Introduction

- Excessive daytime sleepiness (EDS) increases the risk of motor vehicle and work accidents, leading to decreased cognitive ability, performance and quality of life.
- The purpose of this study was to identify correlates and possible physiological causes of EDS among patients with suspected sleep apnea, referred for a sleep study.

Methods

- 147 consecutive sleep studies were collected from patients referred for suspected sleep apnea.
  - Age: 50 ± 16
  - BMI: 29.8 ± 6.8
  - AHI: 23.0 ± 25.4
  - 103 male.
- All patients underwent PSG and MSLT, scored according to gold standard criteria.
- Fluctuations in cardiovascular autonomic control based on heart rate variability analysis were determined using the HC1000P System.
- Patients with MSLT score < 10 minutes were defined as sleepy.
- Patients were categorized by PSG results into healthy, or having sleep apnea and its severity, based on the AHl (cutoff 15). Patients with MSLT score < 10 were defined as sleepy.

Results

Sleep Architecture in all Patients (Fig. 1)

- Sleepy patients defined by MSLT < 10 had:
  - Significantly longer Total Sleep Time and higher Sleep Efficiency than the non-sleepy group (p < 0.05).
  - Shorter sleep latency (p < 0.01).
  - Shorter REM latency, more REM time and more REM periods (p < 0.05).

Sleep Architecture in Apneic Patients

- Among patients with severe sleep apnea (AHl > 30), sleepiness (MSLT < 10) was associated (p < 0.05) with
  - Longer total apnea time
  - Longer Total apnea/hypopnea time
  - Higher number of arousals due to apnea and higher apnea index.

Autonomic Cardiovascular Control Parameters (Fig. 2)

- Sleepy patients exhibited higher VLF power and autonomic balance. In patients with AHI < 15, sleepy patients had higher LF power (p < 0.05).

Conclusions

- Sleepy patients were found to sleep more, fall asleep faster and spend more time in REM than non-hypersomnolent individuals. The results indicate that patients with sleep apnea who are hypersomnolent behave as sleep-deprived subjects when sleep architecture is considered.
- Heart rate variability analysis showed autonomic nervous system involvement. Increased VLF power, LF power and autonomic balance in the hypersomnolent group, as a measure of increased sympathetic activity in this group, indicating that their hypersomnolence might be due to the exhaustion of their stress capabilities needed to overcome sleepiness.

References