.0 ^a	2.1±1.0 ^{a,b}
Rhythm			
Sinus rhythm	127 (75.1%)	172 (68.0%)	159 (57.2%)
Atrial fibrillation	23 (13.6%)	53 (21.0%)	97 (34.9%)
Pacemaker	19 (11.3%)	28 (11.0%)	22 (7.9%)
	72.8±14.1	72.4±14.1	72.4±14.1
	120.9±18.7	115.0±20.5 ^{a,b}	74.0±9.6
	74.0±9.6	72.4±11.0	
	94%	94%	
	93%	89%	
	85%	85%	
	63%	61%	
	62%	62%	
	18.45±13.3 ^a	30.15±15.2 ^{a,b}	
	81.5±6.3 ^a	82.4±5.1 ^a	
	5.7±1.2 ^a	6.2±1.8 ^a	

^a $\leq$ 5/h; OSA: obstructive sleep
vs. no SDB; ^b $p < 0.05$ vs. OSA;

- ✓ 700 KKY'li hastaya poligrafi
- ✓ %76 SDB (%40 SSA/ %36 OSA)
- ✓ SDB'li hastalar
 - ✓ Daha semptomatik
 - ✓ Daha hipoksik
 - ✓ Ölümcül aritmi daha yüksek
 - ✓ LV fonksiyonları daha düşük
 - ✓ 6 dak yürüme testi daha kısa

OUAS ve KY

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Circulation. 2010 July 27; 122(4): 352–360. doi:10.1161/CIRCULATIONAHA.109.901801.

A Prospective Coronary Health Study

Daniel J. Gottlieb,
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Diener-West, PhD

¹ VA Boston Health

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Washington, DC

⁹ University of California

¹⁰ Mel and Enid

Abstract

Background

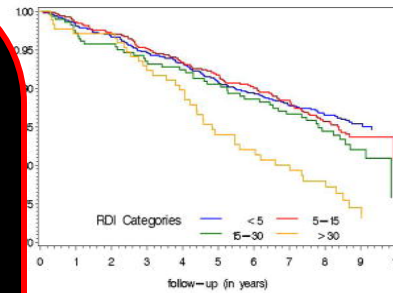
apnea (OSA) is
this study was
a general community

Methods and Results

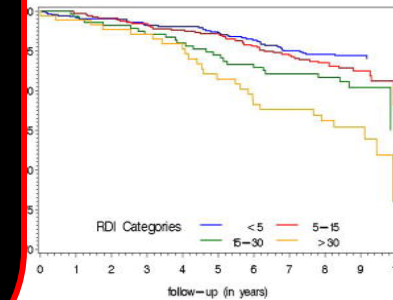
2495 women aged ≥ 40

- ✓ Prospektif kohort
- ✓ KY/KAH olmayan 4422 OSA hastası 8.7 yıl takip edilmiş
- ✓ AHI'da her 10 artışta yeni KY gelişimi riski %13
- ✓ AHI>30 olanlarda <5 olanlara göre KAH %68↑, KY gelişme riski %58↑
- ✓ Kadınlarda ve 70y↑ OSA yeni kalp yetmezliği ile ilişkili bulunmamış!!!!

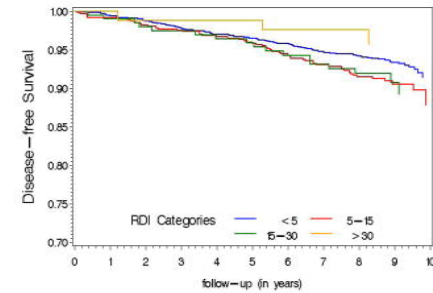
CHD-free Survival by AHI category - Men



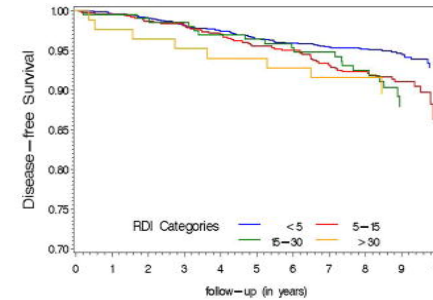
CHF-free Survival by AHI category - Men



CHD-free Survival by AHI category - Women



CHF-free Survival by AHI category - Women

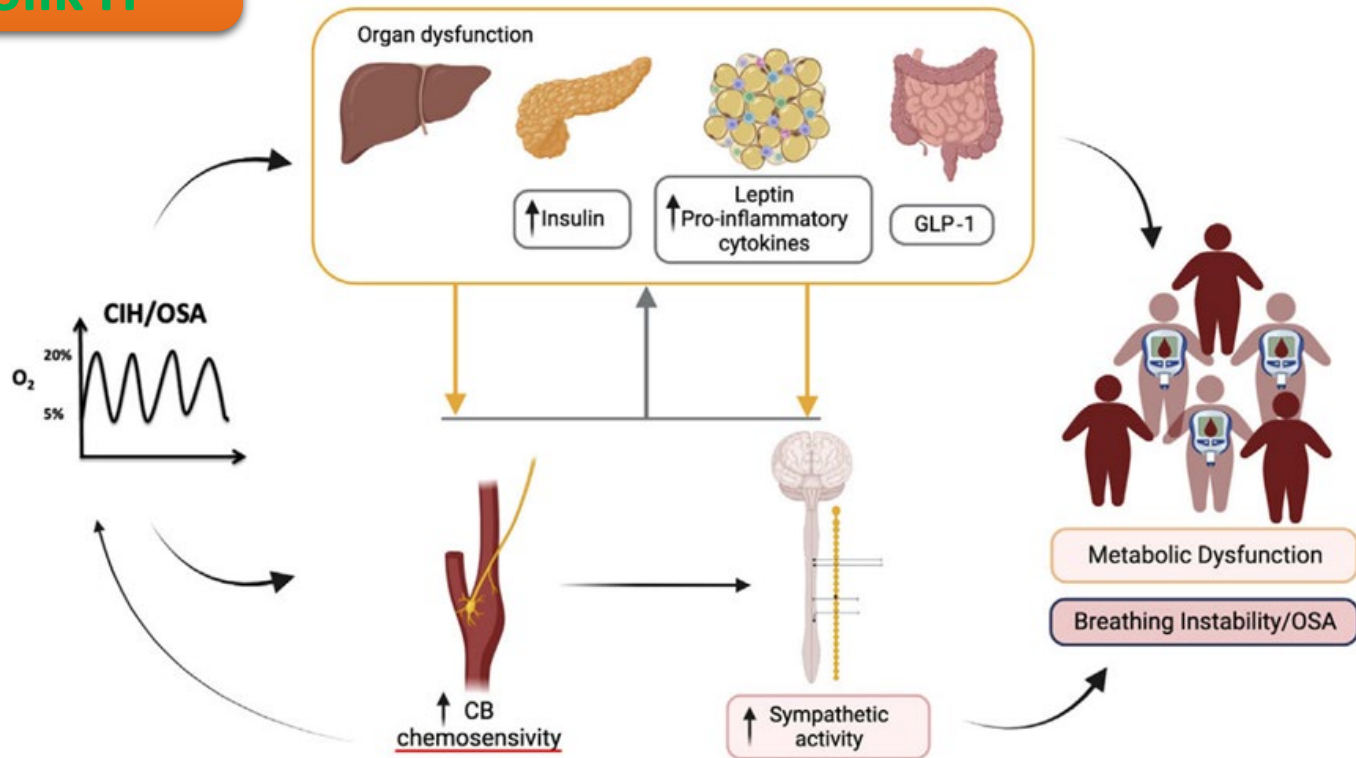


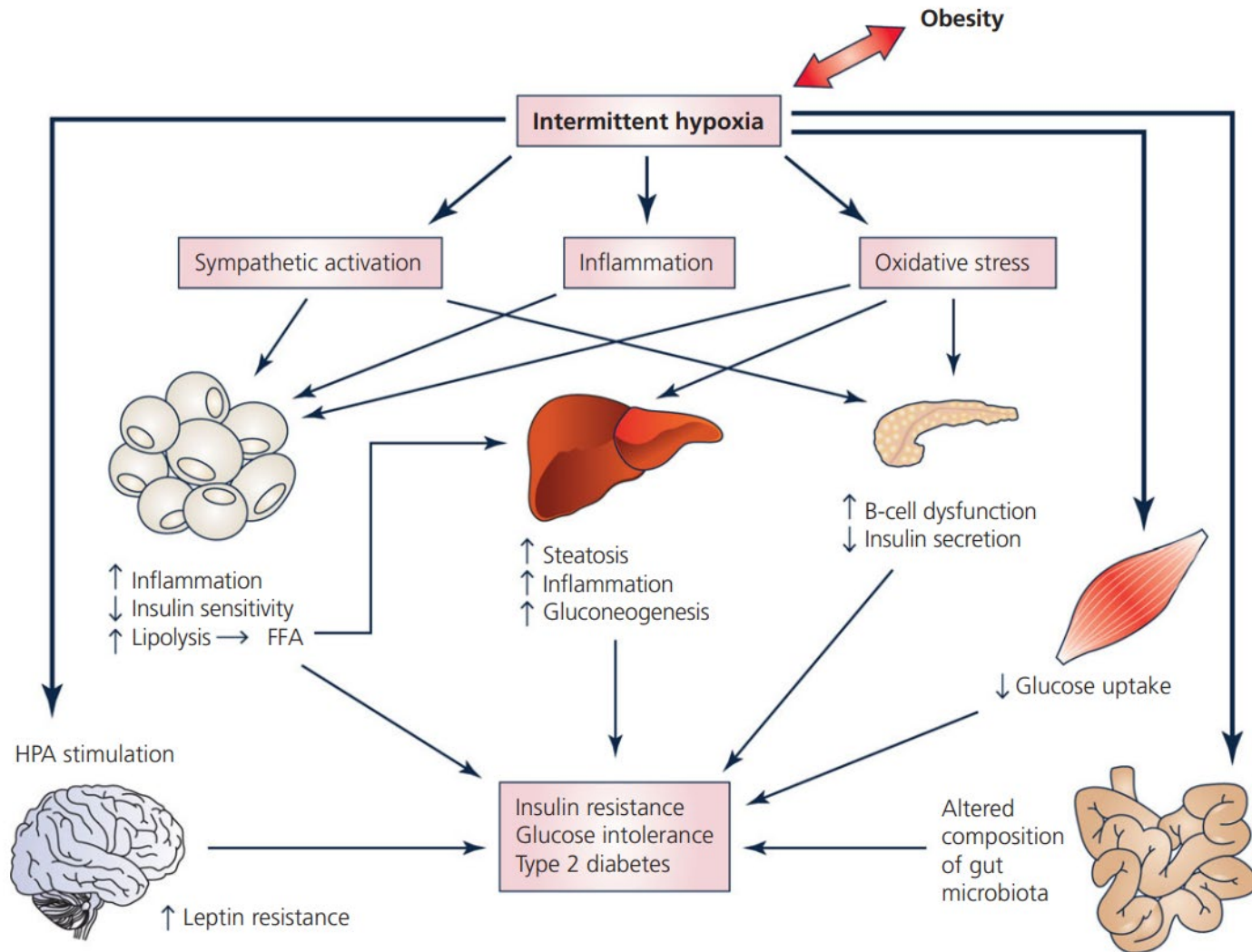
OUAS ve KY

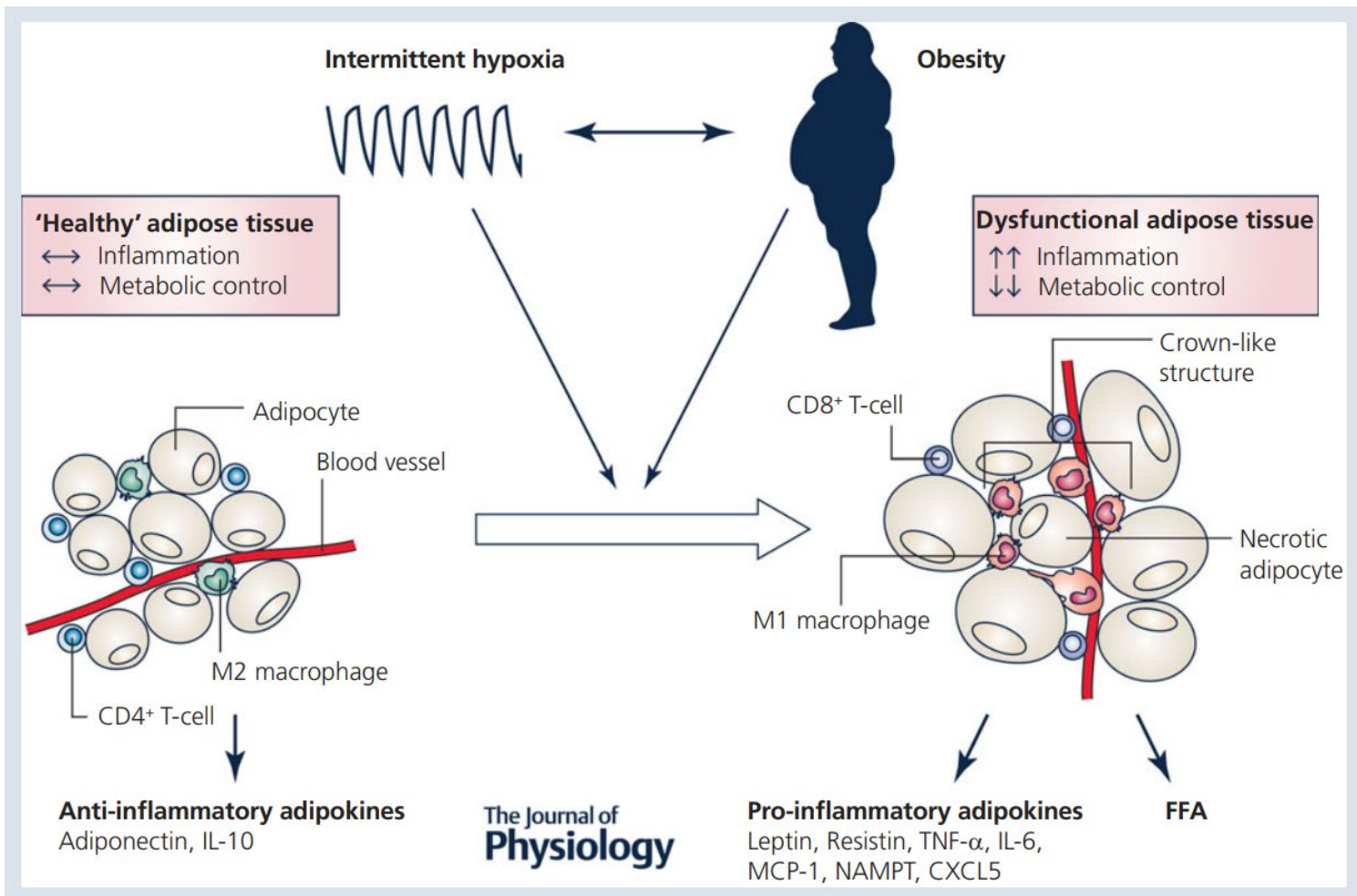
Özet

- ✓ SDB KY gelişme riskini artırıyor
- ✓ SSA OSA'ya göre daha yüksek KY Potansiyli taşıyor
- ✓ OSA KY mortaliteyi artırıyor
- ✓ CSA mortalite daha fazla artırıyor
- ✓ Tedavi ile OSA/nonOSA KY gelişme riski eşitleniyor??
- ✓ CSA ve ileri KY hastalarında ASV mortaliteyi artırıyor!!!

OUAS ve Metabolik H









Does hormonal control obviate positive airway pressure therapy in acromegaly with sleep-disordered breathing?

Muhammed Emin Akkoyunlu^a, Mahmut Muzaffer İlhan^b,
Mehmet Bayram^{a,*}, Ertuğrul Taşan^b, Fatih Yazar^a,
Hatice

- ✓ Prospektif kohort
- ✓ 42 akremogali 22 yeni tanı
- ✓ 15 hasta OSA
- ✓ 12 hastada PAP gerekli
- ✓ Medikal + cerrahi stabilite sonrası 6. ay PSG
- ✓ 11 hasta PAP ihtiyacı devam ediyor

Table 3 Comparison of before treatment and control polysomnography and anthropometric parameters of active acromegalic patients with SDB.

	n = 14		
	Before treatment	After treatment ^a	p
RDI	31.5 (14.4–38.3)	24.6 (12.4–31.4)	0.004
Body mass index	31 (28–36)	31.5 (28–34)	NS
Growth hormone, ng/ml	3.57 (1.59–8.15)	1.16 (0.8–1.39)	0.003
IGF-I, ng/ml	718 (605–1023)	137 (124–184)	0.001
Apnea index	17.7 (4.7–27.1)	12.8 (5.5–24.5)	0.014
ESS	6.5 (4–11)	5.5 (3–7.2)	NS
Hypopnea	11.2 (6.47–14.3)	9.8 (5.5–12.6)	NS
Lowest oxygen saturation	81.5 (75–86)	86 (81.7–89.7)	0.006
Desaturation index	5 (4–6.2)	4 (1.7–6)	0.023
Central apnea	3 (1–12.2)	1 (0–7.2)	0.037
REM-RDI	24.3 (14.1–45.9)	7.8 (1.2–17.2)	0.003
Neck circumference, cm	41 (38–43)	41 (38–43)	NS
Waist circumference, cm	100 (93–108)	99 (94–106)	NS

Data are presented as medians (25th–75th percentile).

Abbreviations: SDB; sleep-disordered breathing, RDI; respiratory disturbance index, IGF; insulin-like growth factor, ESS; Epworth sleepiness scale, REM-RDI; rapid eye movement phase-respiratory disturbance index, NS; not significant.

^a After treatment indicates 6 months after hormonal remission via medical, surgical or radiotherapy or combined.

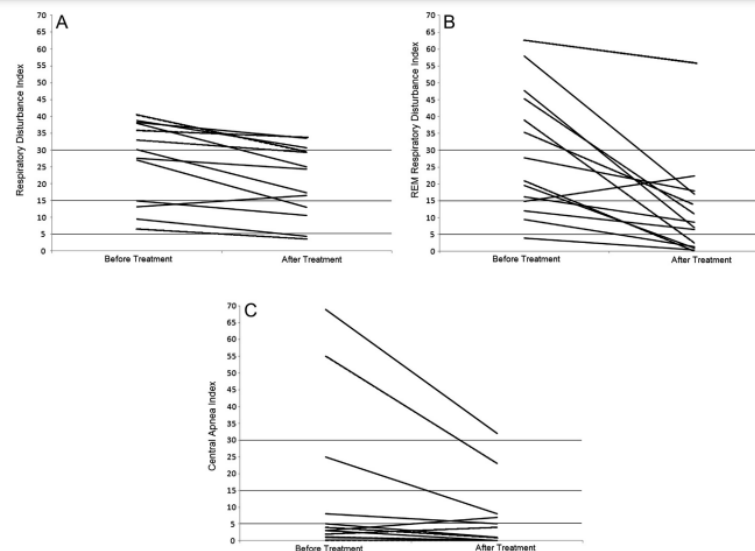


Figure 2 A – Comparison of respiratory disturbance index levels of at polysomnography before treatment and control, B – Comparison of REM-Respiratory disturbance index levels of at polysomnography before treatment and control, C – Comparison of central apnea index levels of at polysomnography before treatment and control.

Vaspin and lipocalin-2 levels in severe obstructive sleep apnea

Muharrem Kiskac¹, Mehmet Zorlu¹, Muhammed Emin Akkoyunlu², Elif Kilic³, Cumali Karatoprak¹, Mustafa Cakirca¹, Erdinc Yavuz⁴, Cuneyt Ardic⁴, Ahmet Adil Camli¹, Mehmetali Cikrikcioglu¹, Levent Kart²

¹Internal Medicine Clinic, Bezmialem Vakif University, Faculty of Medicine, 34093 Fatih, Istanbul, Turkey; ²Department Of Pulmonology,

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Background: Vaspin and lipocalin-2 are less-known recent members of adipocytokine family. There are ongoing studies investigating the role of vaspin ve lipocalin-2 in metabolic syndrome (MS). Obstructive sleep apnea syndrome (OSAS) is independently associated with an increased prevalence of MS. We aimed to measure the levels of vaspin and lipocalin-2 which are secreted from adipocytes in patients with severe OSAS and examine the relationship between these two adipocytokines and OSAS.

Methods: The study consisted of two groups: severe OSAS patients with an apnea-hypopnea index (AHI) of >30/h (OSAS group, 34 subjects) and age-matched healthy volunteers with a AHI <5/h (control group, 25 subjects) Serum levels of vaspin and lipocalin-2 in these two groups were compared.

Results: Serum levels of vaspin were significantly lower in OSAS group patients with severe OSAS compared with control group; healthy volunteers (OSAS group: 0.69 ± 0.5 vs. control group: 1.24 ± 1.13 ; $P=0.034$). The difference between the two groups in terms of serum levels of lipocalin-2 has not reached statistical significance (OSAS group: 61.6 ± 18.2 vs. control group: 68.5 ± 20.1 ; $P=0.17$).

OUAS ve Growth Hormon Salınımı

Growth hormon salınımının OUAS'lılarda azalması nedeniyle lipoliz e azalır

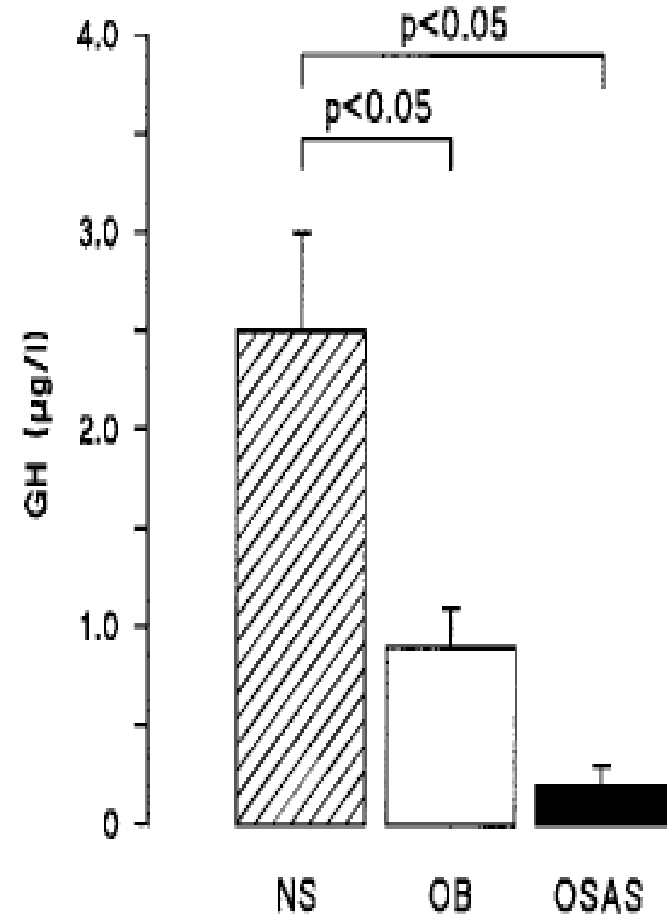
J Clin Endocrinol Metab. 2002

n-CPAP kullanımı ile uyku yapısı düzelir , GH salınımı normale döner ve lipoliz hızlanır

OUAS'lı çocuklarda GH eksikliğine bağlı büyüme ve gelişme geriliği

Tonsillektomi sonrası hızla gelişme o.ç.

Leiberman A. Int J Pediatr Otorhinolaryngol 2006



OUAS ve Empotans

- OUAS'lıların % 28-50'sinde empotans
- OUAS'lılarda empotans nedenleri : Depresyon, hipotalamik-hipofizer-testiküler fonksiyon bozukluğu
- Empotans ile AHI korele

Margel D. Urology. 2004 Mar;63(3):545-9.

- Hafif OUAS'lıların % 53.8'inde, ağır OUAS'lıların ise % 54.5'unda libido azalması

Köktürk ve ark.

- CPAP ile testesteron düzeyi artar

Goncalves MA. Sleep Med. 2005 Jul;6(4):333-9.

OUAS ve Kaza Riski

- Uykulu araba kullanma trafik kaza riskini 8.2 kat artırmakta

Connor J. Accid Anal Prev33;31-41

- (

ORIGINAL RESEARCH ARTICLE

Open Access

Investigation of obstructive sleep apnoea
syndrome p
drivers from

Muhammed E Akkoyunlu¹
and Meltem Tor²

OSAS prevalansı :1,5-2,4

Uzun yol şoförleride %14,9

ve riskin 6.1

- (

Abstract

Background: The aim of this study was to assess the prevalence of Obstructive sleep apnoea syndrome (OSAS) in



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Obstructive Sleep Apnea and the Risk of Sudden Cardiac Death: A Longitudinal Study of 10,701 Adults

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Abstract

Objective—To identify the risk of sudden cardiac death (SCD) associated with obstructive sleep apnea (OSA).

Background—Risk stratification for SCD, a major cause of mortality, is difficult. OSA is linked to cardiovascular disease and arrhythmias, and has been shown to increase the risk of nocturnal SCD. It is unknown if OSA independently increases the risk of SCD.

Methods—We included 10,701 consecutive adults undergoing their first diagnostic polysomnogram between 7/1987 and 7/2003. During follow-up up to 15 years, we assessed incident resuscitated or fatal SCD in relationship to the presence of OSA, physiological data including the apnea-hypopnea index (AHI) and nocturnal oxygen saturation (O₂sat) parameters, and relevant comorbidities.

Results—During an average follow-up of 5.3 years, 142 patients had resuscitated or fatal SCD (annual rate 0.27%). In multivariate analysis, independent risk factors for SCD were age, hypertension, coronary artery disease, cardiomyopathy or heart failure, ventricular ectopy or nonsustained ventricular tachycardia, and lowest nocturnal O₂sat (per -10%, HR 1.14, P=0.029). SCD was best predicted by age >60 years (HR 5.53), AHI >20 (HR 1.60), mean nocturnal O₂sat <93% (HR 2.93), and lowest nocturnal O₂sat <78% (HR 2.60, all P<0.0001).

Conclusions—In a population of 10,701 adults referred for polysomnography, OSA predicted incident SCD, and the magnitude of risk was predicted by multiple parameters characterizing OSA severity. Nocturnal hypoxemia, an important pathophysiological feature of OSA, strongly



OSA sapık ideolojilerden daha az öldürür...