Attentional, memory and executive specificities in patients with Obstructive Sleep Apnea syndrome (OSAS): A neuropsychological approach

Ruben La Iacona, Olivier Mairene, Kendra Kandana Arachchige and Isabelle Simoes Loureiro

1 Cognitive Psychology and Neuropsychology Department, UMONS
2Sleep Laboratory & Clinical Chronobiology Unit (U78), Brugmann University Hospital
* Contact: ruben.liacona@student.umons.ac.be

Introduction

Patients with Obstructive Sleep Apnea Syndrome (OSAS) show specific cognitive impairments, such as impaired alertness/attention, executive and memory functioning. However, there is little to no consensus in research about these possible alterations (Daurat et al., 2016). We propose a neuropsychological battery test assessing vigilance, sustained attention, processing speed, inhibition, updating, shifting and working memory to evaluate these impairments in OSAS. We also studied the subjective aspect of OSAS, by proposing questionnaires on the quality of sleep, sleepiness, fatigue and the severity of insomnia.

Methodology

The battery included 11 neuropsychological tests assessing attentional, executive and memory functions (cf. Table 1). Control subjects also underwent neuropsychological testing. OSAS patients completed the “sleep” questionnaires (cf. Table 2). The day before administration, OSAS patients underwent polysomnography (PSG) in the CHU Brugmann sleep laboratory.

Results

1) Principal results

Inter-group comparisons (OSAS vs Control subjects)

The results showed a significant difference for all neuropsychological tests, except TMT A, between the performance of OSAS patients and control subjects (p<.05).

Compared to control subjects, OSAS patients had significantly lower performances in alertness, sustained attention, processing speed, motor and cognitive inhibition, flexibility, updating and working memory.

Correlation between severity of cognitive disorders and severity of OSAS

There was no correlation (p>.05) between the severity of cognitive disorders, expressed by the performance of OSAS patients on neuropsychological tests, and the degree of severity of OSAS, expressed in apnea-hypopnea index (AHI).

Discussion and conclusions

Our study adds to a growing body of evidence that cognitive deficits are present in OSAS. However, the lack of correlation between disorder severity and poor test performance, and between disorder severity and questionnaire scores, demonstrates that OSAS is a disorder with multiple causes and consequences, which is still poorly understood (Daurat et al., 2016). The relationship between Apnea Hypopnea Index (AHI) and the severity of cognitive disorders would not be linear and various mechanisms such as pre-morbid intelligence or cognitive reserve could be significant variables that interact with the severity of OSAS in the manifestation of cognitive deficit (Alchanatis et al., 2005).

References: