Carta al editor

**Cytokine-dependent inflammatory response in SARS-CoV-2 infection**

Respuesta inflamatoria dependiente de citoquinas en la infección por SARS-CoV-2

Diana Esperanza Monet Álvarez1\* <https://orcid.org/0000-0003-0996-874X>

Emmanuel Zayas Fundora2 <https://orcid.org/0000-0002-3830-358X>

Ángel Miguel Aguilar González3 <https://orcid.org/0000-0002-8227-363X>

Gino Iglesias Sordo4 <https://orcid.org/0000-0002-9065-1426>

1Facultad de Medicina No. 1. Universidad de Ciencias Médicas de Santiago de Cuba. Santiago de Cuba, Cuba.

2Universidad de Ciencias Médicas de la Habana. Facultad de Ciencias Médicas “Manuel Fajardo’’. La Habana, Cuba.

3Facultad de Ciencias Médicas de Sagua la Grande. Universidad de Ciencias Médicas de Villa Clara. Sagua la Grande, Cuba.

4Universidad de Ciencias Médicas de la Habana. Facultad de Ciencias Médicas “10 de octubre’’. La Habana, Cuba.

\*Autor para la correspondencia. Correo electrónico: [esperanza71199@icloud.com](mailto:esperanza71199@icloud.com)

Dear Editor,

COVID-19 still represents a challenge, and a periodic update is necessary, mainly on its pathophysiology as an inflammatory-based disease.

Inflammation is the basis of different clinical entities, and the main reason for consultation in Cuba and the world; known term, commonly seen as a symptom or a risk factor, with an erroneous perception that it is an isolated entity.(1) Both the innate and the acquired immune response act in this process with numerous local and systemic effects, being a response body homeostasis where the functions of almost all organ systems are modified.(2)

Different molecules favor its development, such as vasoactive substances, chemokines, lipid metabolites, immunoglobulins, as well as the kinin, coagulation and complement systems, but the main molecules are cytokines;(3) small peptides that function as intercellular messengers.

A crucial role is then played by anti-inflammatory cytokines, made up of T-helper 2 lymphocytes, producers of interleukins (IL) 10, 13, 24 and 42, responsible for bringing the defensive response to normal.(4)

Knowing the role of cytokines in inflammation is essential to understand the specific expression of inflammatory-based pathologies, which could mean a significant shift in the management of infectious diseases such as COVID-19.

The arrival of the new coronavirus has generated an unbridled use of epidemiological resources to contain it; however, it will be impossible if the biopsychosocial factors and the conditions of the immune response that are triggered in response to the disease are not known.(5)

SARS-CoV-2 is capable of activating the immune system, giving rise to an uncontrolled systemic inflammatory response, due to the production and secretion of pro-inflammatory cytokines and chemokines by immunoeffector cells. This "cytokine storm" is key in the pathophysiology of lung damage, hemodynamic instability, multi-organ failure, and the lethality observed in these patients.(5)

Cytokine storm is a term that, although recently in widespread use, lacks a strict definition. It refers to the overproduction of inflammatory substances with a wide range of biological activity from a variety of tissues and cells, as a result of an infectious process and the loss of negative feedback on the immune system.(6)

A cytokine storm is suspected in all patients with symptoms and signs of COVID-19, associated risk factors, and a torpid course of the disease. It should be taken into account that this entity is associated with a marked elevation of IL-6 (poor prognosis factor in adults with COVID-19) and IL-1, hence the treatment should be aimed at reducing the state of hyperinflammation.(4)

The cytokine storm is not a new concept to immunologists and clinicians, even though it has become more widely known in the wake of COVID-19. They occur in other infections, in autoimmune diseases, and in people with certain "faulty" genes. However, although it is a previously known term, it is still under study, and many of its treatments are still in the experimental phase.

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**Conflict of interest**

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