

Sleep Apnea – Asthma Links

“Obstructive sleep apnea (OSA) and asthma are detrimental to each other” is the conclusion of a recent review of links between the two conditions.¹ Studies have shown that OSA is an independent risk factor for asthma, and OSA is more common in asthmatics than in the general population. Several mechanisms through which interaction might occur include the following.

Gastroesophagal reflux, a well-known trigger for nocturnal asthma, is more common in apneics than in the general population. Decreased intrathoracic pressure & increased transdiaphragmatic pressure during apnea are thought to provoke asthma by way of vagal reflexes elicited when the esophagus is exposed to acid.

Local airway inflammation: Repeated mechanical trauma during snoring & OSA provokes chronic local inflammation of upper and low respiratory tracts, resulting in increased susceptibility to bronchospasm.

Systemic inflammation: Markers of low-grade chronic inflammation, like C-reactive protein, are secreted in proportion to OSA severity and return toward normal levels with CPAP treatment. Oxidative stress secondary to repetitive oxygen desaturations is thought to be involved.

Neuromechanical reflex bronchoconstriction is elicited by apnea-induced increase in vagal tone, repeated mechanical irritation of larynx during snoring and apnea, and stimulation of carotid body by hypoxia.

Cardiac dysfunction: OSA increases risk for CHF, a known cause of bronchial airway narrowing by way of airway hyper-responsiveness.

Circulating leptin, produced by adipose tissue, is elevated in both asthmatics and apneics; its proinflammatory effects are postulated to exacerbate both conditions.

Weight gain: OSA stimulates obesity which in turn predisposes to airway hyper-responsiveness.

Take home message: *Practitioners should be especially vigilant of OSA symptoms in unstable, poorly controlled asthmatic patients, especially when obesity is present.*

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1. Alkalil, M. et al. Obstructive sleep apnea syndrome and asthma: What are the links? *J Clin Sleep Med* 5:2009;71