Simplified Diagnosis and Management of Sleep Apnea

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Faculty disclosure

Nothing to disclose

Simplified Diagnosis and Management of OSA *Learning objectives*

- To know the clinical basis for OSA diagnosis
- To identify the contribution of clinical scales in OSA diagnosis
- To be aware of the health risks associated to the presence of OSA
- To understand the indications of the different OSA diagnostic devices
- To know the different OSA therapeutic tools

Obstructive Sleep Apnea

Definition

- Repetitive episodes of complete or partial cessation of airflow due to upper airway closure during sleep

Clinical diagnosis

Triad

- Snoring
- Apneas during sleep that are witnessed by observers
- Excessive daytime sleepiness
  - Tendency to fall asleep during periods of desired wakefulness
  - Unrefreshing naps

Obstructive Sleep Apnea
Clinical Diagnosis

Other complementary symptoms

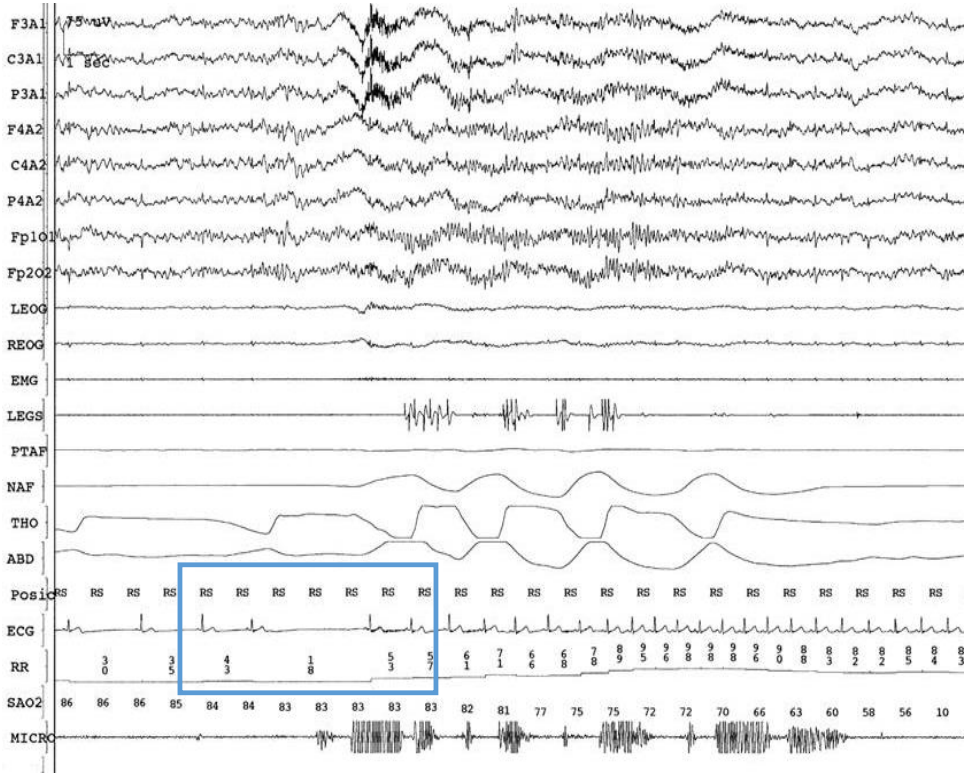
- Gasping or choking episodes at night
- Decreased concentration and memory
- Irritability
- Morning headache
- Nocturia
- Nocturnal diaphoresis
- Nocturnal gastroesophageal reflux
- Decreased libido

Physical examination

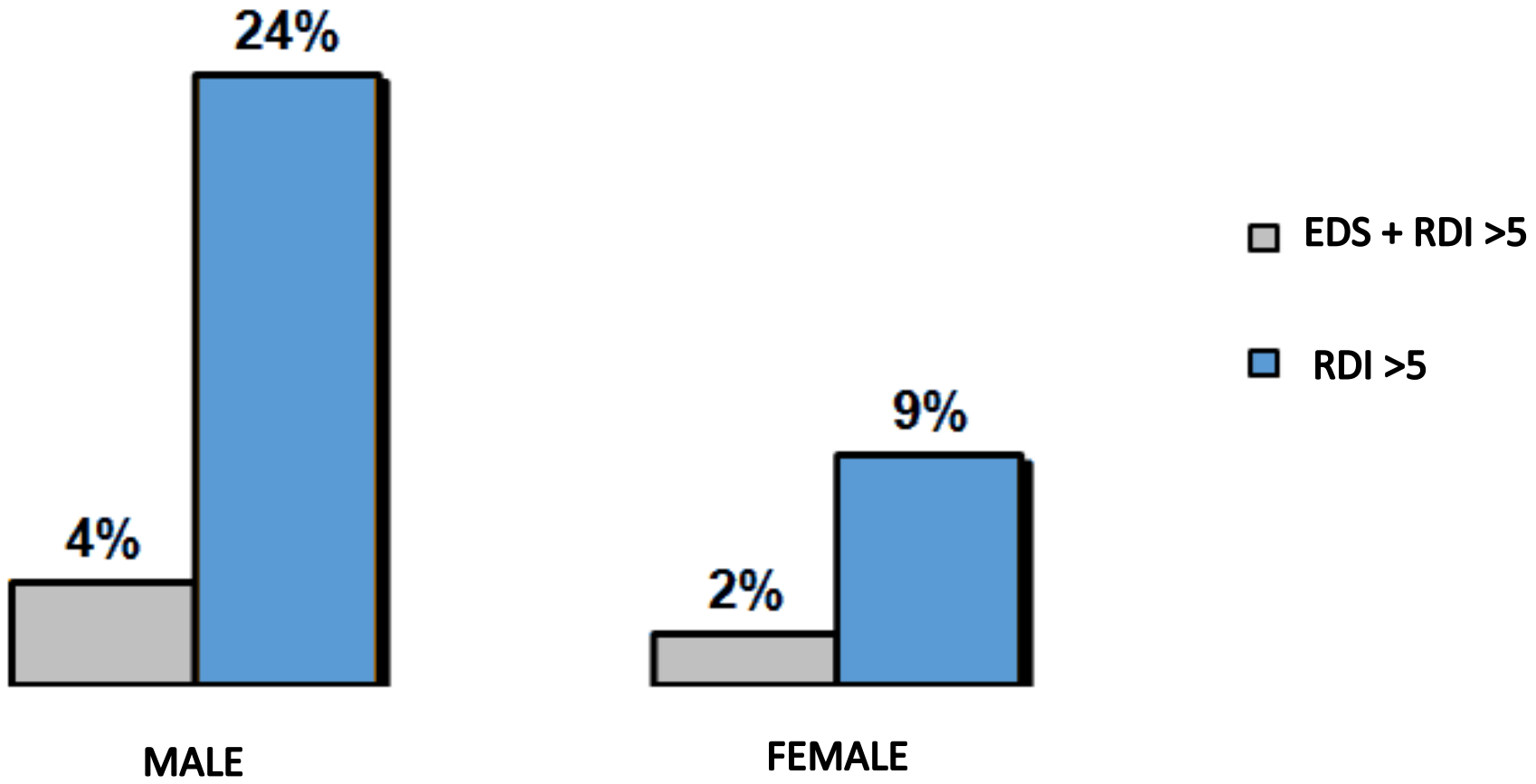
- **Obesity**
- Hypertension
- Retrognatia
- Modified Mallampati scores 3 or 4
- Increased neck circumference
- Macroglosia and tonsilar hypertrophy
- Enlarged uvula
- High arched or narrow hard palate
- Nasal abnormalities

Obstructive Sleep Apnea
Health risks

- Hypertension
- Stroke
- Coronary artery disease
- Congestive heart failure
- Arrhythmias
- Cor pulmonare
- Increase perioperative morbidity
- Metabolic abnormalities
- Sudden death



Obstructive Sleep Apnea
Prevalence



Young et al, 1993, NEJM

Obstructive Sleep Apnea
Diagnosis

- Screening tools
  - Berlin questionnaire
  - Apnea clinical score
  - STOP-BANG questionnaire
  - Epworth sleepiness score
- Polysomnography (PSG): Gold standard diagnostic test
  - Severity is determined by AHI or RDI
    - Index 5-14 mild
    - Index 15-29 moderate Index $\geq$ 30 severe
    - Index $\geq$ 30 severe

Combination of clinical and PSG criteria

Obstructive Sleep Apnea
Diagnosis

Attended polysomnography : Gold standard

- Advantages
  - Accuracy
  - Reliability
  - Feasibility
  - Safety
  - More information
  - Other sleep disorders
  - Video association
  - Allowed interventions

- Disadvantages
  - Expensive
  - Technically complex
  - Long waiting list
  - Patients without diagnosis and treatment

Full PSG vs Portable Monitors

Type	Parameters	Body position	Legs movements	Interventions
1 Full attended PSG	Oximetry, respiratory monitoring, cardiac monitoring, EEG, actigraphy, body position, others	Yes	Desirable optional	Possible
2 Full unattended PSG	Oximetry, respiratory monitoring, cardiac monitoring EEG, actigraphy, body position, others	Optional	Desirable Optional	Not possible
3 Portable devices (unattended)	Usually 4-7 channels (2 respiratory monitoring), ECG, oximetry	Optional	Optional	Not possible
4 Continuous single or dual bioparameter recording (unattended)	Usually using oximetry as 1 of the parameters	Not	Not	Not possible

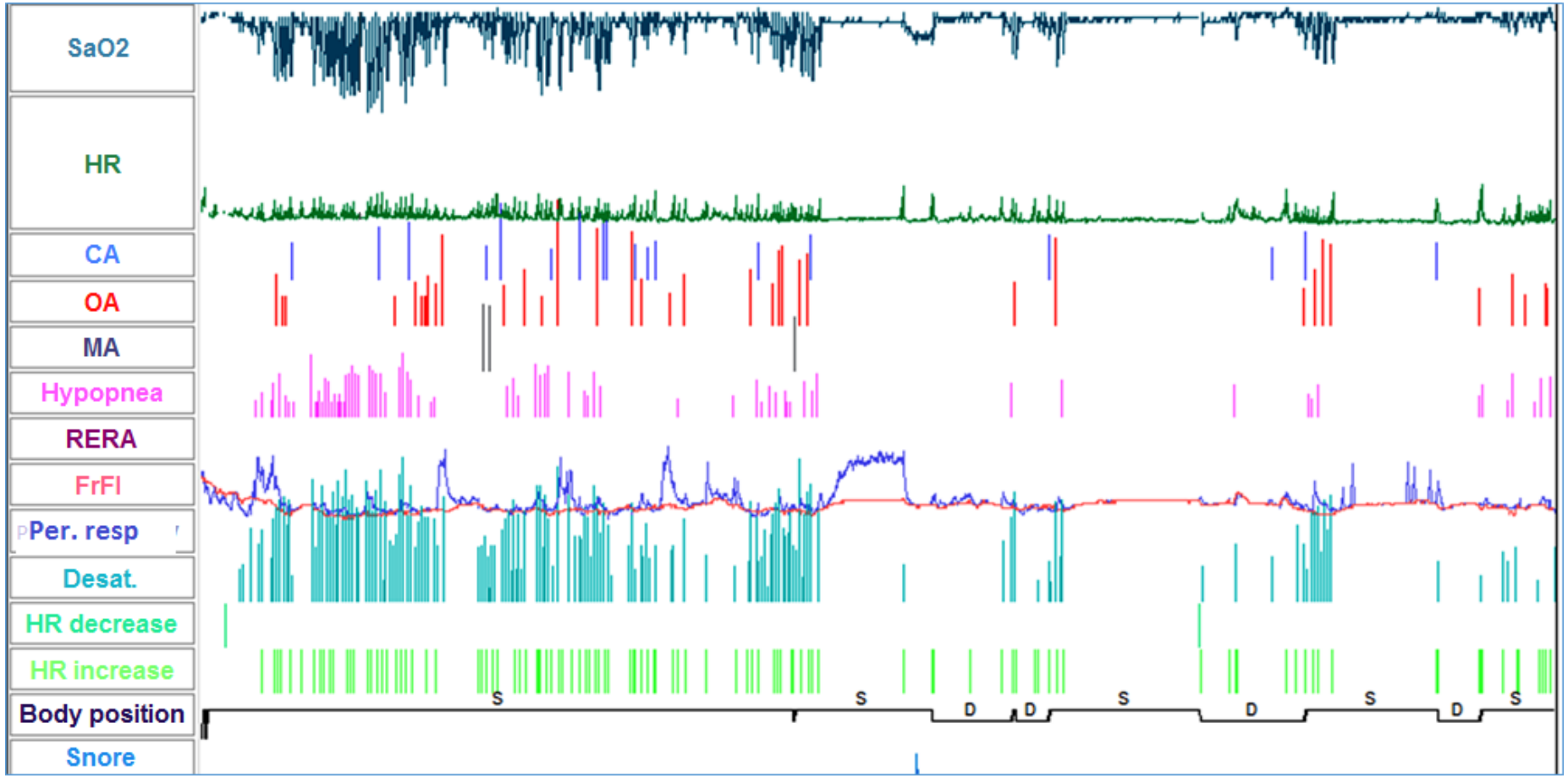
Portable monitors for the diagnosis of OSA *Recording devices*

- May be indicated:
  - In patients unable to have full in-laboratory PSG
    - Immobility, safety reasons, or critical illness, etc
  - To monitor the response to non CPAP treatments
    - Oral appliances, upper airway surgery, and weight loss
- Can be used in patient´s home, including autoPAP, in selected patients
- At a minimum, record airflow, respiratory effort, and blood oxygenation
  - Oronasal thermal sensor, nasal pressure transducer, oxymetry, and ideally inductance plethysmography
- Must allow review of raw data
- Manual scoring or manual editing

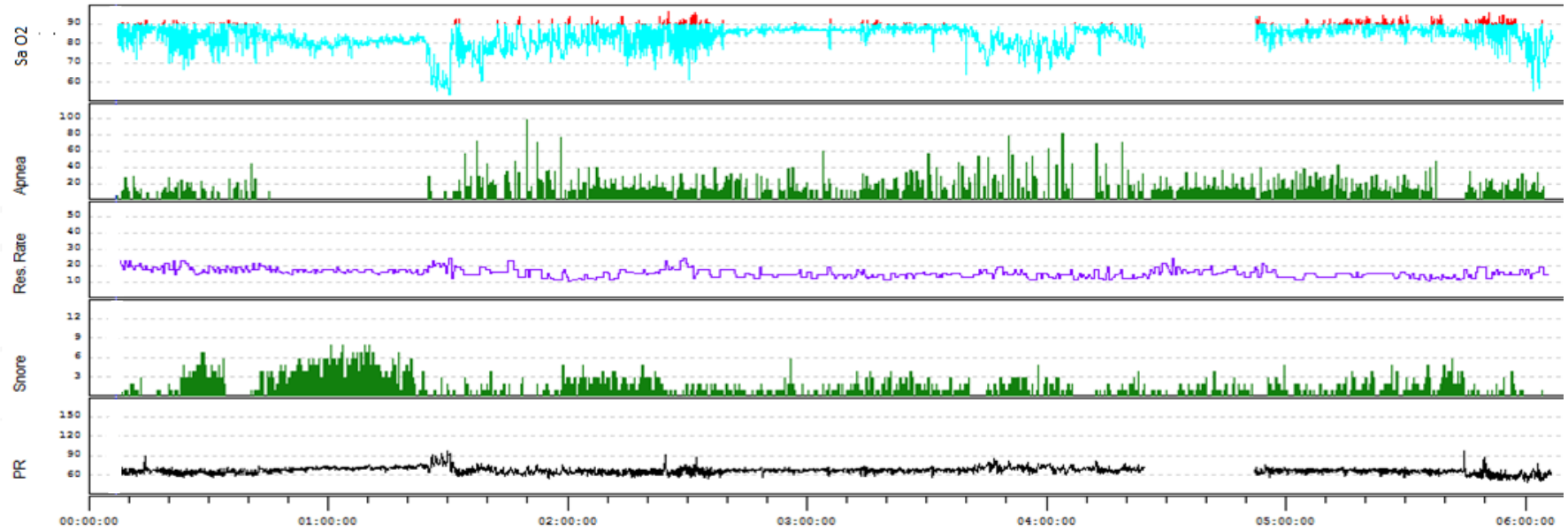
Portable monitors for the diagnosis of OSA
Type of devices

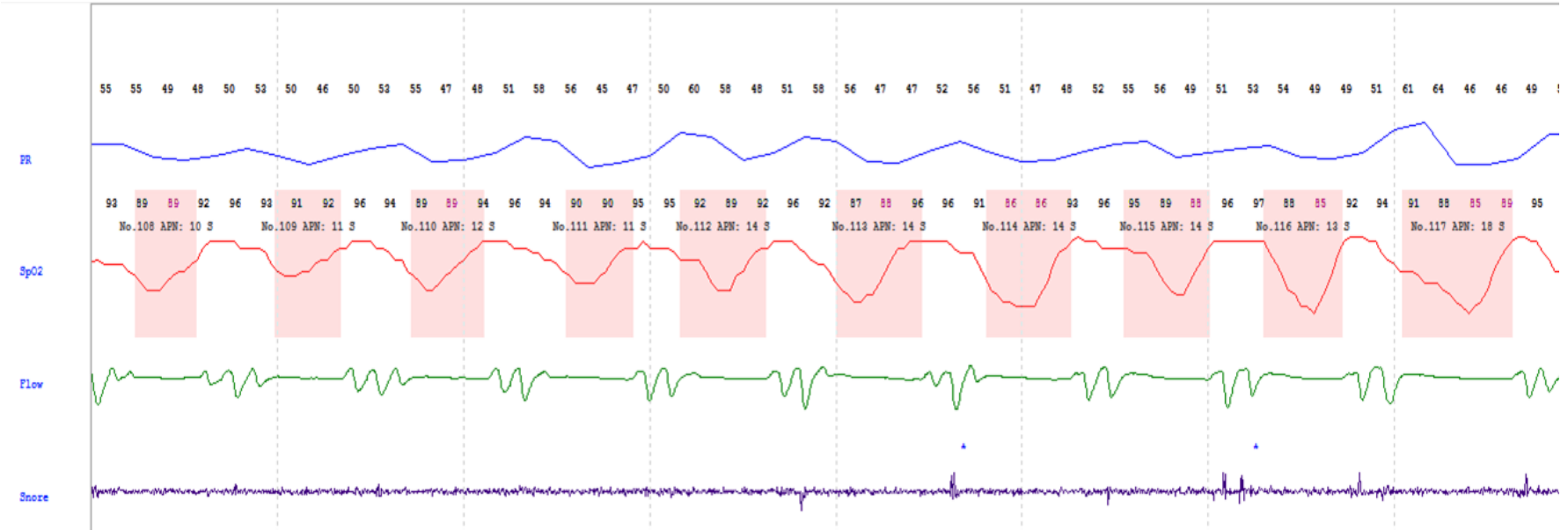
- Type 3 (>3 signals)
  - Unattended could be used to decrease or increase the probability that a patient has an AHI > 15 and rule out a diagnoses of OSA
  - Insufficient evidence to support these devices in the home-unattended setting
- Type 4
  - Insufficient evidence to support to increase o decrease the probability of an AHI of > 15 or make a diagnosis of OSA

Type 3 Portable Device



Portable device





Obstructive Sleep Apnea

¿Why to treat?

- Improvement of quality of life
  - No daytime sleepiness and fatigue
- Reduce risk of
  - High blood pressure
  - Cardiovascular mortality
  - Motor vehicle accidents
- Lowered economic cost
- Marital harmony

Obstructive Sleep Apnea
Management

I. Behavioral modifications
II. Posicional therapy
III. Pharmacological treatment
IV. Positive airway pressure
V. Oral appliances
VI. Surgical interventions
VII. Adjuntive therapies: bariatric surgery

I.- Behavioral Modifications

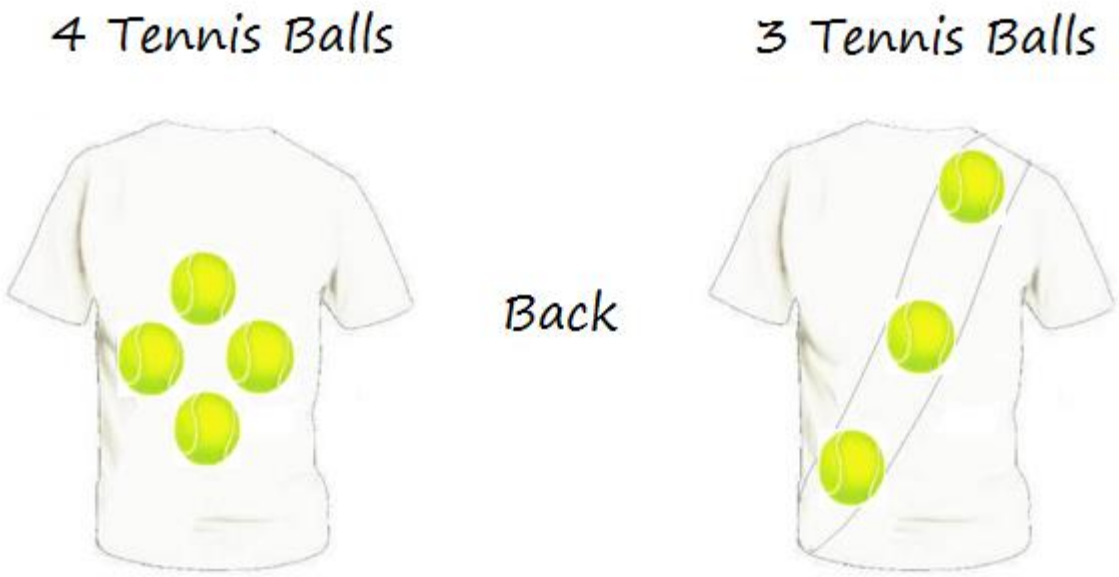
- Patient education
- Sleep hygiene
- Avoidance sleep deprivation
- Weight loss
- Smoking cessation
- Avoidance of alcohol and respiratory depressant medications

II.- Positional Therapy

Primarily positional OSA

- Supine sleep causes mechanical changes
  - neck positioning
  - gravity
- Significant improvement in lateral or prone positions

Avoidance of supine sleep



III.- Pharmacological Treatment

- Modafinil
  - Residual excessive daytime sleepiness
    - Despite optimal PAP therapy
    - Without other identifiable causes
  - In addition to PAP therapy

IV.- Possitive Airway Pressure (PAP)

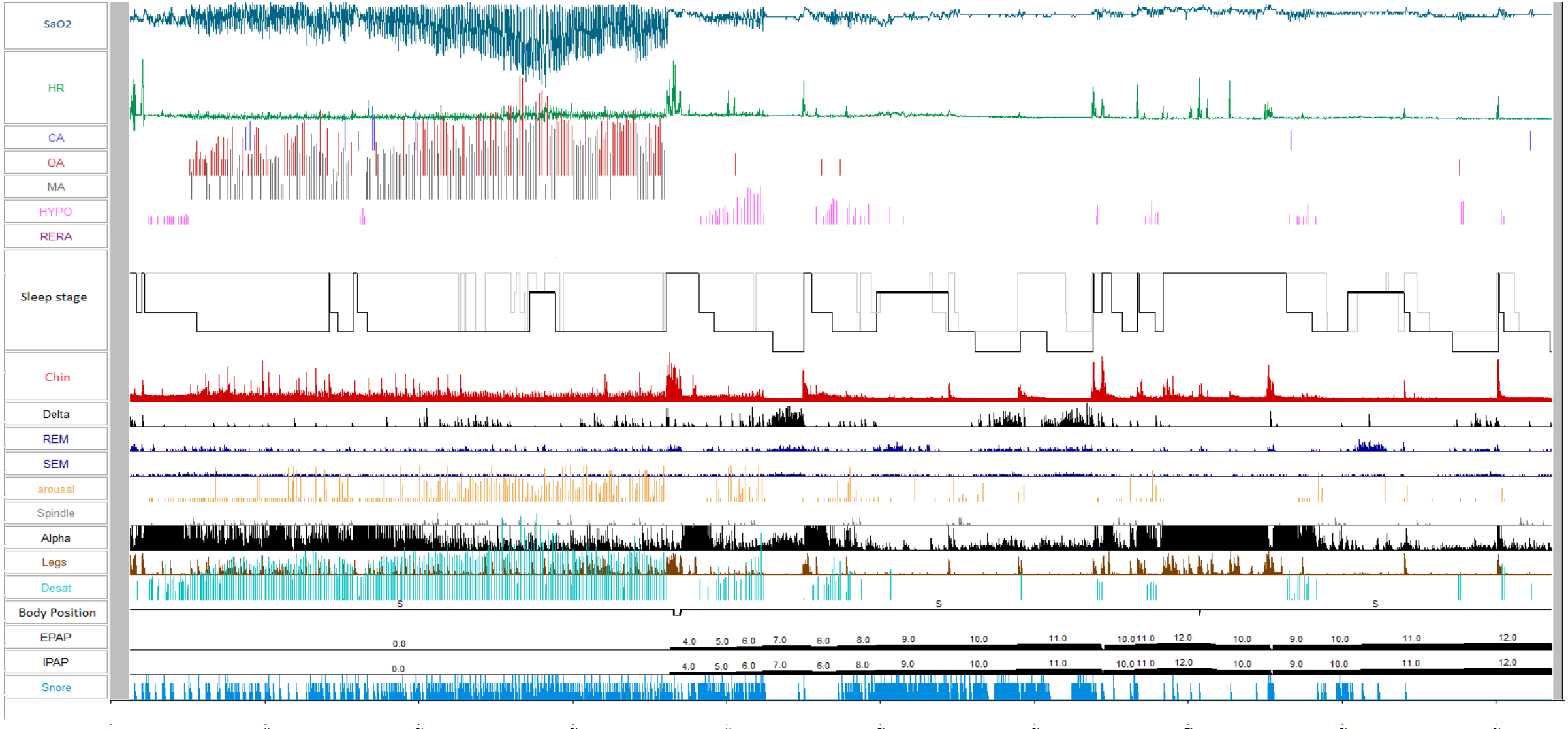
- Several modes
  - Continuos Positive Airway Pressure (CPAP)
  - Flexible CPAP
  - Bilevel PAP
  - APAP
  - Expiratory Positive Airway Pressure (EPAP)
  - Adaptative Servo-Ventilation

CPAP: treatment of choice for moderate to severe OSA

IV.- Possitive Airway Pressure (PAP)

- Criteria for PAP theraphy in patients with OSA
  - AHI $\geq$ 15
  - AHI 5-14 and any of the followings
    - EDS
    - Hypertension
    - Ischemic heart disease
    - Stroke
    - Insomnia
    - Mood disorders

Polysomnography with CPAP titration



V.-Mandibular Advancement Appliances

- Improve AHI, snoring, and oxygen saturation
  - Increase the area of the airway
    - Bring soft palate, tongue and hyoid bone forward
    - Activate masseter and submental muscles
    - Better results with adjustable and custom-made
    - Adverse effects usually mild and transient
    - Better tolerated than PAP
- Indications
  - Mild to moderate OSA
  - In severe OSA: only in CPAP intolerance or PAP rejection

VI.- Surgical Therapy

- Nasopharingeal obstruction: septoplasty, turbinate reduction
  - Improve CPAP adherence
- Retropalatal obstruction
  - Uvulopalatopharyngoplasty (UPPP)
  - *Laser assisted uvuloplasty (LAUP): not recommended for OSA*
- Tonsillectomy: children
- Hypopharyngeal obstruction
  - Genioglossus advancement and hyoid suspension
- Retropalatal and hypopharyngeal obstruction
  - Genioglossus advancement, hyoid suspension and uvulopalatoplasty
- Maxilomandibular advancement
  - Select patiens who have fail CPAP and/or MAA treatment
- Tracheostomy
  - Performed prior to the introduction of CPAP

No consensus when there is no identifiable anatomic obstruction

Simplified Diagnosis and Management of OSA
Key messages

- Hypersomnolence, witnessed apneas and snoring as determined by clinical history or ad-hoc scales allow a high suspicious of OSA
- There are several types of polygraphic recordings to confirm OSA diagnosis, each one with particular indications
- OSA carries a several significant health risks
- Positive airway pressure is the main and standard treatment of OSA
- There are several general complementary measures to consider
- Surgical treatments are an option in particular cases

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