Review

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# Pathological Impacts of Chronic Hypoxia on Alzheimer's Disease

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## Abstract

Chronic hypoxia is considered as one of the important environmental factors contributing to the pathogenesis of Alzheimer's disease (AD). Many chronic hypoxia-causing comorbidities, such as obstructive sleep apnea syndrome (OSAS) and chronic obstructive pulmonary disease (COPD), have been reported to be closely associated with AD. Increasing evidence has documented that chronic hypoxia may affect many pathological aspects of AD including amyloid β (Aβ) metabolism, tau phosphorylation, autophagy, neuroinflammation, oxidative stress, endoplasmic reticulum (ER) stress, and mitochondrial and synaptic dysfunction, which may collectively result in neurodegeneration in the brain. In this Review, we briefly summarize the effects of chronic hypoxia on AD pathogenesis and discuss the underlying mechanisms. Since chronic hypoxia is common in the elderly and may contribute to the pathogenesis of AD, prospective prevention and treatment targeting hypoxia may be helpful to delay or alleviate AD.

**Keywords:**Alzheimer’s disease; Chronic hypoxia; amyloid β; autophagy; neuroinflammation; tau.