Possible neuronal mechanisms of sleep disturbances in patients with autism spectrum disorders and attention deficit hyperactivity disorder

Jun Kohyama

Medical Hypotheses (November 2016)
DOI: http://dx.doi.org/10.1016/j.mehy.2016.11.001.

Abstract

The most common form of sleep disturbance among both patients with autism spectrum disorders and patients with attention deficit hyperactivity disorder is sleep-onset insomnia, but the neuronal mechanisms underlying it have yet to be elucidated and no specific treatment strategy has been proposed. This means that many caregivers struggle to manage this problem on a daily basis. This paper presents a hypothesis about the neuronal mechanisms underlying insomnia in patients with autism spectrum disorders and attention deficit hyperactivity disorder based on recent clinical and basic research. It is proposed that three neuronal mechanisms (increased orexinergic system activity, reduced 5-hydroxytryptamine and melatonergic system activity, rapid eye movement sleep reduction) are involved in insomnia in both autism spectrum disorders and attention deficit hyperactivity disorder. This suggests that antagonists against the orexin receptors may have beneficial effects on insomnia in patients with autism spectrum disorders or attention deficit hyperactivity disorder. To the best of the author’s knowledge there has been no research into the effects of this agent on insomnia in these patient groups. Large, controlled trials should be carried out.