

[Am J Respir Crit Care Med. 2001 Dec 1;164\(11\):2025-30.](#)



[Links](#)

Comment in:

[Am J Respir Crit Care Med. 2001 Dec 1;164\(11\):2013-4.](#)

Genioglossal activation in patients with obstructive sleep apnea versus control subjects. Mechanisms of muscle control.

[Fogel RB](#), [Malhotra A](#), [Pillar G](#), [Edwards JK](#), [Beauregard J](#), [Shea SA](#), [White DP](#).

Divisions of Sleep Medicine and Pulmonary and Critical Care, Department of Medicine, Brigham and Women's Hospital, Harvard Medical School, Boston, Massachusetts 02115, USA. rfogel@partners.org

Pharyngeal dilator muscle activation (GGEMG) during wakefulness is greater in patients with obstructive sleep apnea (OSA) than in healthy control subjects, representing a neuromuscular compensatory mechanism for a more collapsible airway. As previous work from our laboratory has demonstrated a close relationship between GGEMG and epiglottic pressure, we examined the relationship between genioglossal activity and epiglottic pressure in patients with apnea and in control subjects across a wide range of epiglottic pressures during basal breathing, negative-pressure (iron-lung) ventilation, heliox breathing, and inspiratory resistive loading. GGEMG was greater in the patients with apnea under all conditions ($p < 0.05$ for all comparisons), including tonic, phasic, and peak phasic GGEMG. In addition, patients with apnea generated a greater peak epiglottic pressure on a breath-by-breath basis. Although the relationship between GGEMG and epiglottic negative pressure was tight across all conditions in both groups (all R values ≥ 0.69), there were no significant differences in the slope of this relationship between the two groups (all p values > 0.30) under any condition. Thus, the increased GGEMG seen in the patient with apnea during wakefulness appears to be a product of an increased tonic activation of the muscle, combined with increased negative-pressure generation during inspiration.

PMID: 11739130 [PubMed - indexed for MEDLINE]