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Obstructive sleep apnea, cognition and Alzheimer's disease: A systematic review integrating three decades of multidisciplinary research

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Abstract

Increasing evidence links cognitive-decline and Alzheimer's disease (AD) to various sleep disorders, including obstructive sleep apnea (OSA). With increasing age, there are substantial differences in OSA's prevalence, associated comorbidities and phenotypic presentation. An important question for sleep and AD researchers is whether OSA's heterogeneity results in varying cognitive-outcomes in older-adults compared to middle-aged adults. In this review, we systematically integrated research examining OSA and cognition, mild cognitive-impairment (MCI) and AD/AD biomarkers; including the effects of continuous positive airway pressure (CPAP) treatment, particularly focusing on characterizing the heterogeneity of OSA and its cognitive-outcomes. Broadly, in middle-aged adults, OSA is often associated with mild impairment in attention, memory and executive function. In older-adults, OSA is not associated with any particular pattern of cognitive-impairment at cross-section; however, OSA is associated with the development of MCI or AD with symptomatic patients who have a higher likelihood of associated disturbed sleep/cognitive-impairment driving these findings. CPAP treatment may be effective in improving cognition in OSA patients with AD. Recent trends demonstrate links between OSA and AD-biomarkers of neurodegeneration across all age-groups. These distinct patterns provide the foundation for envisioning better characterization of OSA and the need for more sensitive/novel sleep-dependent cognitive assessments to assess OSA-related cognitive-impairment.

Keywords: Alzheimer's disease; Amyloid; Biomarkers; Cognition; Middle aged; Mild cognitive impairment; Obstructive sleep apnea; Older adults; Phosphorylated tau.

Figures

Fig. 1. Study retrieval and selection for...

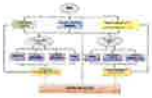

Fig. 2. Possible intermediate mechanisms in the...

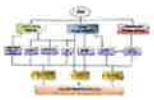

Fig. 3. Possible intermediate mechanisms in the...

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