



Pattern of “Sleep spindles” in obstructive sleep apnea patients

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Abstract: Obstructive sleep apnea (OSA) is very serious and multifactorial sleep disorder which closely related with disruption of sleep homeostasis. It is known that such sleep encephalographic (EEG) phenomenon as sleep spindles (SSs) support sleep stability and may display a sleep protective function. Thus, it is of particular interest to assess the SSs pattern in OSA patient that was the aim of the present research. We investigated whether SS activity could be altered in patient with moderate degree of OSA compared with non-OSA subjects. 35 middle-aged OSA patients and 30 controls underwent full-night polysomnography (PSG). SSs were automatically detected during stage 2 (N2) of non-rapid eye movements. The SSs activity characteristics involved: total number, mean density, mean maximum amplitude and mean frequency. All differences were considered statistically significant at $p < 0.05$. We noted a significant decrease in the density and number of central SSs in patients with OSA compared to controls, however, the amplitude is significantly higher in OSA subjects. To summarize, our results show that OSA lead to significant disruption of SSs density, reduction of their number and frequency in N2 sleep stages. These findings can be evidence of the extinction of a brain protective mechanism against exciting stimuli during apnea episodes in OSA patients with a long duration of sleep disturbances.

Keywords: obstructive sleep apnea, sleep spindles, sleep disorders