

Abstract

OSA can impair the transmission of nerve impulses along the auditory pathway, which depend on the supply of oxygen. The hypothesis is that Continuous Positive Airway Pressure (CPAP) treatment can cause changes in attention, memory, and symptoms of sleepiness and functional quality of sleep. The objective of this work was to monitor the electrophysiological responses of the central auditory pathways, through long latency potentials in individuals with moderate to severe OSA, over a period of three months, and compare the results between patients who use CPAP and those who do not. Partial results suggest that in the LLAEP, the group with CPAP showed better latencies of the P2 component, as well as higher N2-P3 amplitudes, compared to the group without CPAP

Objectives

The aim of this study was to evaluate Long Latency Auditory Evoked Potentials (LLAEP) in individuals with Obstructive Sleep Apnea (OSA), whether or not they were using CPAP.

Methodes and Materials

- Thirty-one adults, aged 20 to 70 years, participated.
- The comparison of the central auditory pathways between the groups (with and without CPAP) was made through Long Latency Auditory Evoked Potentials (LLAEP), observing the P1, N1, P2, N2, and P3 components, and the P1-N1, P2-N2, and N2-P3 amplitudes. In the first evaluation (after the medical assessment).
- All participants underwent tonal and vocal audiometry with impedancemetry, as well as LLAEP. In the second evaluation (after 3 months), they underwent impedancemetry and LLAEP in both groups.

Results

Longer P2 component latencies were observed in the group of non-CPAP users (M= 197.38; SD= 33.09) compared to CPAP users (M= 175.12; SD= 28.15) after 3 months of CPAP treatment. This finding is supported by Andrew Vakulin ,Peter G. Catcheside ,Stuart D. Baulk ,Nick A. Antic ,Cameron J. van den Heuvel ,Bancos Siobhan R. Doug McEvoy (2012), who also found a mild improvement after longitudinal CPAP treatment. As far as amplitude is concerned, higher N2-P3 amplitudes were observed in the group of individuals who used CPAP (M= 2.39; SD= 2.69) than among individuals who did not use CPAP (M= 1.08; SD= 1.09) in the right ear, as Fig. 1.

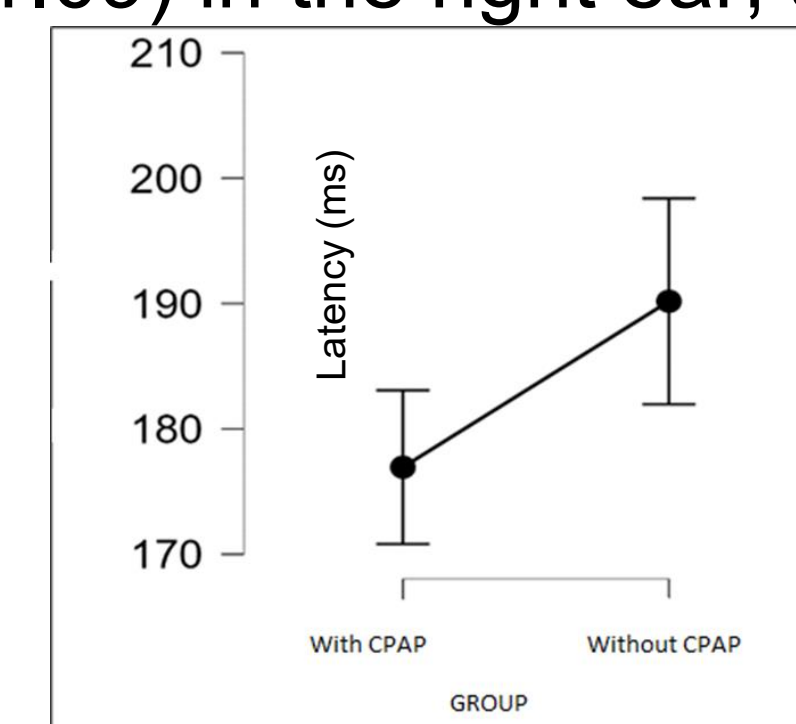


Fig 1 Comparison of P2 component latency between the two groups

After analyzing the results of the study, the increased latency of the P2 component may suggest that patients not using CPAP have greater difficulty classifying, decoding and discriminating auditory stimuli.

Conclusion

With the use of CPAP for 3 months and the reduction in P2 latency, we observed an improvement in the processing speed of cortical information and better patient attention to acoustic stimuli. This suggests increased activity of neuronal fibers in the central nervous system.

Références

Andrew Vakulin ,Peter G. Catcheside ,Stuart D. Baulk ,Nick A. Antic ,Cameron J. van den Heuvel ,Bancos Siobhan R. Doug McEvoy ·Auditory evoked potentials remain abnormal after CPAP treatment in patients with severe obstructive sleep apnea. *Clinical neurophysiology*. 2012;123(2):310-7.