

Neurobehavioral and autonomic alterations in adults with obstructive sleep apnea

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Objective: Obstructive sleep apnea (OSA) is associated with sympathetic hyperactivity, excessive nocturnal sweating, sleepiness, and neurobehavioral cognitive alterations. However, it is not well known if cognitive consequences of OSA are independent from autonomic alterations. Thus, we assessed the association between polysomnographic, autonomic, and cognitive tests performance in OSA patients. **Methods:** Fifty eight OSA patients (53 male) were administered with questionnaires assessing demographic, Epworth, Beck Depression Inventory, Syndrom Kurz test (SKT), Trail Making part B (TMT-B), and Frontal Assessment Battery (FAB) tests. Spectral analysis of heart rate variability (HRV) and night sweating symptoms (NSwS) score were used to assess autonomic function. **Results:** Global cognitive function (SKT) was normal in mild-moderate (M-OSA) and severe (S-OSA) patients. In S-OSA patients AHI was correlated with TMT-B ($r = 0.30$ $P < 0.05$) and with FAB ($r = -0.31$ $P < 0.05$). Oxygen desaturation was correlated with TMT-B ($r = -0.45$ $P = < 0.001$) and FAB ($r = 0.29$ $P = < 0.05$). Sympathetic overactivity was correlated with oxygen desaturation: HRV ($r = -0.39$ $P < 0.05$) and NSwS score ($r = -0.49$ $P < 0.01$), but HRV and NSwS score were not correlated with TMT-B and FAB. **Conclusion:** Frontal cognitive dysfunction and predominance of sympathetic drive occur in OSA patients. Abnormal frontal cognitive function and sympathetic hyperactivity were related to oxygen desaturation, but not between each other. We conclude that neurobehavioral changes and autonomic imbalance in OSA patients take place independently from each other, suggesting different pathophysiological pathways. © 2014 Elsevier B.V.

Autonomic dysfunction

Cognitive dysfunction tests

Heart rate variability

Night sweating

Obstructive sleep apnea

adolescent

adrenergic stimulation

adult

Article

autonomic dysfunction

Beck Depression Inventory

cognition

cognitive defect

correlational study

disease association

disease severity

Epworth sleepiness scale

female

Frontal Assessment Battery test

heart rate variability

human

hyperactivity

major clinical study

male

neurologic examination

night sweat

night sweating symptoms score

oxygen desaturation

psychologic test

questionnaire

scoring system

sleep disordered breathing

sympathetic hyperactivity

Syndrom Kurz test

Autonomic Nervous System Diseases

Cognition Disorders

complication

heart rate

middle aged

neuropsychological test

pathophysiology

physiology

polysomnography

sleep disordered breathing

Adult

Autonomic Nervous System Diseases

Cognition Disorders

Heart Rate

Humans

Male

Middle Aged

Neuropsychological Tests

Polysomnography

Sleep Apnea, Obstructive