

Heart Rate Variability: A Potential Noninvasive Biomarker in Viral Sepsis by COVID19 Infection

The sudden outbreak caused by the so-called SARS-CoV-2 has spread globally.^[1] The new virus belongs to the Orthocoronavirinae subfamily, family coronaviridae, order nidovirales.^[2,3] It has been estimated that a considerable number of patients (up to 12%⁴) are admitted to intensive care units and with the number of patients progress to severe condition associated with an exaggerated systemic inflammatory response that darkens the outcome.^[4] Unlike the other SARSs, the COVID19 data from Wuhan (Hubei province, China) has shown that the disease is known to affect males (68%) and middle-aged adults in the age group of 50–59 years.^[2] The estimated prevalence is 10% in patients <39 years.^[3] Timely management of multiple organ failure and associated sepsis are determining factors in treatment. The release of proinflammatory cytokines, chemokines, interferons, and macrophages has been observed.^[5] The cytokine storm caused by viral invasion may play a role in COVID19 pathobiology.

The identification of noninvasive biomarkers is necessary for the management of this complex condition. In patients with heart failure, acute myocardial infarction, among other pathologies, a relationship has been found between heart rate variability (HRV) and outcome.^[6] The HRV is a representation of autonomic dysfunction. Heart rate is a dynamic event with temporal changes. HRV is defined as the variation in a certain period of heartbeats over time; this phenomenon is managed by extracardiac physiological mechanisms.^[7] HRV decreases in patients who present with acute myocardial infarction and is a predictor of arrhythmias and cardiac arrest.^[8,9]

In the group of patients with severe illnesses, severe metabolic disturbance (acidosis) has been observed that can correspond to alteration of the microcirculation.^[5] Clinically, these patients present with hypotension, a weak pulse in the context of mixed shock.^[5] Some authors have reported that HRV may be an early predictor of septic shock and multiple organ dysfunction.^[10-12] The aggressive inflammatory response observed in some patients infected with coronavirus can lead to myocardial ischemia in previously ill coronaries and also affect ventricular function in the early stages of sepsis.^[12] We believe that the early characterization of a group of patients who progress to

shock and multiple organ dysfunction with noninvasive physiological biomarkers will allow goal-oriented critical management strategies to be established that will offer targeted treatment to each patient.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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10.4103/jtccm.jtccm_3_20

How to cite this article: Moscote-Salazar LR, Janjua T, Florez-Perdomo WA, Garcia-Ballesteros E, Amit A. Heart Rate Variability: A Potential Noninvasive Biomarker in Viral Sepsis by COVID19 Infection. *J Transl Crit Care Med* 2020;2:67-8..

Submission: 17-05-2020;

Revision: 27-07-2020;

Accepted: 20-08-2020;

Published: 25-06-2021;

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