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)\(^1\)-\(^2\). 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 (HLEC) pre and post BCST

Methods

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

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

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

Patient completes 3-4 weeks of BCST

Repeat steps post-BCST

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