Investigating the Underlying Mechanisms Responsible for the Effectiveness of Behavioral Cough Suppression Therapy

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Investigating the Underlying Mechanisms Responsible for the Effectiveness of Behavioral Cough Suppression Therapy

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Introduction
An estimated 20% of patients with CC do not respond to medical treatment and are said to have refractory chronic cough (RCC)\(^1\). Evidence suggests RCC is caused by hypersensitivity of sensory receptors in the airway epithelium known to regulate cough\(^2\). The primary sensory receptors are the transient receptor potential vanilloid (TRPV)\(^3\)–\(^7\). These receptors can be found in the epithelial layer of the bronchus, larynx and nose\(^3\)–\(^5\) and are very plastic. Behavioral cough suppression therapy (BCST) has been shown to result in reduced cough sensitivity\(^7\)–\(^9\); however, the underlying mechanism that results in reduced cough sensitivity is unknown.

Hypothesis
BCST works by stimulating neuroplasticity that results in a reduction in TRPV expression in the airway epithelium of patients with RCC?

Specific Aim
Quantify TRPV expression in human laryngeal epithelial cells (HLEpC) pre and post BCST

Methods

Baseline Testing
- Epiglottic biopsy
- Urge-to-cough Test
- Leicester cough questionnaire

Repeat steps post-BCST

Methods

Analyze TRPV expression via Western blot\(^1\)

Analyze TRPV mRNA expression via qPCR\(^2\)

Patient completes 3–4 weeks of BCST

Urge-to-Cough (UTC) test

Epiglottic Biopsy

Implications
Explaining the mechanism of the effect of BCST may increase its application in the clinic as well as open doors to other potential treatments for RCC.

References