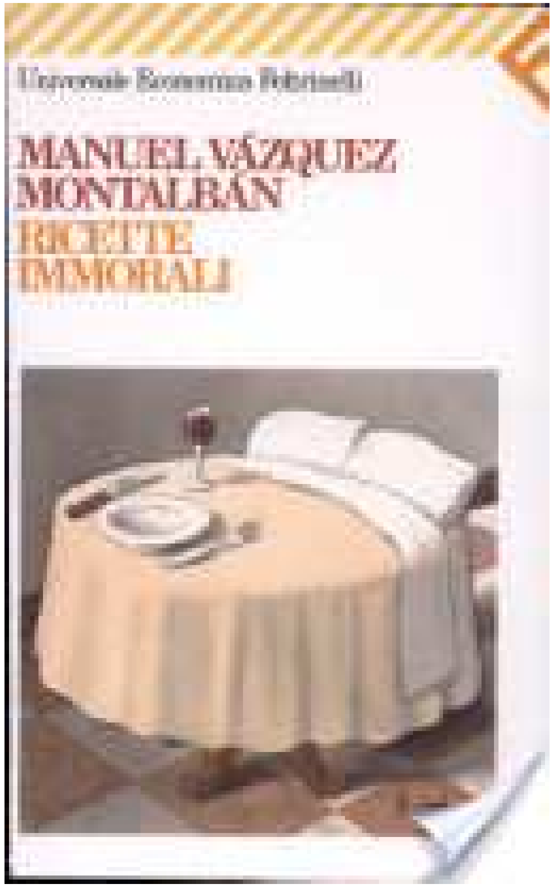
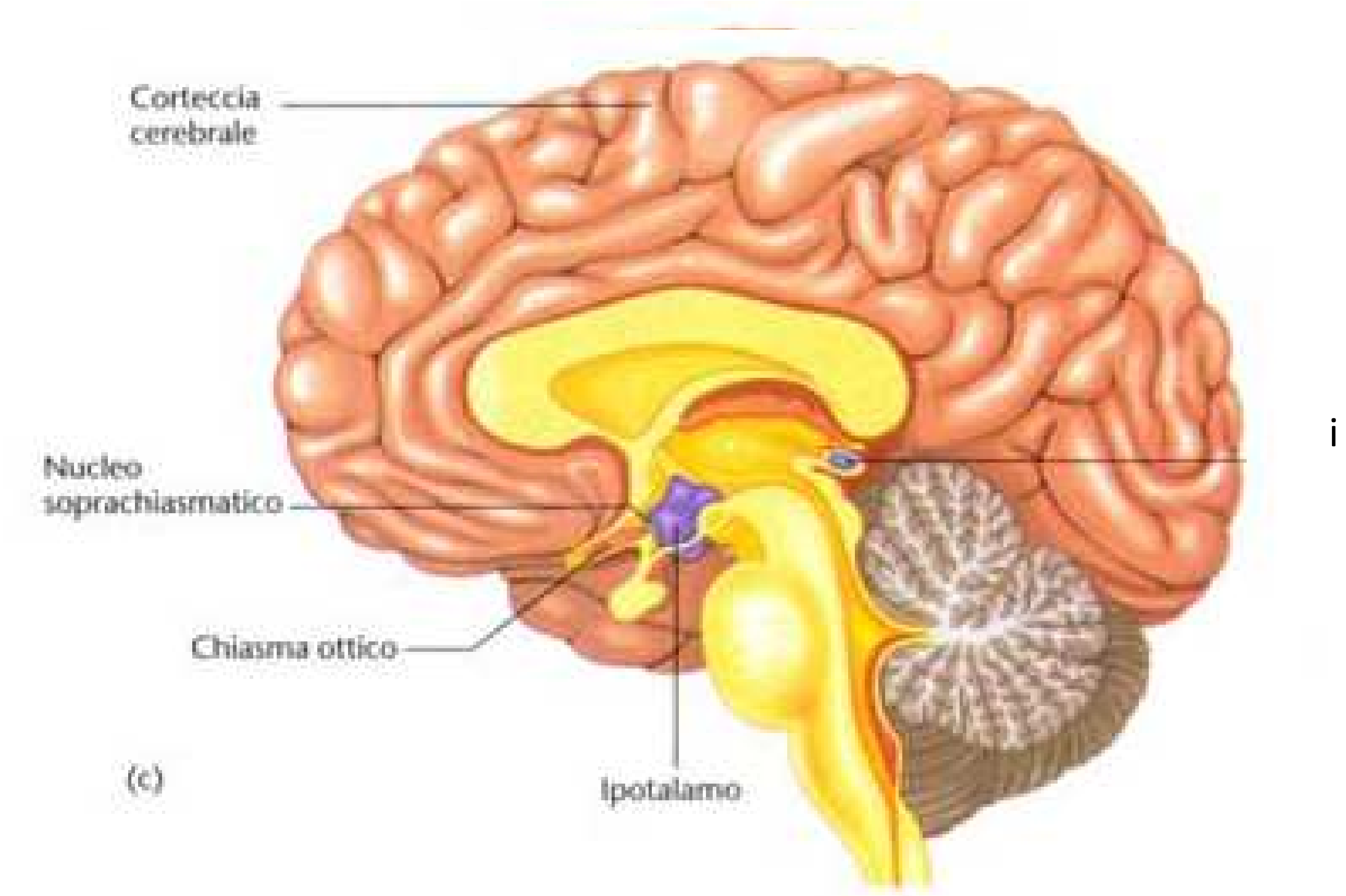
SONNO E ALIMENTAZIONE


Universale Economica Feltrinelli
MANUEL VÁZQUEZ MONTALBÁN
RICETTE IMMORALI

Liborio Parrino
Centro di Medicina del Sonno
Dipartimento di Neuroscienze
Azienda Ospedaliero-Universitaria di Parma

Aristotele

durante la digestione si formano vapori che salgono alla testa;
man mano che il cervello si raffredda i vapori si condensano,
fluiscono verso il basso e raffreddano il cuore,
ritenuto il centro sensoriale del corpo.


Corteccia cerebrale
Nucleo soprachiasmatico
Chiasma ottico
(c)
Ipotalamo
i

Temperatura – Alimentazione – Ciclo sonno veglia

Sleep, 17(4):339–344
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Nocturnal Eating Syndrome in Adults

*Maria Cristina Spaggiari, †Franco Granella, *Liborio Parrino,
‡Carlo Marchesi, ‡Ilaria Melli and *Mario Giovanni Terzano

Sleep, 20(9):734–738
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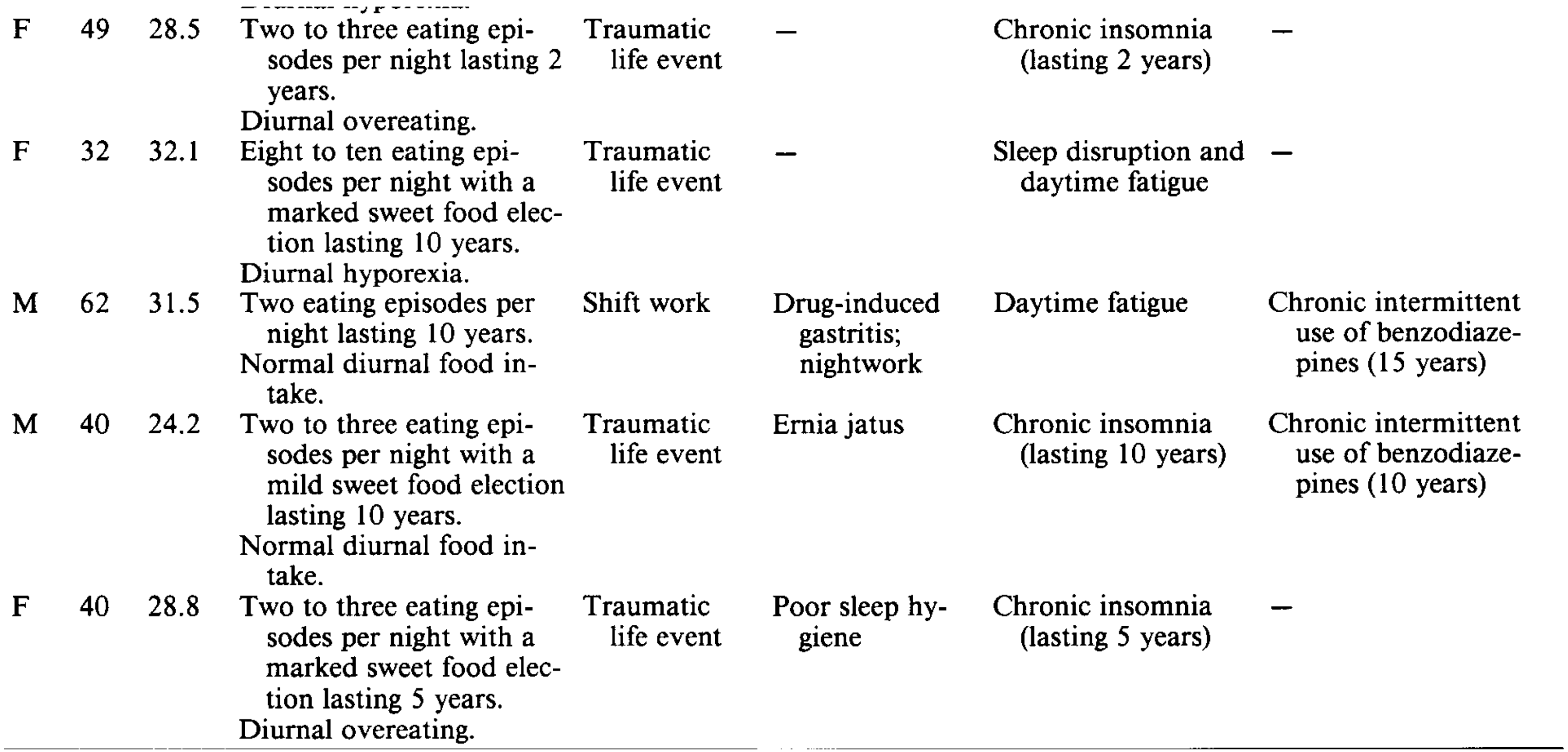
Nocturnal Eating: Prevalence and Features in 120 Insomniac Referrals

Raffaele Manni, Maria Teresa Ratti and Amelia Tartara

Neurological Institute "C. Mondino", University of Pavia, Italy

Sex	Age	BMI[a]	Clinical features	Promoting events	Predisposing factors	Associated complaints	Drugs
M	44	30.3	Two to three eating episodes per night with a marked sweet food election lasting 9 months. Normal diurnal food intake.	Diet	—	Chronic insomnia	Chronic intermittent use of benzodiazepines (10 years); discontinuous use of antidepressants (10 years)
F	45	23	Four to seven eating episodes per night lasting 10 years. Diurnal hyporexia.	Traumatic life event	—	Daytime fatigue	—
M	46	39.5	Three to four eating episodes per night lasting 16 years. Normal diurnal food intake.	—	Peptic ulcer	—	—
F	23	22.2	Three eating episodes per night with a marked sweet food election lasting 5 years. Diurnal hyporexia.	—	Poor sleep hygiene	Daytime sleepiness, sleep attacks and fragmented nocturnal sleep (lasting 10 years)	—
F	30	23.2	Two to three eating episodes per night with obsessional behaviors and a marked sweet food election lasting 5 years. Diurnal hyporexia.	Delivery	—	—	—



F	49	28.5	Two to three eating episodes per night lasting 2 years. Diurnal overeating.	Traumatic life event	–	Chronic insomnia (lasting 2 years)	–
F	32	32.1	Eight to ten eating episodes per night with a marked sweet food election lasting 10 years. Diurnal hyporexia.	Traumatic life event	–	Sleep disruption and daytime fatigue	–
M	62	31.5	Two eating episodes per night lasting 10 years. Normal diurnal food intake.	Shift work	Drug-induced gastritis; nightwork	Daytime fatigue	Chronic intermittent use of benzodiazepines (15 years)
M	40	24.2	Two to three eating episodes per night with a mild sweet food election lasting 10 years. Normal diurnal food intake.	Traumatic life event	Ernia jatus	Chronic insomnia (lasting 10 years)	Chronic intermittent use of benzodiazepines (10 years)
F	40	28.8	Two to three eating episodes per night with a marked sweet food election lasting 5 years. Diurnal overeating.	Traumatic life event	Poor sleep hygiene	Chronic insomnia (lasting 5 years)	–

DSM-IV

- **Bulimia**
- **Disturbo del comportamento alimentare (binge eating)**

TABLE 2. *Psychiatric investigations*

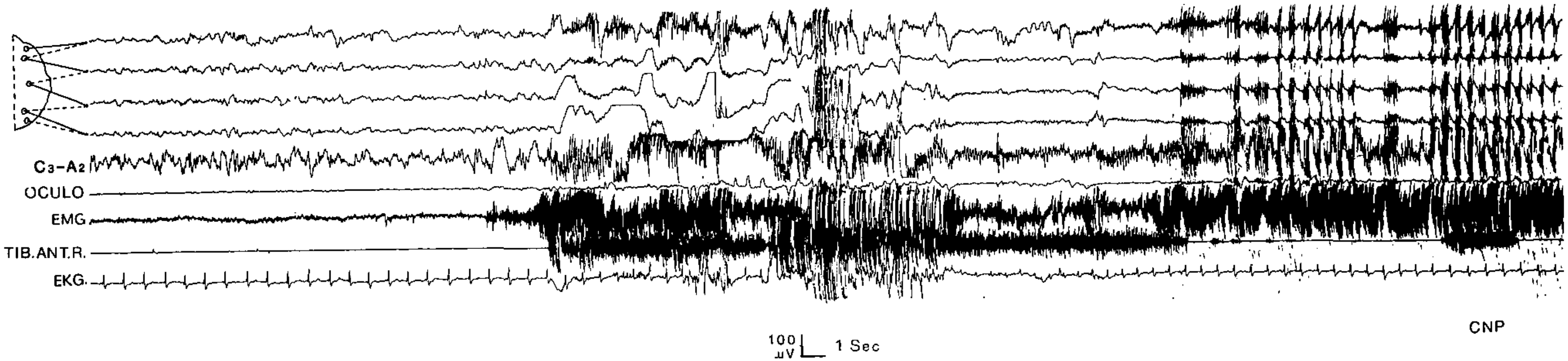
Patient	Clinical evaluation (DSM-III-R)	MMPI	EAT-26[a]	HRSD[b]	HRSA[c]
1	Panic disorder with agoraphobia, major depression	Hysteria, depression, schizophrenia	Normal	21	100
2	Generalized anxiety disorder	nd[d]	Normal	nd	nd
3	Panic disorder with agoraphobia	nd	Normal	nd	nd
4	Normal	Depression, hypochondria, psychastenia	Normal	14	49
5	Generalized anxiety disorder	Hysteria, paranoia, social introversion	Normal	15	68
6	Panic disorder	nd	Normal	nd	nd
7	Agoraphobia without panic disorder	Hysteria, depression, psychastenia	Normal	20	116
8	Panic disorder with agoraphobia, dysthymia	Depression, hysteria, schizophrenia	Normal	20	60
9	Panic disorder	Depression, hysteria, psychastenia	Normal	29	37
10	Agoraphobia without panic disorder	Depression	Normal	16	40

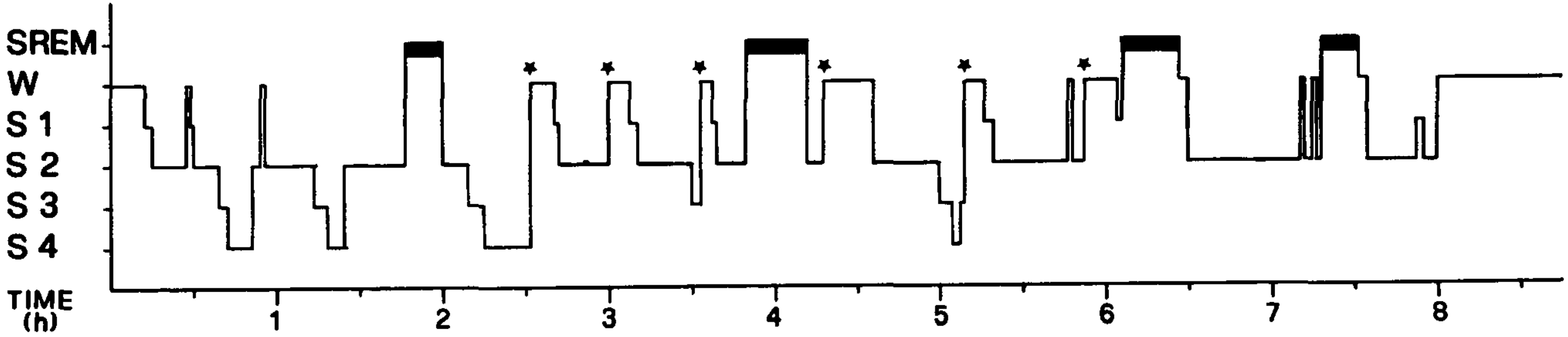
[a] EAT-26 = Eating Attitude Test (short version).

[b] HRSD = Hamilton Rating Scale for Depression (normal values ≤15).

[c] HRSA = Hamilton Rating Scale for Anxiety (normal values ≤50).

[d] nd = not done.


C3-A2
OCULO
EMG
TIB.ANT.R.
EKG.
100 µV
1 Sec
CNP


SREM
W
S 1
S 2
S 3
S 4
TIME (h)
1
2
3
4
5
6
7
8

		NES (seven subjects)	Binge (three subjects)	Aspecific nocturnal eating (eight subjects)
Number of subjects eating during PSG		7	3	3
Number of eating episodes/night	mean	4.0	2.5	1.5
	range	2–7	1–3	0–2
Eating latency (minutes)	mean	2.0	14.5	16.3
	range	1–3	8–20	12–24
Sleep latency after eating (minutes)	mean	3.0	6	7
	range	2–5	5–7	5–8

TABLE 6. *Clinical features common to all 10 patients*

A. A complaint of difficulty in maintaining sleep
B. Frequent and recurrent awakenings to eat or drink
C. Food-seeking drive described as urgent abnormal need to swallow food with absence of real hunger
D. Compulsive feeding behavior
E. Food peculiarity (always edible substances)
F. Inability to return to sleep without eating
G. Full waking during the episodes and clear recall of them in the morning
H. Polysomnographic evidence of low sleep efficiency index and high number of awakenings
I. Strict relation between nocturnal episodes and NREM sleep
J. Short "eating latency" and quick return to sleep after eating
K. No medical, hormonal or neurological disorders
L. Absence of bulimia or anorexia nervosa

CASO CLINICO

- 45 anni – F – impiegata
- Insonnia intermedia (risvegli multipli con fame compulsiva per sostanze commestibili soprattutto dolci)
- Ad ogni episodio notturno, ingerisce quantità “industriali” di briosche, nutella, biscotti
- Dopo l’abbuffata si riaddormenta
- Scosse alle gambe durante il sonno (riferite dal bedpartner)
- Ricordo al mattino degli episodi notturni
- Astenia diurna e sonnolenza pomeridiana
- Aumento di peso ma poco appetito di giorno
- Se mangia di più a cena non modifica il comportamento notturno
- Non manovre purgative
- Non disturbi psichiatrici presenti o pregressi

CASO CLINICO (D.D. e Terapia)

PSG

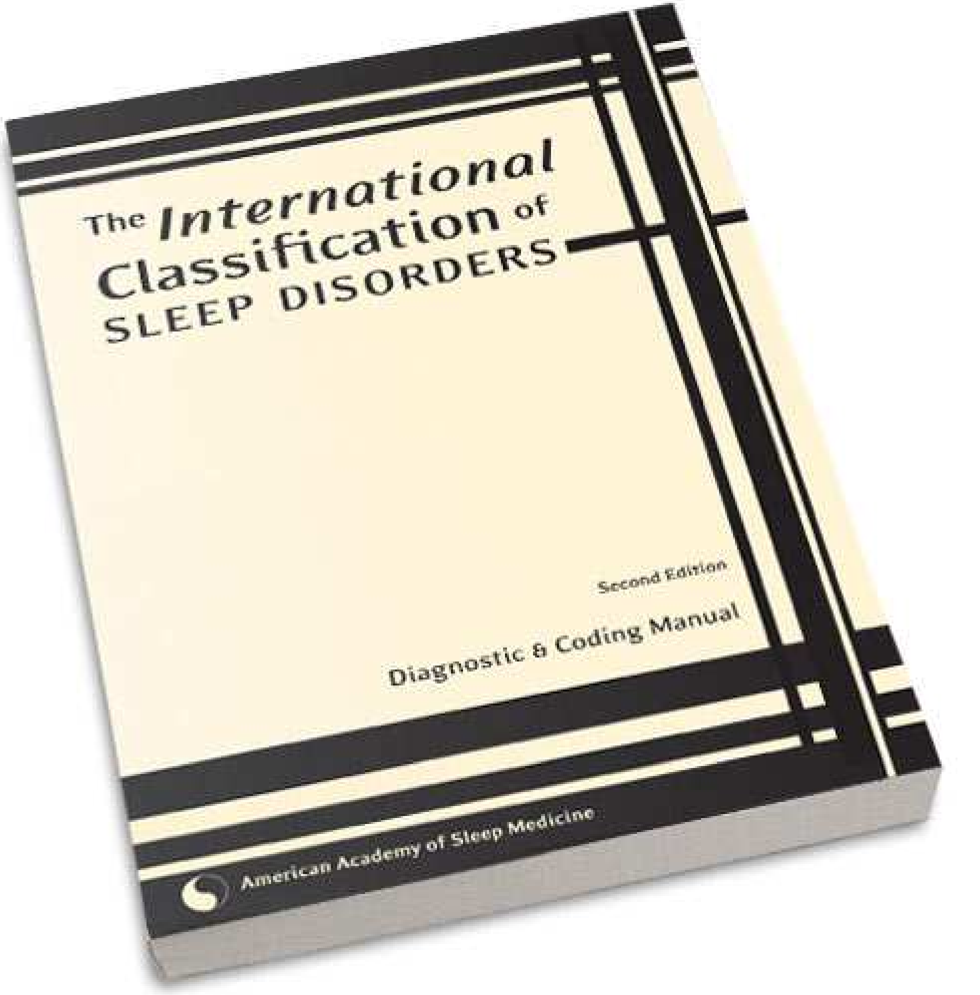
- **Aumento dei WASO**
- **Riduzione del sonno non-REM**
- **Risvegli (improvvisi) sempre in sonno non-REM**
- **Aumento del CAP rate per la presenza di PLM**

Diagnosi Differenziale

- **Sonnambulismo (parasonnie)**
- **Time-killing in insonnia**
- **Bulimia**
- **Disturbo del comportamento alimentare (binge eating)**

Trattamento

- **Trazodone, dopamino-agonisti**
- **SSRI (fluvoxamina)**
- **Topiramato**



The International Classification of SLEEP DISORDERS

Second Edition

Diagnostic & Coding Manual

American Academy of Sleep Medicine

SLEEP RELATED EATING DISORDER
(PARASOMNIA)

NES: run to the fridge…
RLS / PLM
bruxismo
fumo

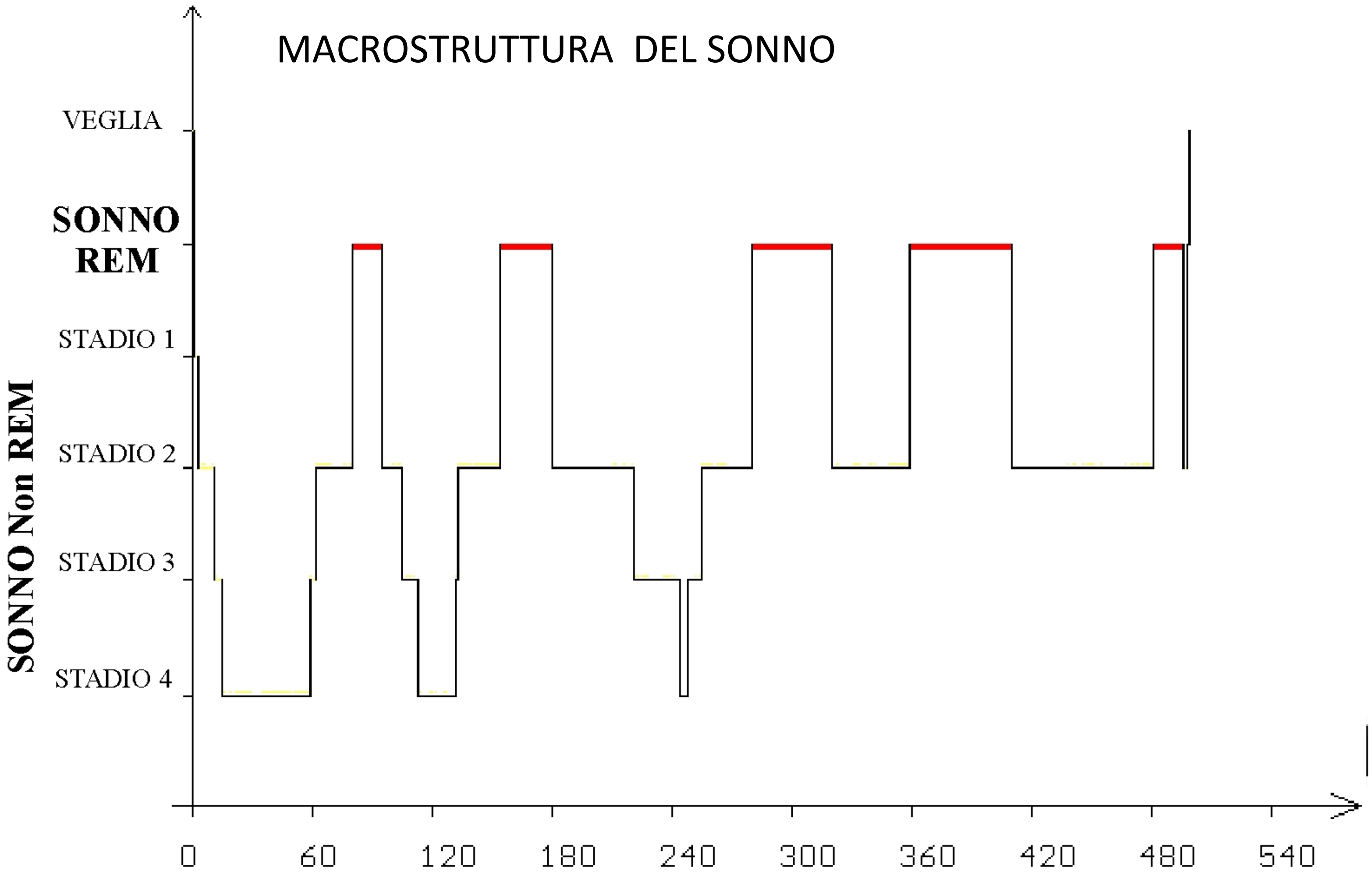
SONNAMBULISMO: incoscienza
non sempre cibo o sostanze commestibili
non ricordo al mattino

INSONNIA: passatempo (time-killing activity)

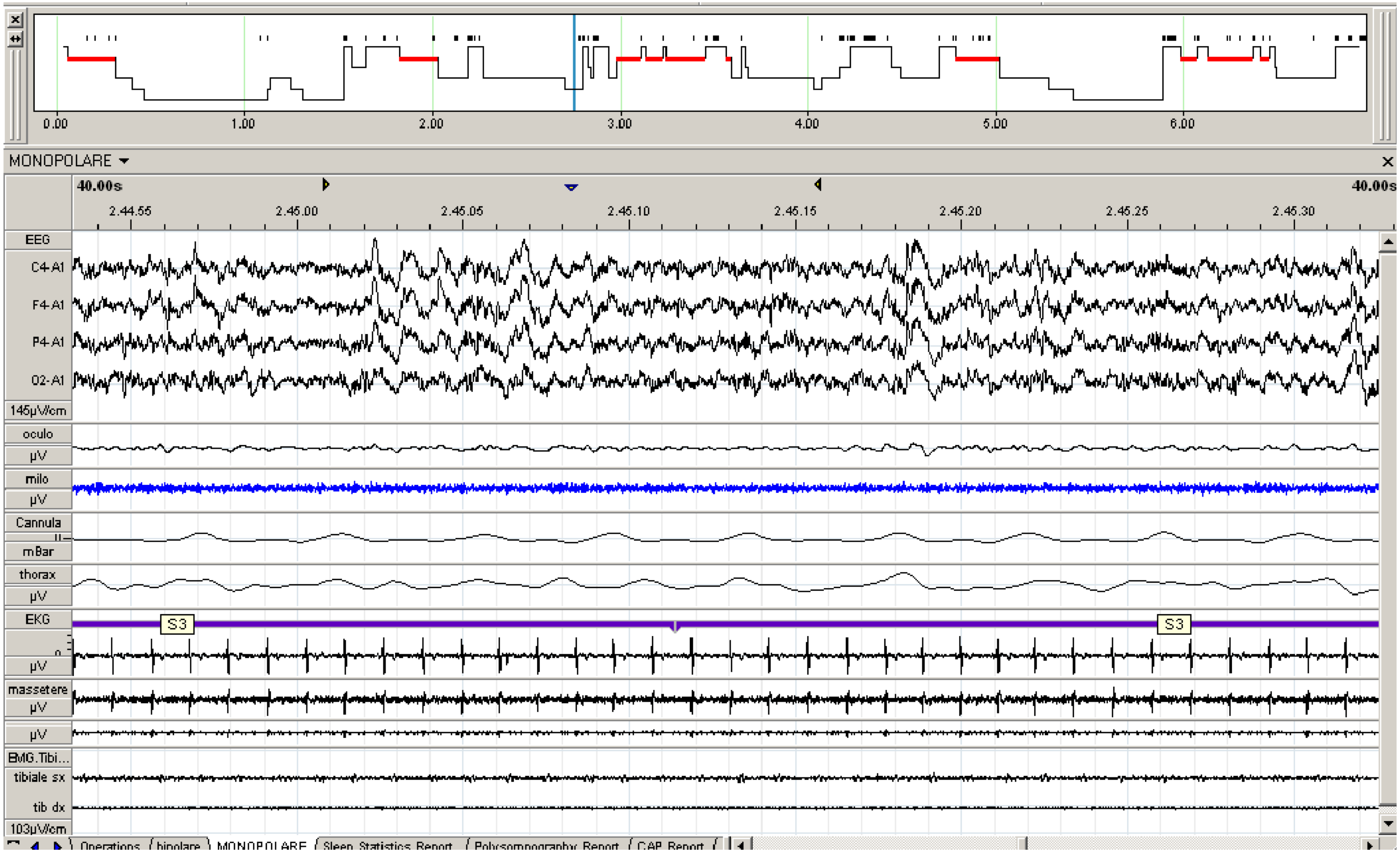
DISTURBI DEL RITMO CIRCADIANO: spostamento orari

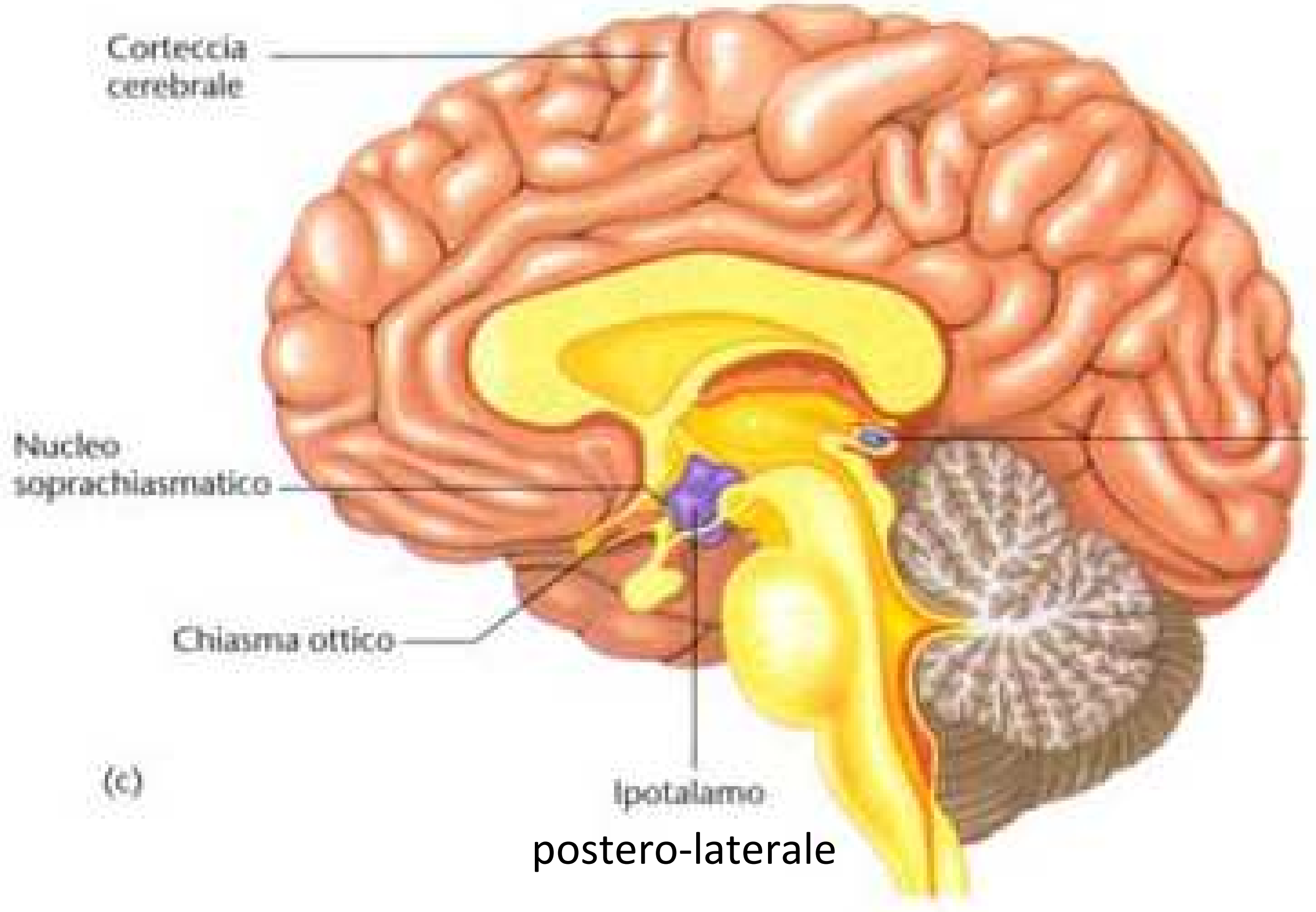
NARCOLESSIA: snack ogni 3-4 ore

MACROSTRUTTURA DEL SONNO



PSG NARCOLESSIA


0.00
1.00
2.00
3.00
4.00
5.00
6.00
MONOPOLARE
40.00s
40.00s
2.44.55
2.45.00
2.45.05
2.45.10
2.45.15
2.45.20
2.45.25
2.45.30
EEG
C4-A1
F4-A1
P4-A1
O2-A1
145µV/cm
oculo
µV
milo
µV
Cannula
mBar
thorax
µV
EKG
S3
S3
µV
massetere
µV
µV
EMG.Tibi...
tibiale sx
tib dx
103µV/cm
Operations
bipolare
MONOPOLARE
Sleep Statistics Report
Polysomnography Report
CAP Report

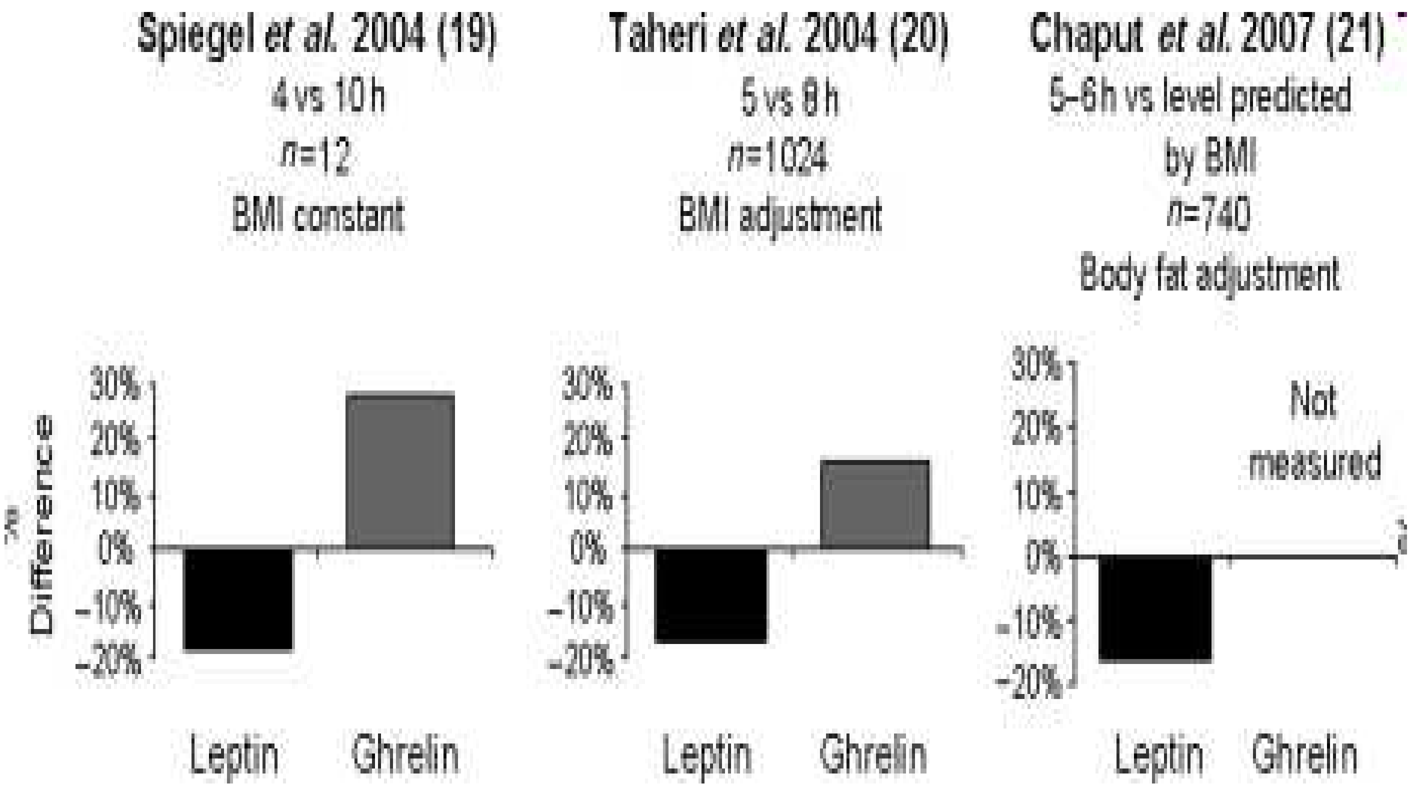

Corteccia cerebrale
Nucleo soprachiasmatico
Chiasma ottico
(c)
Ipotalamo
postero-laterale

Orexina (carente nella narcolessia)

ormone neuropeptidico che stimola lo stato di veglia e l’appetito

attiva il grasso bruno e aumenta il dispendio energetico

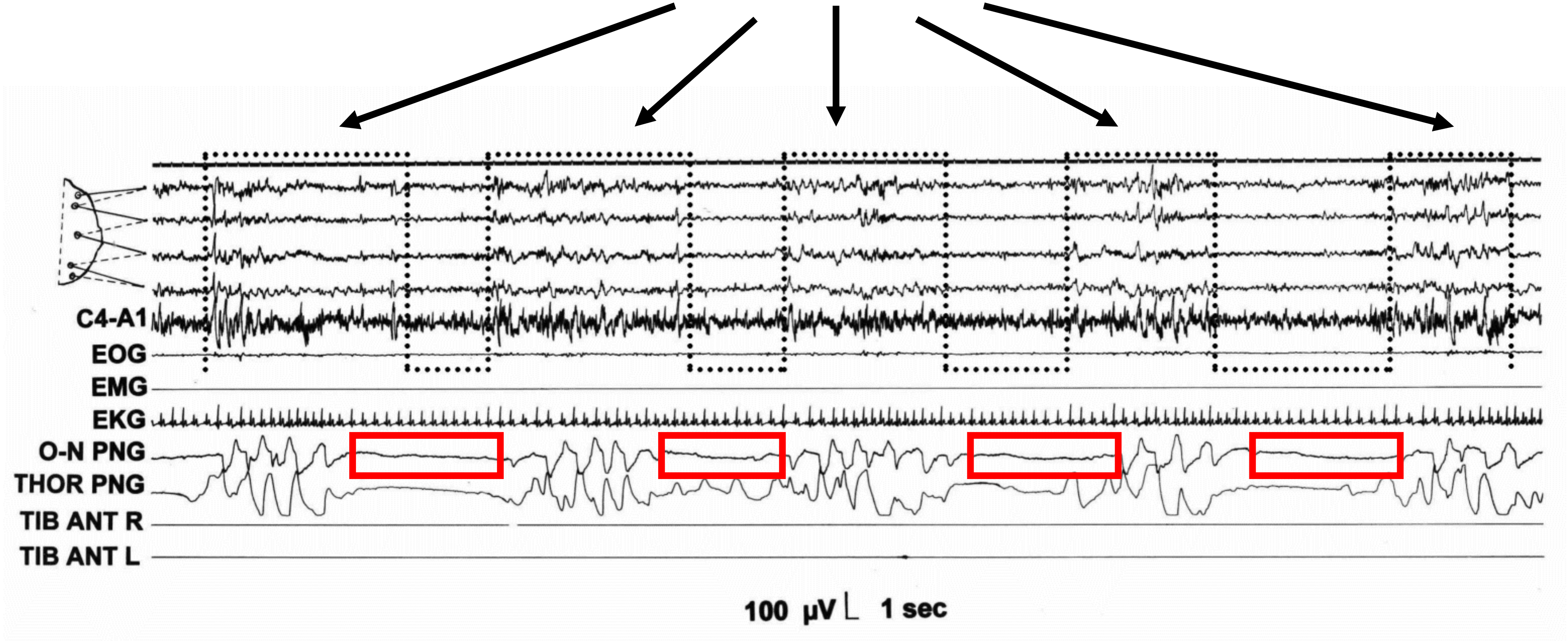
La restrizione di sonno è associata ad una significativa riduzione della leptina (ormone della sazietà prodotto dal tessuto adiposo) e ad un aumento della grelina (ormone dell'appetito prodotto dallo stomaco)



SINDROME DELLE APNEE OSTRUTTIVE NEL SONNO (OSAS)

- Eventi respiratori ripetitivi nel sonno
- Gli eventi sono interrotti da un microrisveglio

microrisvegli


C4-A1
EOG
EMG
EKG
O-N PNG
THOR PNG
TIB ANT R
TIB ANT L
100 µV
1 sec

TRACCIATO DI SONNO STADIO 2 CON APNEE

Apnea-Ipopnea Index (AHI)

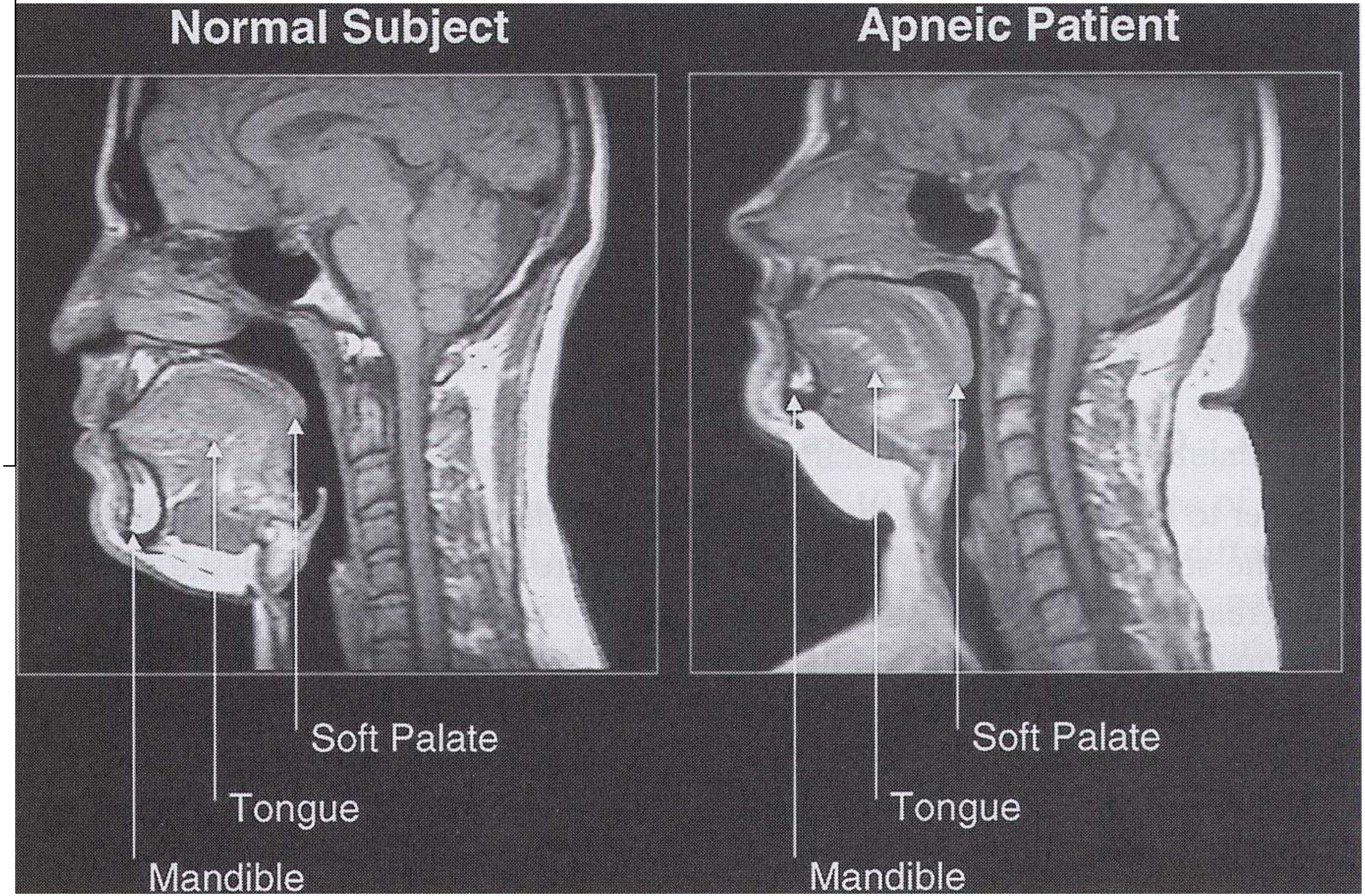
Si basa sul numero totale interruzioni complete (APNEE) o parziali (IPOPNEE) del respiro per ORA di sonno.

Queste pause respiratorie devono durare almeno 10 secondi e in genere si associano a una desaturazione di ossigeno nel sangue.

Indice utilizzato per stabilire l’entità della sindrome delle apnee notturne.

AHI tra 5 e 14: sindrome lieve
AHI: tra 15-30: sindrome moderata
AHI: > 30: sindrome grave

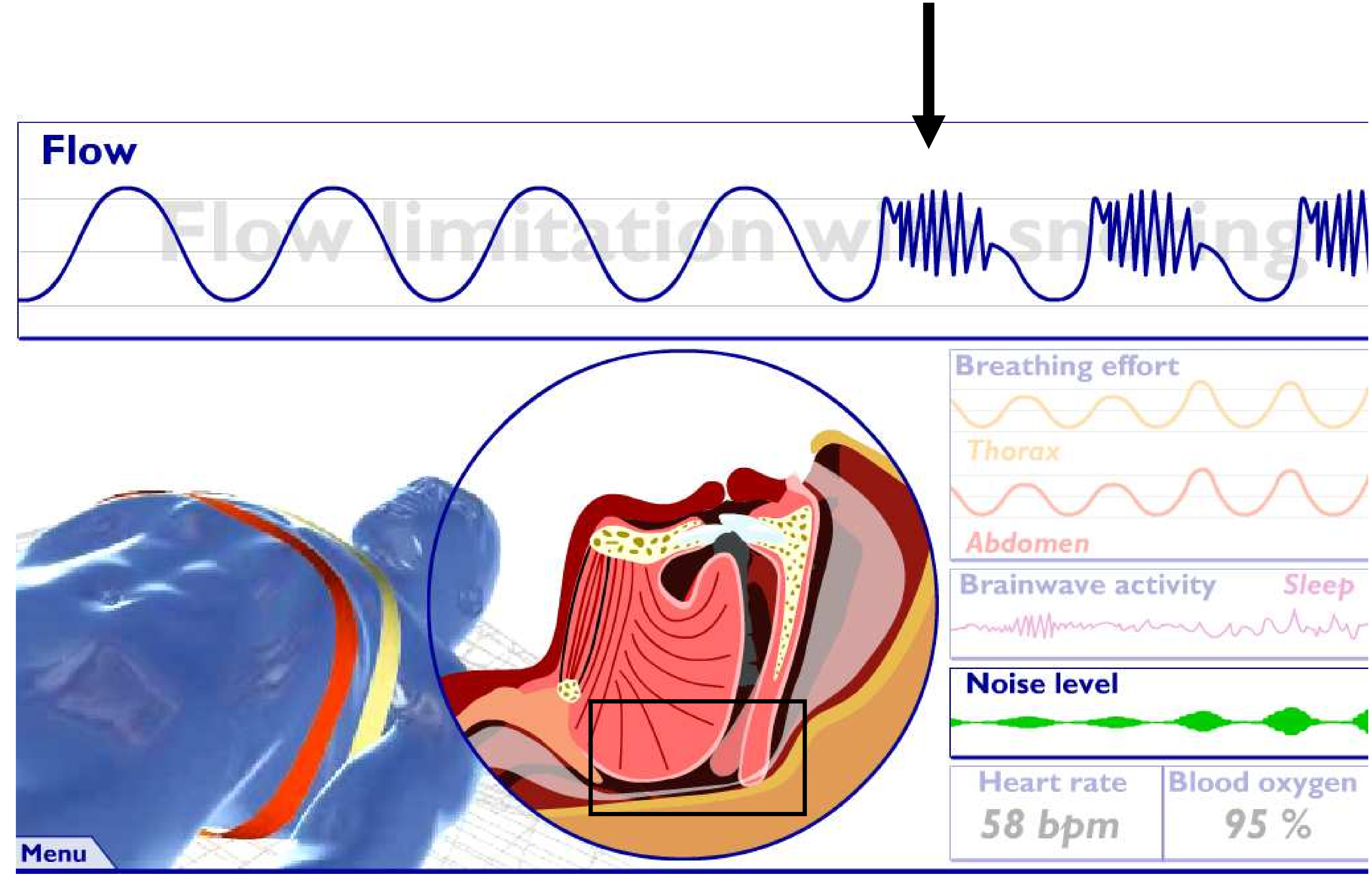
QUESTA VALUTAZIONE SI PUO’ FARE SOLO CON LA POLISONNOGRAFIA

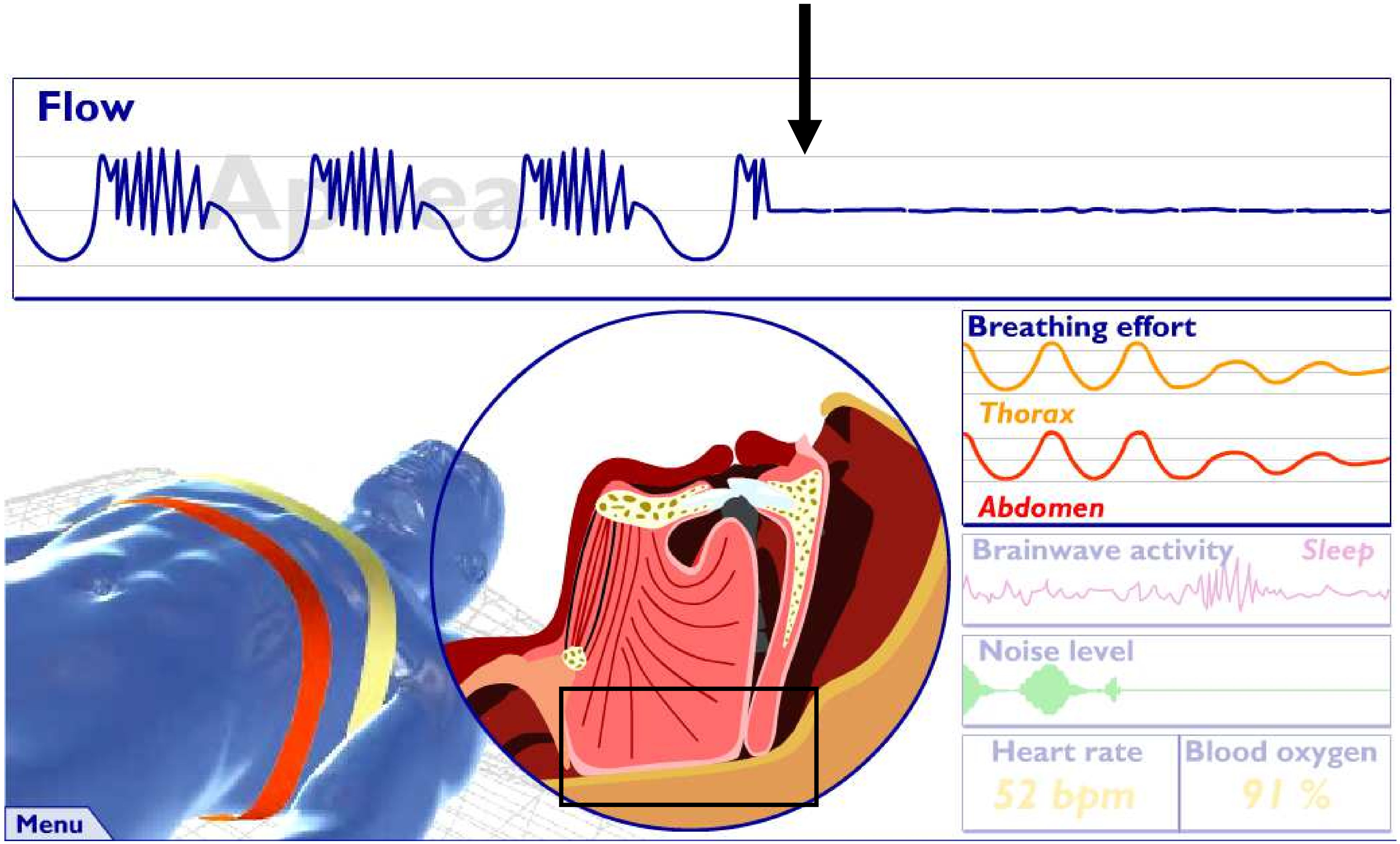


Normal Subject

Apneic Patient

Soft Palate
Tongue
Mandible
Soft Palate
Tongue
Mandible


Flow
Flow limitation with snoring
Breathing effort
Thorax
Abdomen
Brainwave activity
Sleep
Noise level
Heart rate
58 bpm
Blood oxygen
95 %
Menu


Flow
Apnea
Breathing effort
Thorax
Abdomen
Brainwave activity
Sleep
Noise level
Heart rate
52 bpm
Blood oxygen
91 %
Menu

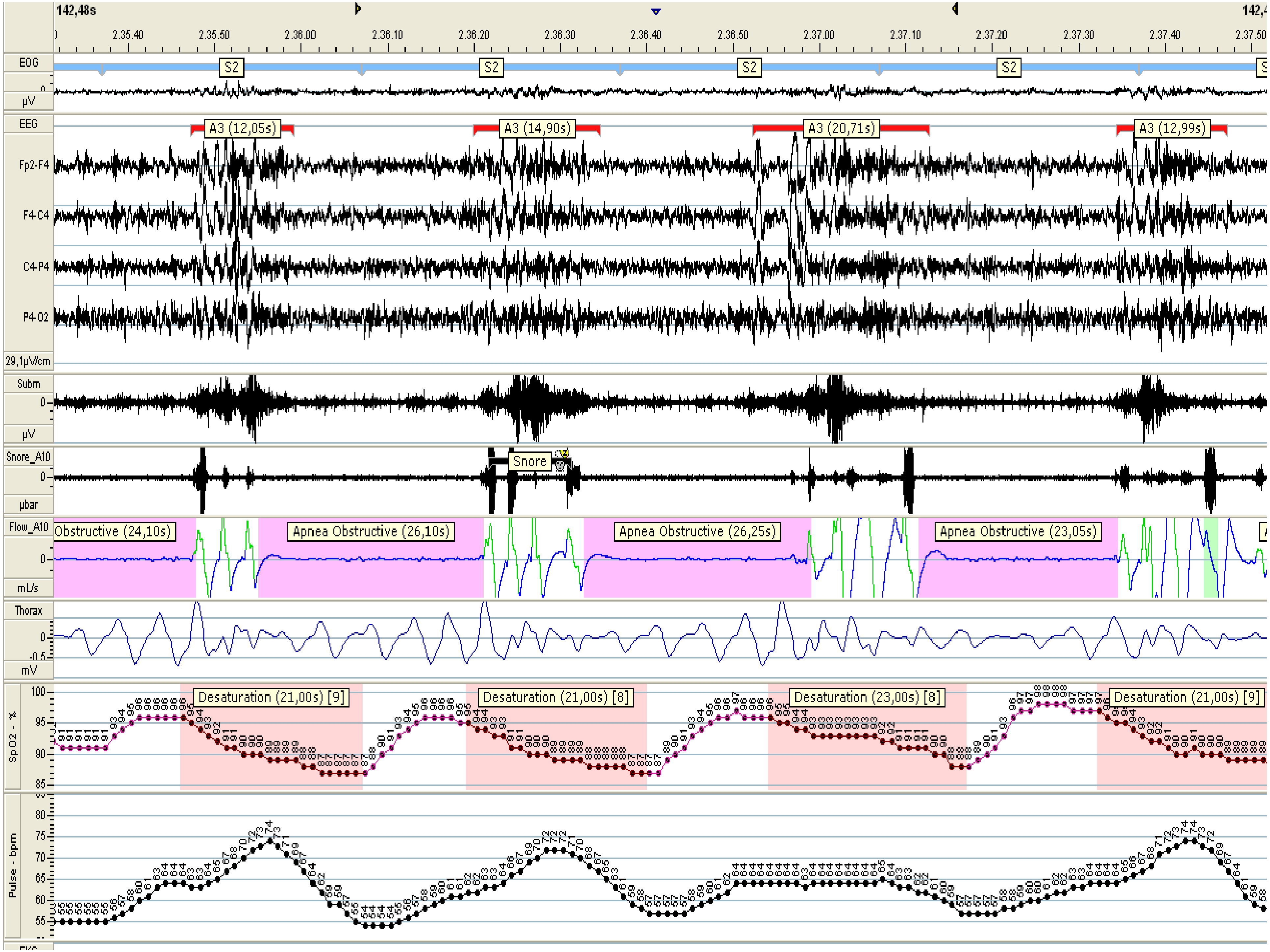
Gli studi epidemiologici hanno evidenziato che l'OSAS si associa
in alta percentuale di casi, oppure è un importante fattore di aggravamento
o di rischio per :

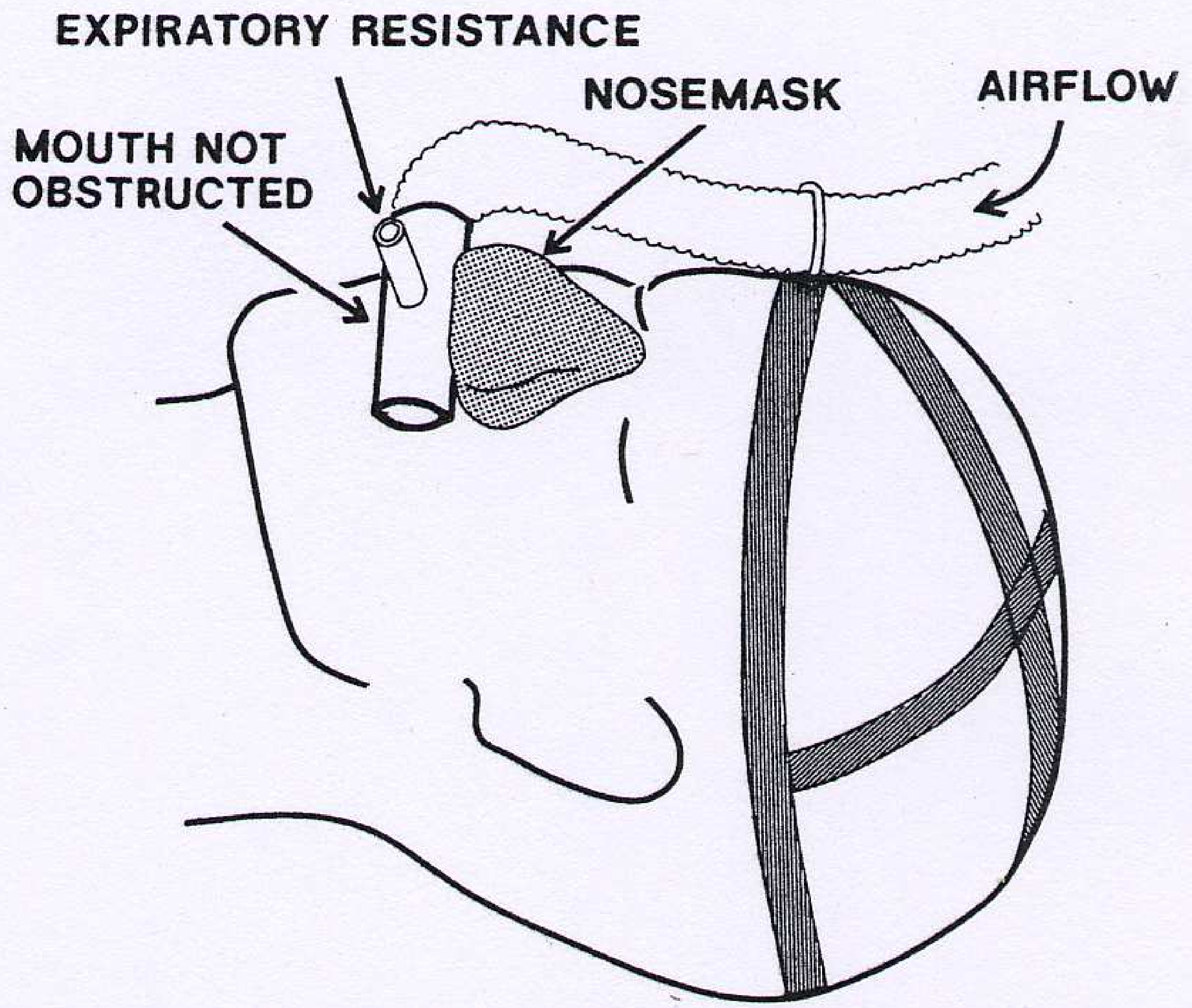
- Insufficienza respiratoria
- Ipertensione arteriosa sistemica: in particolare l'OSAS può essere responsabile del mancato calo fisiologico della pressione arteriosa ("dipping") notturna, ma anche dello scarso controllo farmacologico dell'ipertensione arteriosa, L'80% dei pazienti con ipertensione farmaco-resistente presenta disturbi respiratori nel sonno.
- Cardiopatia ischemica e scompenso cardiaco
- Aritmie cardiache e fibrillazione atriale
- Patologie cerebrovascolari
- Sindrome Metabolica
- Alterazione dei fattori di coagulazione in senso trombofilico

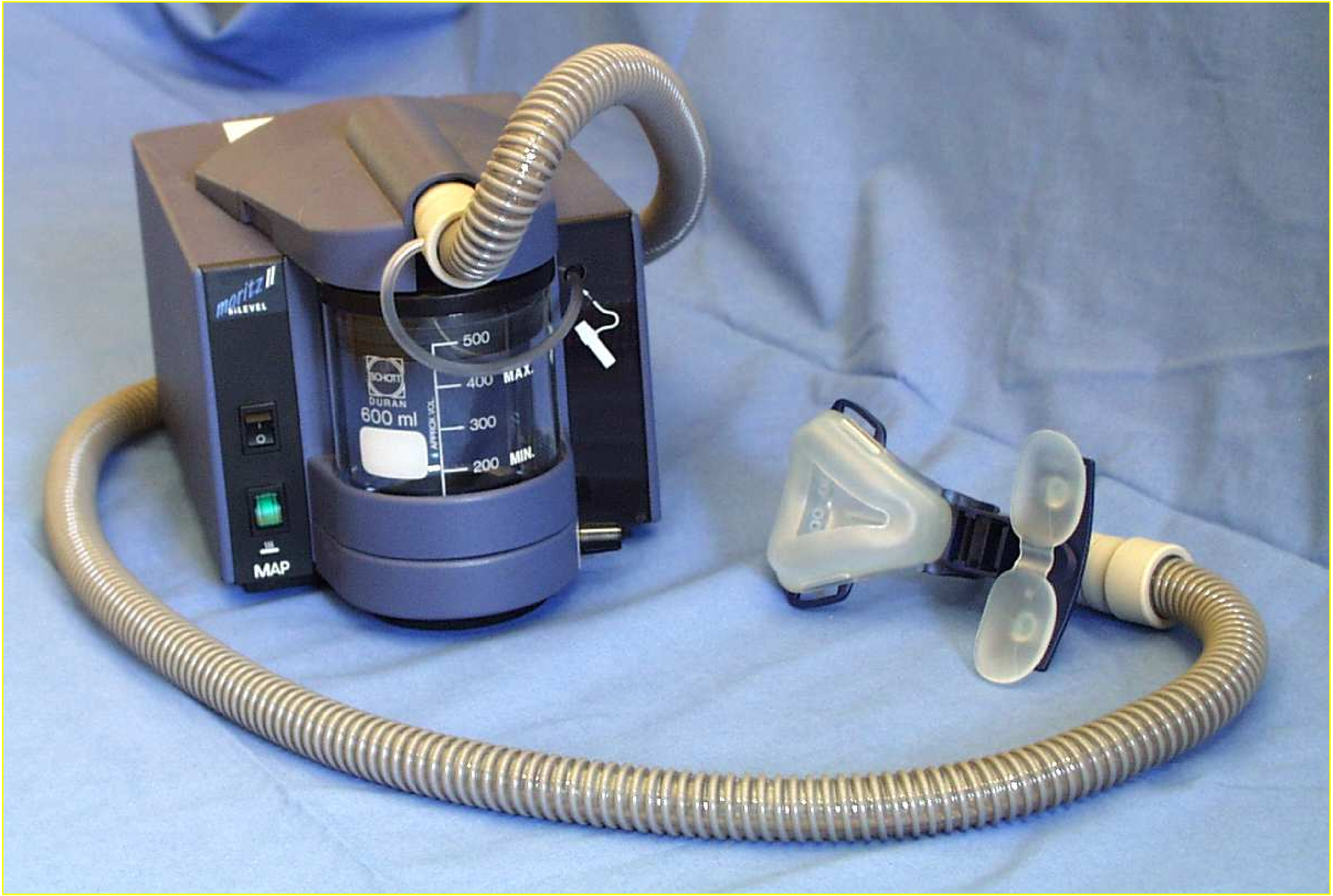
SINDROME DELLE APNEE OSTRUTTIVE NEL SONNO (OSAS)

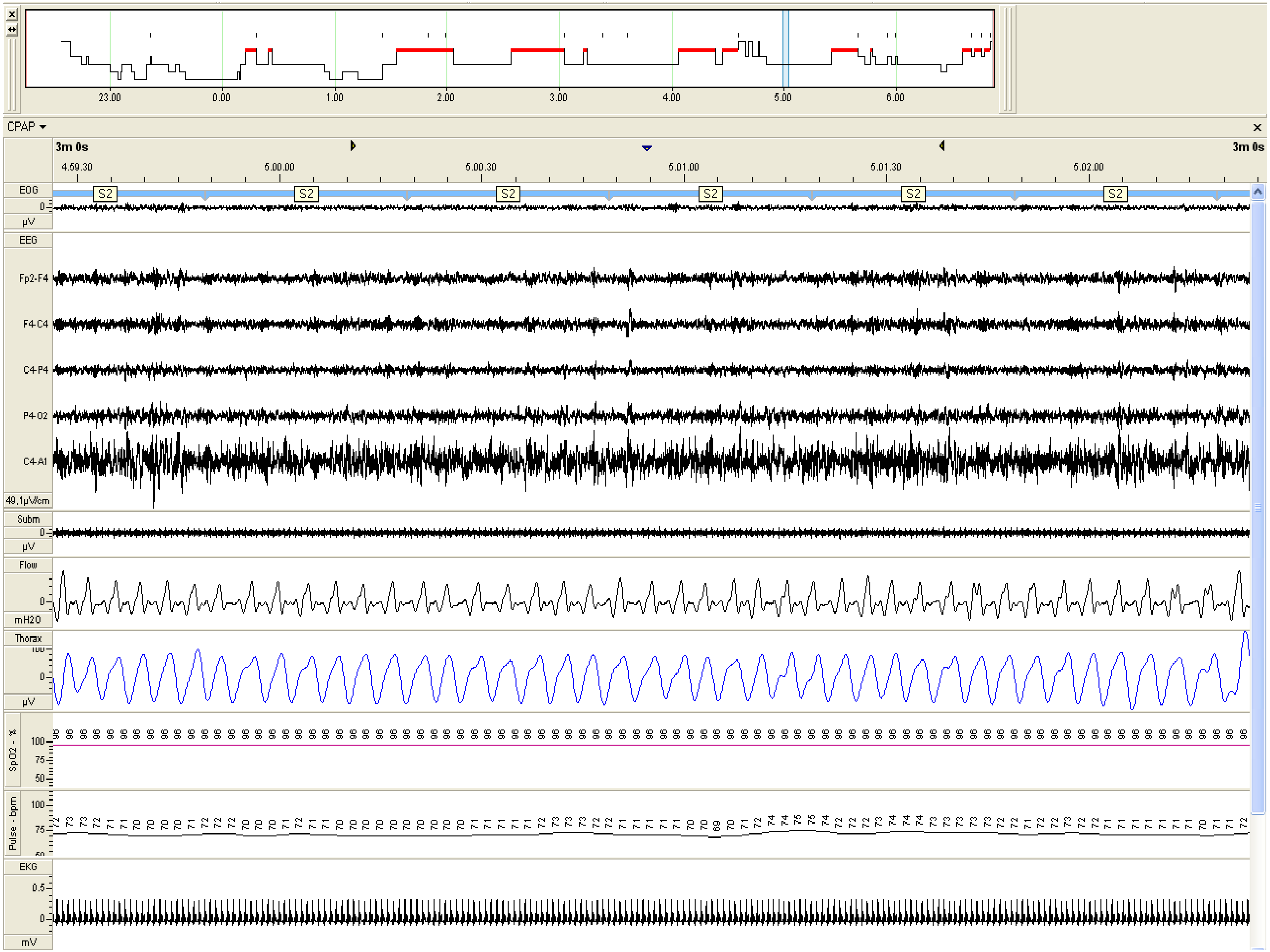
Up to 83% of patients with type 2 diabetes suffer from unrecognized OSAS and increasing severity of OSAS is associated with worsening glucose control

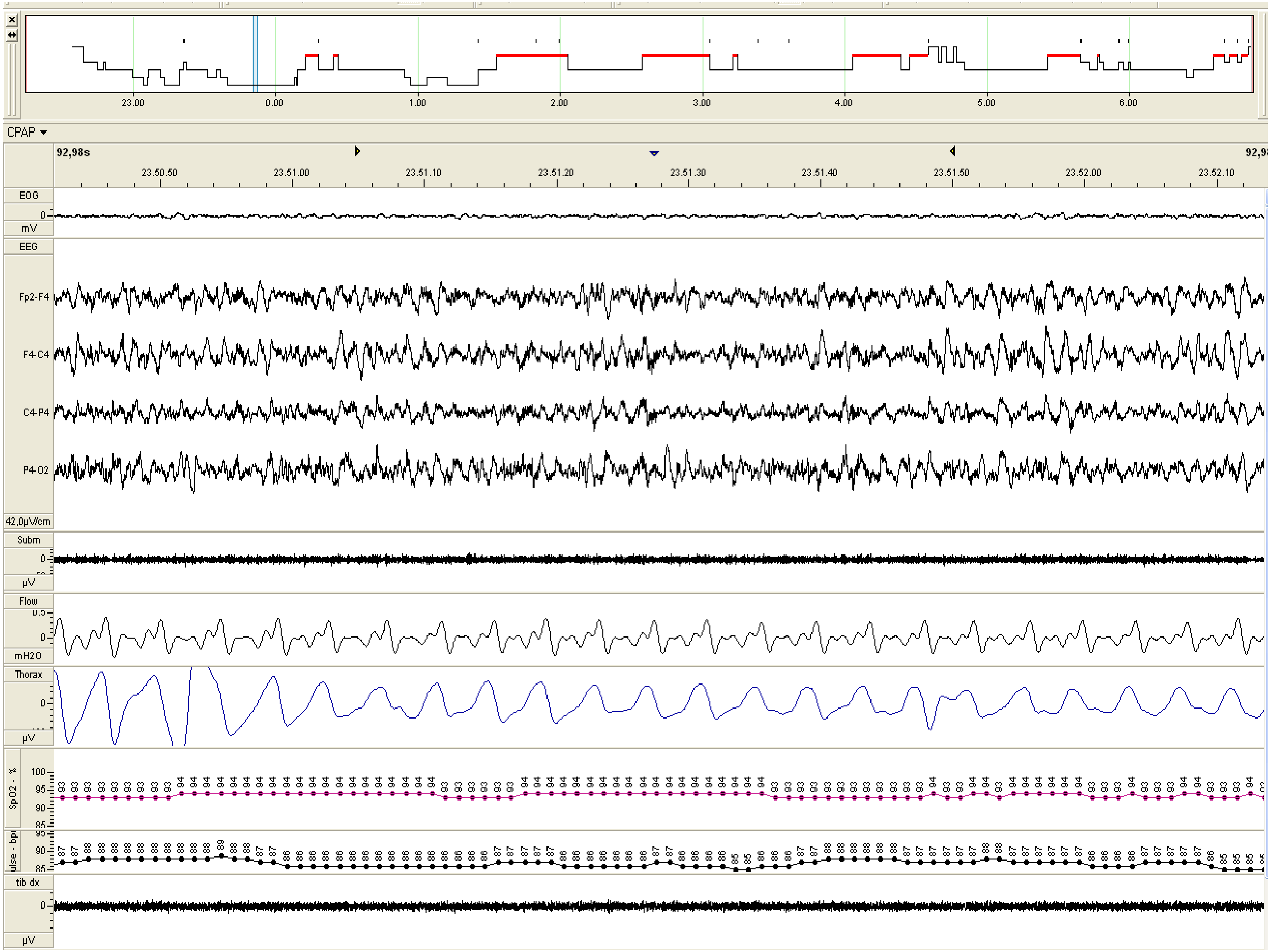
Sushmita Pamidi and Esra Tasali 2012

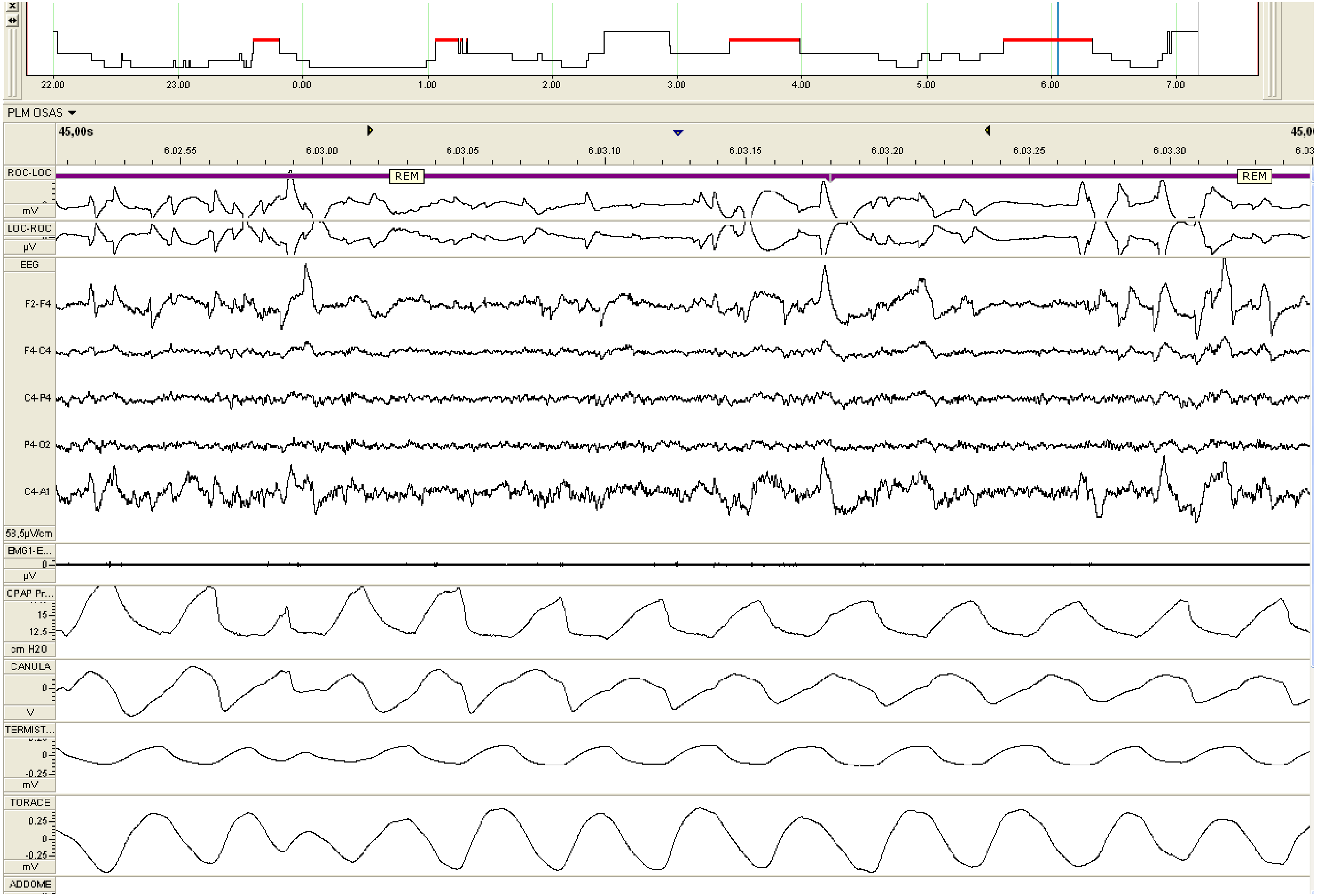

142,48s
2.35.40
2.35.50
2.36.00
2.36.10
2.36.20
2.36.30
2.36.40
2.36.50
2.37.00
2.37.10
2.37.20
2.37.30
2.37.40
2.37.50
EOG
µV
S2
S2
S2
S2
EEG
A3 (12,05s)
A3 (14,90s)
A3 (20,71s)
A3 (12,99s)
Fp2-F4
F4-C4
C4-P4
P4-O2
29,1µV/cm
Subm
0
µV
Snore_A10
0
µbar
Snore
Flow_A10
0
mL/s
Obstructive (24,10s)
Apnea Obstructive (26,10s)
Apnea Obstructive (26,25s)
Apnea Obstructive (23,05s)
Thorax
0
-0.5
mV
SpO2 - %
100
95
90
85
Desaturation (21,00s) [9]
Desaturation (21,00s) [8]
Desaturation (23,00s) [8]
Desaturation (21,00s) [9]
Pulse - bpm
80
75
70
65
60
55


EXPIRATORY RESISTANCE
NOSEMASK
AIRFLOW
MOUTH NOT OBSTRUCTED

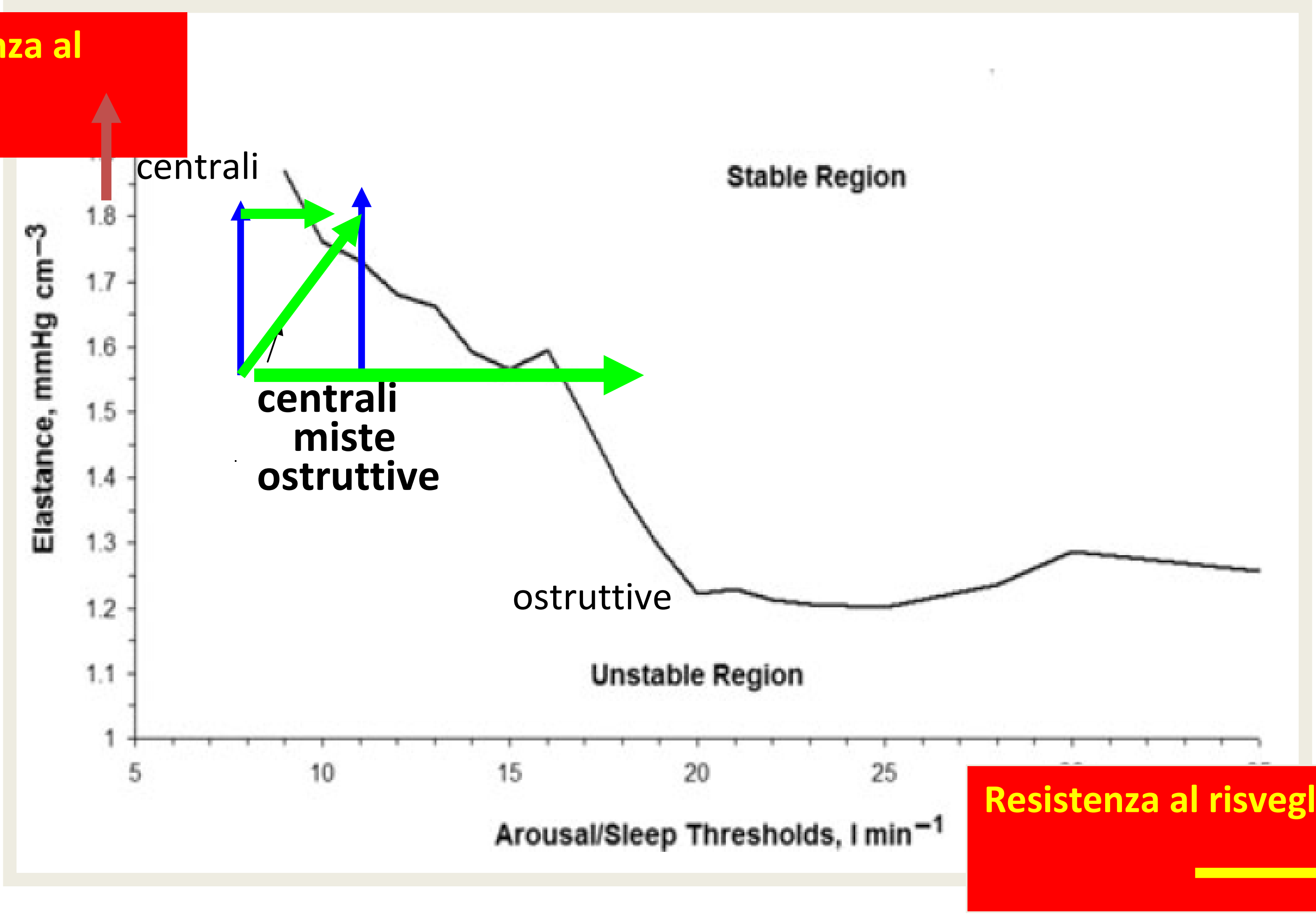

moritz II
BILEVEL
MAP
SCHOTT
DURAN
600 ml
APPROX. VOL.
500
400 MAX.
300
200 MIN.


23.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
CPAP
3m 0s
4.59.30
5.00.00
5.00.30
5.01.00
5.01.30
5.02.00
3m 0s
S2
S2
S2
S2
S2
S2
EOG
0
µV
EEG
Fp2-F4
F4-C4
C4-P4
P4-O2
C4-A1
49,1µV/cm
Subm
0
µV
Flow
0
mH2O
Thorax
100
0
µV
SpO2 - %
100
75
50
96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96 96
Pulse - bpm
100
75
50
72 73 73 72 71 71 70 70 70 70 71 72 72 72 70 70 70 71 72 71 71 70 70 70 70 70 70 70 70 70 70 71 71 71 71 71 72 73 73 73 72 72 71 71 71 71 71 70 70 69 70 71 72 74 74 75 75 74 72 72 72 73 74 74 74 73 73 73 73 73 72 72 71 72 72 73 72 72 71 71 71 71 71 71 71 70 71 71 72
EKG
0.5
0
mV


23.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
CPAP
92,98s
92,9
23.50.50
23.51.00
23.51.10
23.51.20
23.51.30
23.51.40
23.51.50
23.52.00
23.52.10
EOG
0
mV
EEG
Fp2-F4
F4-C4
C4-P4
P4-O2
42,0µV/cm
Subm
0
µV
Flow
0
mH2O
Thorax
0
µV
SpO2 - %
100
95
90
85
ulse - bpi
95
90
85
tib dx
0
µV

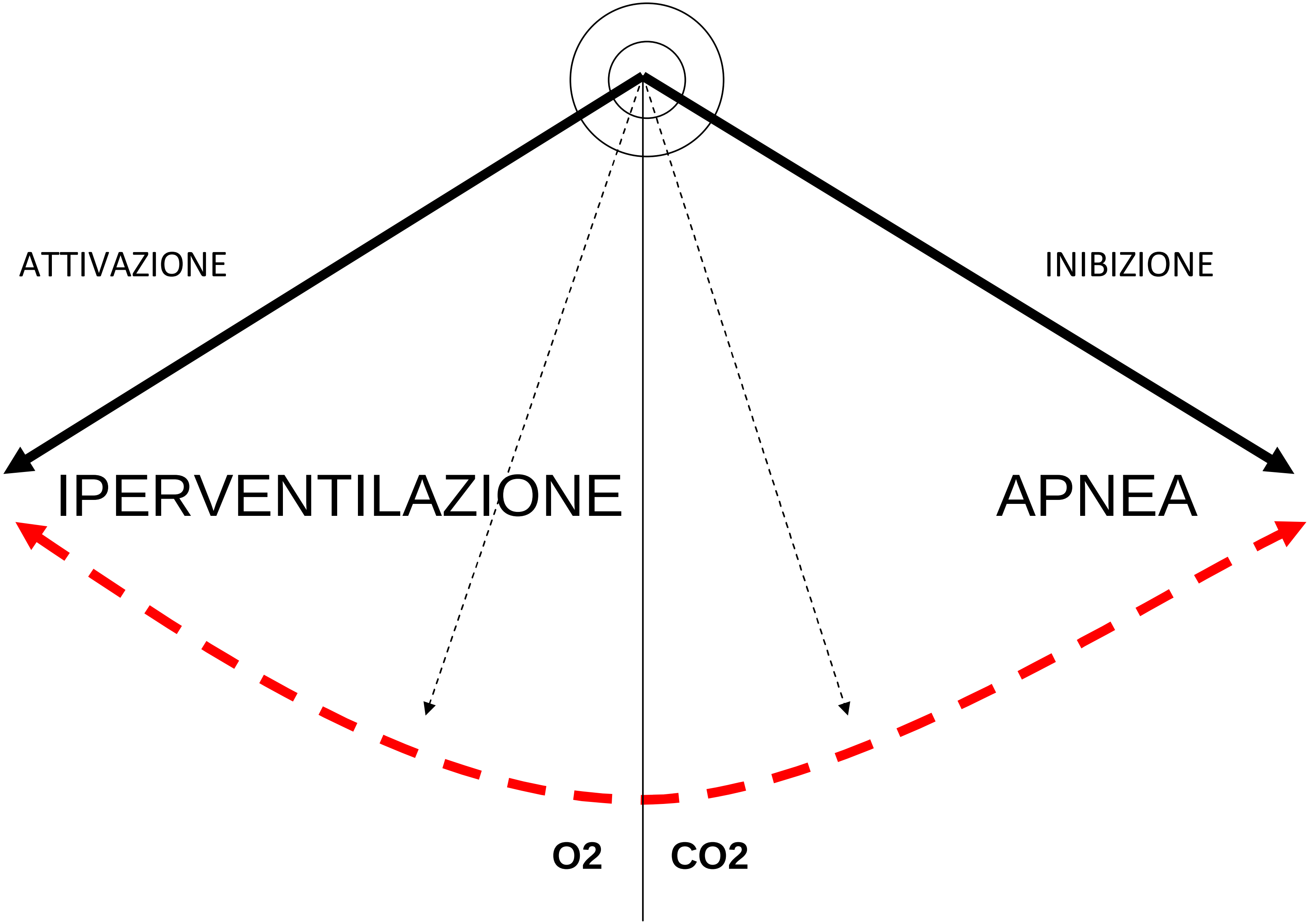

22.00
23.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
PLM OSAS
45,00s
6.02.55
6.03.00
6.03.05
6.03.10
6.03.15
6.03.20
6.03.25
6.03.30
6.03
45,0
ROC-LOC
REM
REM
mV
LOC-ROC
µV
EEG
F2-F4
F4-C4
C4-P4
P4-O2
C4-A1
58,5µV/cm
EMG1-E...
0
µV
CPAP Pr...
15
12.5
cm H2O
CANULA
0
V
TERMIST...
0
-0.25
mV
TORACE
0.25
0
-0.25
mV
ADDOME

Resistenza al collasso



Resistenza al risveglio

INSTABILITA’ NEURO- VEGETATIVA



ATTIVAZIONE

INIBIZIONE

IPERVENTILAZIONE

APNEA

O2

CO2

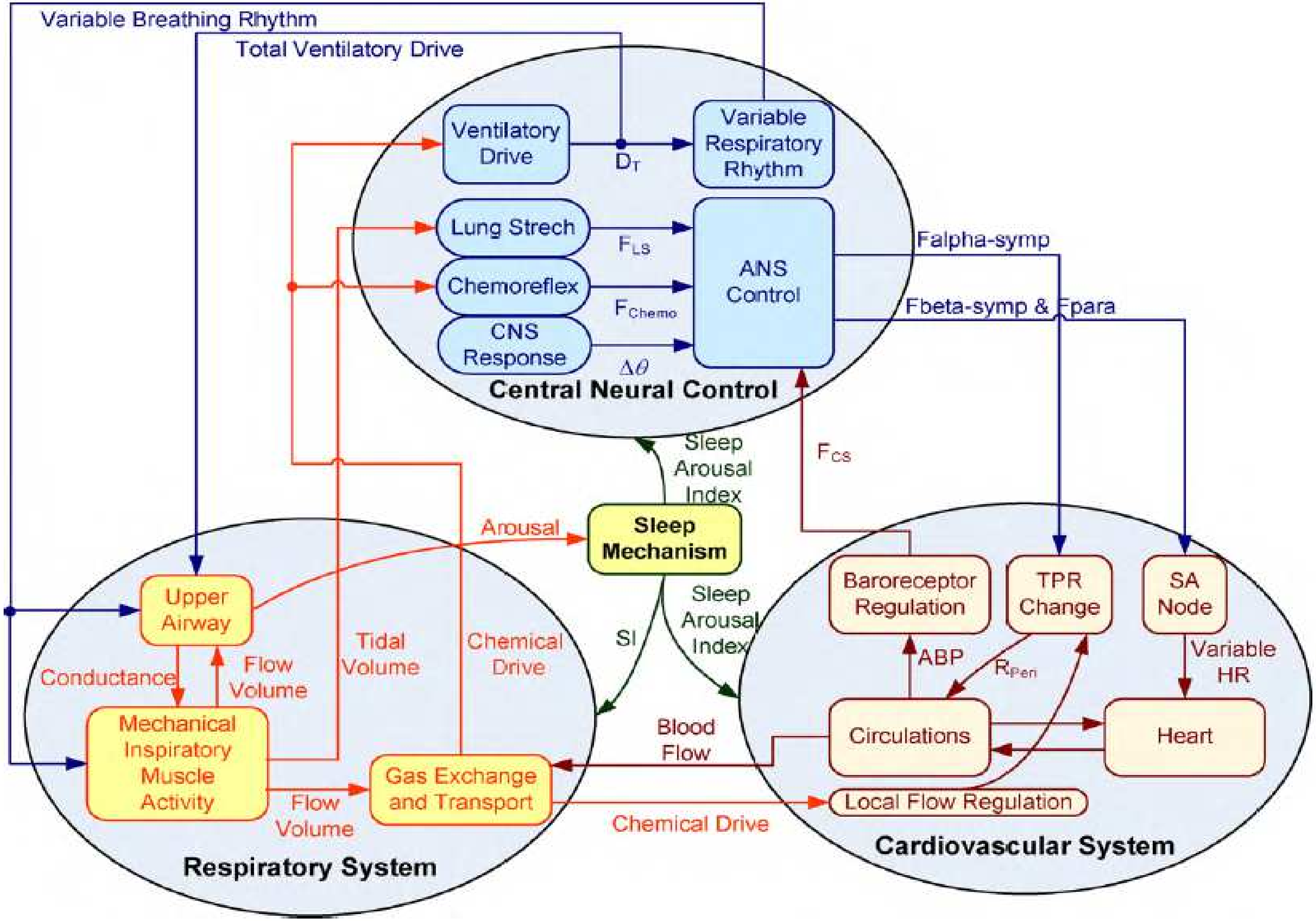

Variable Breathing Rhythm
Total Ventilatory Drive
Ventilatory Drive
D_T
Variable Respiratory Rhythm
Lung Strech
F_{LS}
Chemoreflex
F_{Chemo}
CNS Response
$\Delta\theta$
ANS Control
Falpha-symp
Fbeta-symp & Fpara
Central Neural Control
Sleep Arousal Index
F_{CS}
Arousal
Sleep Mechanism
SI
Sleep Arousal Index
Upper Airway
Conductance
Flow Volume
Tidal Volume
Chemical Drive
Mechanical Inspiratory Muscle Activity
Flow Volume
Gas Exchange and Transport
Blood Flow
Chemical Drive
Respiratory System
Baroreceptor Regulation
TPR Change
SA Node
ABP
R_{Peri}
Variable HR
Circulations
Heart
Local Flow Regulation
Cardiovascular System

Fig. 1. Schematic diagram of the integrative model of cardiovascular and respiratory interactions with sleep–wake state control.

XXII CONGRESSO NAZIONALE AIMS

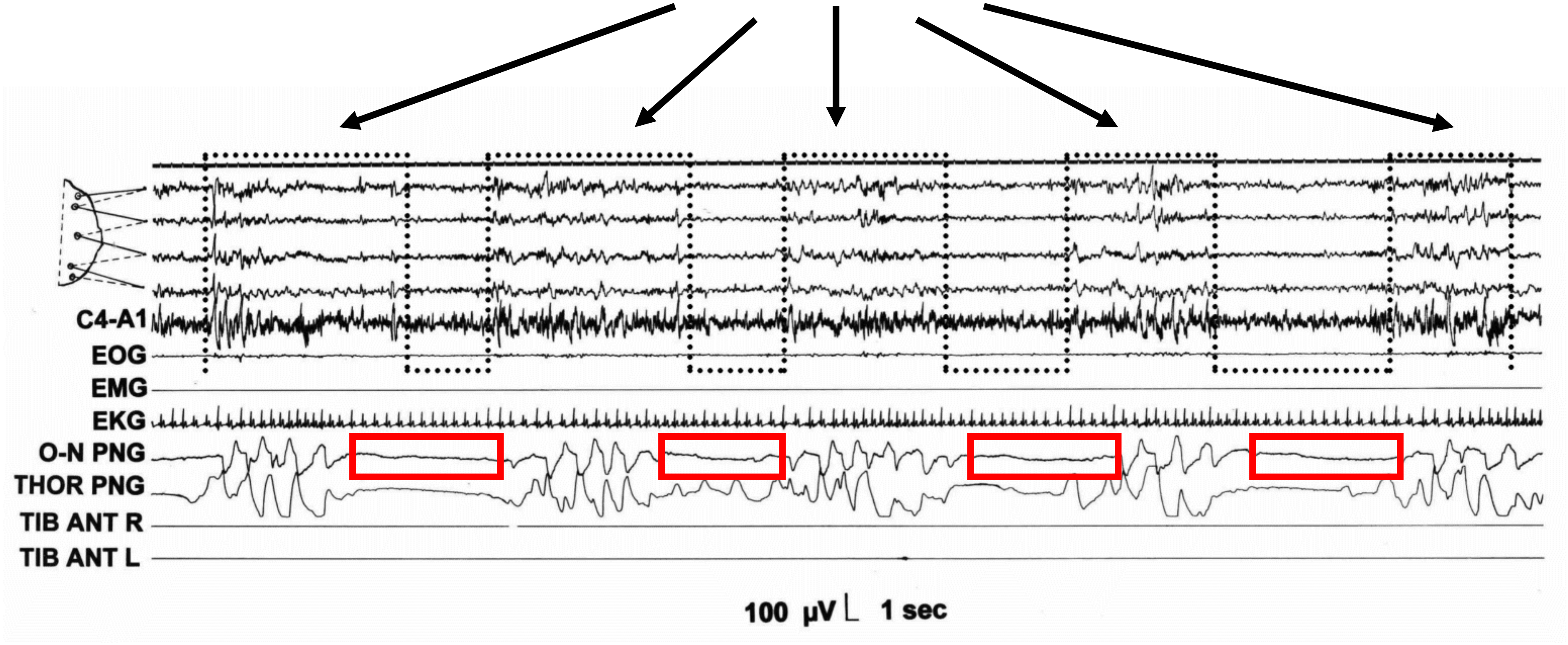
ASSOCIAZIONE ITALIANA DI MEDICINA DEL SONNO

"PER UNA MEDICINA DEL SONNO SOSTENIBILE"

PARMA, 21 - 24 OTTOBRE 2012
Centro Congressi - Camera di Commercio

DOMENICA 21 OTTOBRE

09,00-13,00	**MEDICI DI BASE E SPECIALISTI INCONTRANO ESPERTI DEL SONNO SUI PROBLEMI DELLA MEDICINA DEL SONNO NELLA PRATICA CLINICA QUOTIDIANA** *Accreditamento Ecm dedicato*
	Moderatori: M.G. Terzano - L. Parrino
09,00-09,30	**Fisiologia del sonno (con accenno ai disturbi del ritmo e ai problemi di sonnolenza alla guida e sul lavoro) -** M. C. Spaggiari
09,30-09,50	**Le insonnie** - A. Cicolin
09,50-10,20	**Terapia delle insonnie (farmaci e CBT)** - E. Bonanni
10,20-10,40	**OSAS e sue terapie** - M. Bosi
10,40-11,00	**Terapia chirurgica di russamento ed apnee** - S. Frassineti
11,00-11,20	**Le ipersonnie e loro terapie** - F. Provini
11,20-11,40	**Disturbi del movimento in sonno e parasonnie** - L. Ferini Strambi
11,40-12,00	**Medicina di Genere e accenno ai disturbi del sonno in pediatria** - R. Silvestri
12,00-13,00	**Discussione Casi clinici** (divisione in gruppi di lavoro)



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TRACCIATO DI SONNO STADIO 2 CON APNEE