

Notes: This is the first in a series of 5 blog posts about COVID-19 and Autonomic Dysfunction. This a pre-publication release that will be featured in a major medical journal.

Coronavirus Induces Oxidative Stress Leading to Autonomic Dysfunction Often With Delayed Symptom Onset

Heather L. Bloom, MD¹ and Joseph Colombo, PhD, DNM, DHS²

1. Electrophysiology, Atlanta Veterans Affairs Medical Center and Emory University Medical School, Atlanta, GA
2. Parasympathetic & Sympathetic Nervous System Consultant, Franklin Cardiovascular Associates, PA & Autonomic Dysfunction and POTS Center, Sewell, NJ, and Senior Medical Director & CTO, Physio PS, Inc., Atlanta, GA, dovetech@erols.com

Correspondence should be addressed to Dr. Colombo, dovetech@erols.com

ABSTRACT

Coronavirus, like other viruses and many chronic and serious pathologies induce Oxidative Stress. Oxidative Stress largely affects the Mitochondria of cells. Cardiac and Nerve Cells are known to contain the largest numbers of Mitochondria of the cells in the body. The effect of Oxidative Stress on the Parasympathetic and Sympathetic (P&S) branches of the Autonomic Nervous System is to induce dysfunction. P&S Dysfunction further affects the heart and other organs and systems of the body. Since the P&S branches are designed to work together to maintain normal organ function, even when dysfunctional, organ dysfunction is often delayed until P&S dysfunction is very significant. Symptoms are not induced or realized until organ dysfunction presents. This delay in symptoms often appears to be health, and therefore is often not associated with the causal factor, such as Coronavirus. Symptoms resulting from P&S dysfunction are often long-term and significantly impact patient quality of life and productivity. Symptoms include severe fatigue, anxiety, depression, lightheadedness, sleep difficulties, brain-fog, cognitive and memory difficulties, GI disturbances, shortness of breath, palpitations, and more. Unfortunately, these symptoms are often not believed because these patients' resting state is normal, including office exams, blood work, urine analysis and other tests administered at rest, including many autonomic tests. However, the underlying P&S is not evident during the resting state it is only evident during the dynamic states, when tests are typically not performed. This editorial highlights the possibility of delayed Coronavirus induced Oxidative Stress induced P&S dysfunction, describes the possible types of P&S dysfunction, and offers possible therapy options to restore proper P&S function (balance).

KEY WORDS

Coronavirus, Parasympathetic, Sympathetic, Oxidative Stress, Antioxidants

ABBREVIATIONS

ALA	Alpha-Lipoic Acid
ANS	Autonomic Nervous System
CoQ10	Co-enzyme Q10
COVID-19	Coronavirus (SARS-CoV-2)
P&S	Parasympathetic and Sympathetic
PE	Parasympathetic Excess
POTS	Postural Orthostatic Tachycardia Syndrome
SE	Sympathetic Excess
SW	Sympathetic Withdrawal