

---

# Aerodynamic Changes In Patients With Chronic Cough Treated With Cough Suppression Therapy

---

Jin Yang, Thomas Murry, Salem Dehom, Andrea Cragoe, Brianna Crawley, Priya Krishna

---

**Objective:** Voice therapy has been suggested as the choice of treatment for patients with chronic cough. However, the voice aerodynamic parameters that may account for improvement in cough symptoms have not been well studied. The purpose of this study was to determine the changes in the aerodynamic parameters of phonation and self-ratings of cough severity following cough suppression therapy.

**Methods:** Chart review was conducted for 22 patients with long term chronic cough (>6 months) refractory to various medical treatments, who received from 2 to 4 visits of cough suppression therapy over a 6 month period. Sessions consisted of breathing modification exercises such as reported in the literature<sup>1</sup>. Aerodynamic parameters including mean peak estimated subglottal air pressure, mean airflow during voicing, aerodynamic resistance, and maximum phonation time (MPT) were obtained before and after therapy. Patients also completed the Cough Severity Index (CSI).

**Results:** Twenty-two patients (M:F=3:11), mean age 62 (range=28-78) had significant CSI improvement from 18.8 to 10.4 ( $p<0.001$ ) after cough suppression therapy.

Mean estimated subglottic air pressure decreased from 7.93 to 6.35 cmH<sub>2</sub>O ( $p=0.004$ ); MPT increased significantly from 13.5 s to 15.5 s ( $p=0.003$ ); laryngeal airway resistance decreased from 43 to 42 cmH<sub>2</sub>O/cc/sec ( $p=0.044$ ).

**Conclusion:** This investigation provides evidence that reduced mean estimated subglottic air pressure and MPT are associated with symptomatic improvement in chronic cough. These objective changes in aerodynamic measures support the use of cough suppression therapy for chronic cough patients, especially those refractory to other treatments.

---

From Loma Linda University Medical Center  
Accepted for Publication: November 2018  
The authors have no funding, financial relationships, or conflicts of interest to disclose.  
Send correspondence to: [jiyang@llu.edu](mailto:jiyang@llu.edu)