Increased pulmonary CO₂ excretion in patients with small intestinal bacterial overgrowth (SIBO): Possible implications for COPD

Klaus Gottlieb 1, Chenxiong (Charles) Le 1, Vince Wacher 1, Christline Cruz 2, Tyler Porter 1, Joseph Sliman 1, Stephen Carter 2

1 Synthetic Biologics, Inc., Rockville, MD; 2 Commonwealth Laboratories LLC, Salem, MA

In this study, we saw a small but highly statistically significant increase in expired CO₂ percentage in SIBO patients compared to those without SIBO by breath test criteria. This increase is likely due to bacterial CO₂ production and could be relevant in patients with COPD.

METHODS

We identified 11,674 consecutive unique subjects who underwent breath testing for SIBO with lactulose as substrate by Commonwealth Laboratories, Salem, MA, from October 2014 to September 2015. Hydrogen and methane concentrations were determined as parts per million (ppm) and CO₂ as volume percent of exhaled air. The research was determined to be IRB exempt.

RESULTS

One patient had a high hydrogen breath test, indicating bacterial fermentation of lactulose. Bacterial production of CO₂ could account for 20–30% of the MV needed to keep a steady state, at least in the context of the LBT. This increase should have no effect on otherwise healthy patients but could be relevant in patients with baseline hypercapnia. While further studies appear warranted, it may be reasonable to test patients with hypercapnia for SIBO as a possible contributing factor that would be amenable to intervention.