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## Letter to the Editor

**Pancytopenia during SARS-CoV-2 infection<sup>☆</sup>*****Pancitopenia en el curso de infección por SARS-CoV-2***

To the Editor,

The finding of pancytopenia in a patient should not be considered as a disease in itself but rather the sign of a disease that needs to be diagnosed. Among the various causes, viral infections stand out. The case reported is an example of a patient with pancytopenia secondary to SARS-CoV-2 infection.

A 77 year-old female referred from the nursing home to the emergency department due to a 4 day history of evening fever without any other associated symptoms. She did not have any history of interest, independent for basic daily life activities and without cognitive impairment. The physical examination revealed crackles in both lung bases and the chest X-ray showed bilateral infiltrates compatible with COVID. Unknown cause pancytopenia stood out in the lab results: 1730 leukocytes (neutropenia and lymphopenia of 760 in both series), 94,000 platelets and haemoglobin of 11.5 g/dl. An assessment by Haematology was requested, which carried out a smear test compatible with the infectious process: 45% of the segmented population with reinforced granulation and some hyposegmented forms with some band neutrophils, 44% small lymphocytes and some activated lymphocytes, 11% monocytes with abundant vacuoles. Given these findings, a was performed for SARS-CoV-2, which was positive and was admitted for respiratory monitoring and laboratory control. The patient did not wish to receive compassionate use treatment for COVID-19. A spontaneous laboratory improvement was observed after 48 h, with almost a complete recovery of parameters: 3060 leukocytes, 121,000 platelets, and haemoglobin of 12.5 g/dl. Given the clinical stability and laboratory improvement, it was decided to discharge her to her nursing home in a quarantine environment.

Among the possible causes of pancytopenia,<sup>1</sup> such as drug-induced bone marrow toxicity, tumour or autoimmune processes, it is worth highlighting viral infections. There are multiple known viral infections causing pancytopenia, including human immunodeficiency virus, parvovirus B19, cytomegalovirus or Epstein–Barr virus.

Pancytopenia is classified as central (if there is a decrease in hematopoietic cells in the bone marrow) or peripheral (if there is cell destruction or sequestration). In the case of a viral infection, the etiological mechanism is bone marrow aplasia, which is caused by various mechanisms.

King and Goodell<sup>2</sup> classified 4 different mechanisms by which viral infections can affect hematopoietic stem cells. The first of these is produced by the direct action of the virus that triggers changes in the expression of intracellular factors with the ability to manipulate cellular pathways or even cause the interruption of host cell translation. The second of them takes place through the direct recognition of a pathogen: through various pathogen-associated molecular pattern (PAMPs), hematopoietic cells give rise to the activation of different pattern recognition receptors (PRR) and cause changes in the expression of the chemokine receptor until apoptosis induction. The third of them focuses on the overproduction of inflammatory cytokines. This mechanism results in hematopoietic failure due to depletion that rapidly returns to quiescence after the initial response. Finally, although the link between the bone marrow microenvironment and haematopoiesis is difficult to define, it is well known that stromal cells play an important role in signalling haematopoiesis induction. These 4 scenarios are not mutually exclusive.

Hemophagocytic lymphohistiocytosis (HLH)<sup>3</sup> is a rare hyperinflammatory syndrome characterized by uncontrolled macrophage and lymphocyte activation and a life-threatening cytokine storm, accompanied by pancytopenia among other complications. Among the infectious triggers, viral infection is the most common, either as a primary infection or after reactivation in immunocompromised patients. It may be that our patient presented HLH in relation to primary infection by SARS-CoV-2, but without being a risk factor for severe disease as has been raised in other published cases.<sup>4</sup> The fact that the same virus can lead to different manifestations in the hematopoietic series in different patients points to the existence of a genetic basis for an aberrant immune activation which it is still unknown.

We are still in the process of investigating haematological abnormalities due to COVID-19.<sup>5</sup> More studies are needed to determine if this new virus associates notable differences in the mechanisms that produce pancytopenia compared to other viruses.

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Raquel Martín Pozuelo Ruiz de Pascual\*, Patricia López Pardo, Pedro López-Dóriga Bonnardeaux

Servicio de Geriátría, Hospital Universitario de Getafe, Getafe, Madrid, Spain

\* Corresponding author.

E-mail address: [raquelmprp@hotmail.com](mailto:raquelmprp@hotmail.com) (R. Martín Pozuelo Ruiz de Pascual).

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## Emotional health of emergency area workers during the COVID-19 pandemic<sup>☆</sup>



### Salud emocional del personal sanitario del Área de Urgencias durante la pandemia COVID-19

Dear Editor:

In the context of the COVID-19 pandemic, we report some data in relation to the emotional health of the emergency department staff of a high-tech hospital that has been one of the epicentres of the above-mentioned disease. Between 20th February and 15th April 2020, a total of 12,304 patients were seen in the Emergency Department and 2,306 diagnoses of coronavirus infection were established, with a peak of 133 patients on 27th March 2020. As in other centres, its professionals have had to adapt to working with quarantine measures; shifts and care circuits have had to be reinvented and, thanks to the *Lean* methodology, resource management has been optimized.

On a psychological level, health workers have described emotions of fear regarding their own safety, that of their families, stigmatisation, and interpersonal isolation measures. The same emotional reactions were described during the SARS pandemic,<sup>1</sup> highlighting the importance of leadership based on promoting team cohesion, collaboration and communication between specialties, factors considered essential to reduce the impact of this type of stressor. Avoidance coping strategies, hostile confrontation, blame, and anxious attachment were highlighted as personal factors contributing to a maladaptive response.

The impact of the pandemic is uncertain in the face of an unprecedented situation. In the short term, among hospital workers, the typical *burnout* symptoms, such as fatigue, insomnia, irritability, and loss of appetite, stand out. In the long term, staff may present with post-traumatic stress disorder that is related to cardiovascular, musculoskeletal, sleep and gastrointestinal disorders.<sup>2</sup> Musculoskeletal disorders are the leading cause of disability and sick leave among healthcare workers, and the experience of pain is a complex mixture supported by an interdependent set of biomedical, psychosocial and behavioural factors, whose relationships are not static, but evolve and change over time. It is considered that the treatment of choice in this type of situation should be multimodal, to improve disability and the use of self-control skills with the personalisation of rehabilitation objectives and the introduction of healthy physical and psychological habits, in a framework of multidisciplinary care centred on the person and beyond the disease.<sup>1,3</sup>

In countries like the US, the standards of medical training, supervised by the Accreditation Council for Graduate Medical Edu-

cation (ACGME), value skills related to Emotional Intelligence (EI) that contribute to the improvement of teamwork and doctor-patient communication (interpersonal skills, communication and professionalism).<sup>4</sup> In line with these standards, since 2016, 1,250 hospital professionals have received humanistic training in Emotional Ecology, of which 45 belong to the Emergency Department.<sup>5</sup> The Emotional Ecology model goes beyond EI since it does not focus solely on the individual but on their links with others and with the world. This approach underlines that, evolutionarily, the most adaptive strategy is the cooperative one, rather than competitiveness.

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Filippo De Caneva<sup>a,\*</sup>, Maria García-Gómez<sup>b</sup>, Ernest Bragulat Baur<sup>a</sup>

<sup>a</sup> Área de Urgencias, Hospital Clínic, Barcelona, Spain

<sup>b</sup> Institut d'Ecologia Emocional, Barcelona, Spain

\* Corresponding author.

E-mail address: [fdecane@clinic.cat](mailto:fdecane@clinic.cat) (F. De Caneva).

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