

# Ventilatory and autonomic regulation in sleep apnea syndrome: A potential protective role for erythropoietin?

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Obstructive sleep apnea (OSA) is the most common form of sleep disordered breathing and is associated with wide array of cardiovascular morbidities. It has been proposed that during OSA, the respiratory control center (RCC) is affected by exaggerated afferent signals coming from peripheral/central chemoreceptors which leads to ventilatory instability and may perpetuate apnea generation. Treatments focused on decreasing hyperactivity of peripheral/central chemoreceptors may be useful to improving ventilatory instability in OSA patients. Previous studies indicate that oxidative stress and inflammation are key players in the increased peripheral/central chemoreflex drive associated with OSA. Recent data suggest that erythropoietin (Epo) could also be involved in modulating chemoreflex activity as functional Epo receptors are constitutively expressed in peripheral and central chemoreceptors cells. Additionally, there is some evidence that Epo has anti-oxidant/anti-inflammatory effects. Accordingly, we propose that Epo treatment during OSA may reduce enhanced peripheral/central chemoreflex drive and normalize the activity of the RCC which in turn may help to abrogate ventilatory instability. In this perspective article we discuss the potential beneficial effects of Epo administration on ventilatory regulation in the setting of OSA. Copyright ©

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Central chemoreflex

Chronic intermittent hypoxia

Erythropoietin

Peripheral chemoreflex

Sleep apnea

erythropoietin

erythropoietin receptor

ibuprofen

recombinant erythropoietin

antiinflammatory activity

antioxidant activity

autonomic nervous system function

cell protection

chemoreceptor

chemoreceptor reflex

chronic intermittent hypoxia

drug selectivity

hormone receptor interaction

human

neuroprotection

nonhuman

pathophysiology

respiration center

respiration control

respiratory function

Review

sleep disordered breathing