Letter to the editor

SARS CoV-2 Might Exploit Cells of the Innate Immune System to Induce the Novel Acute Immune Dysrhythmic Syndrome (n-AIDS) and Para COVID Syndrome: A Case Report and a Hypothesis.

Mina T. Kelleni, MD, PhD

Pharmacology Department, College of Medicine, Minia University, Egypt.

mina.kelleni@mu.edu.eg; drthabetpharm@yahoo.com

Mobile: +201200382422

https://orcid.org/0000-0001-6290-6025

Highlights

COVID-19 major culprit is mediated through dysregulation of the immune system.

n-AIDs involves ARDS and/or multi-inflammatory syndrome.

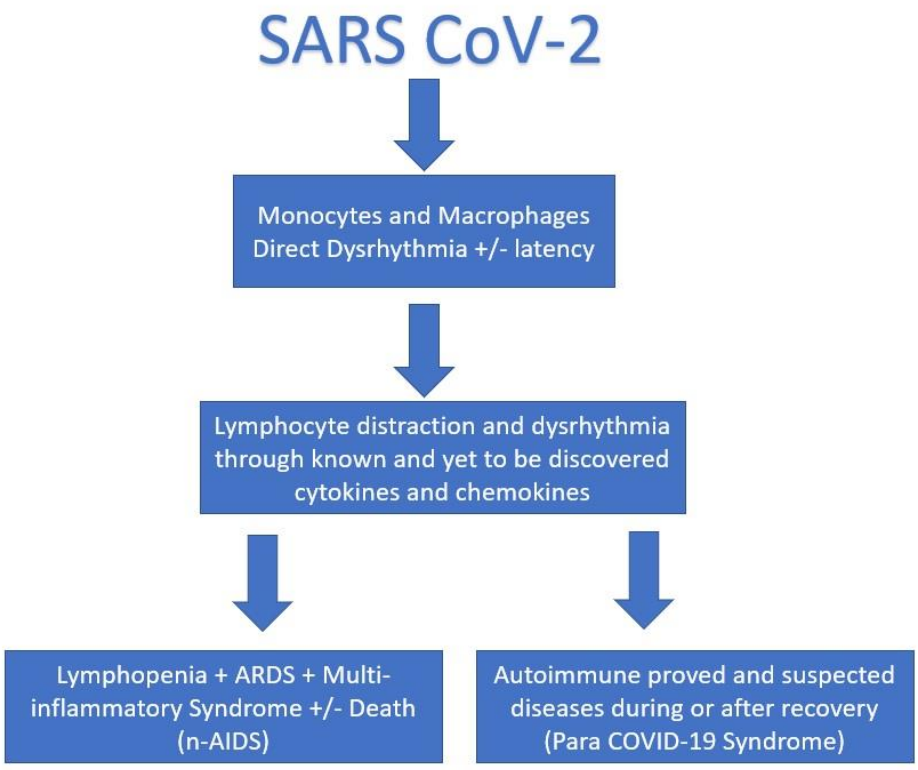
Para COVID Syndrome involves autoimmune complications during or after recovery of COVID-19.

Summary

In this short communication we present a COVID-19 recovered patient who suffered from a first time cutaneous delayed type cell mediated hypersensitivity lichenoid reaction and we suggest para COVID syndrome to include similar Post COVID conditions including the long haulers. Moreover, we explain our previous recommendation to reclassify COVID-19 and similar potentially fatal acute viral diseases as novel acute immune-dysrhythmia syndromes as we suggest that the main culprit that results in acute respiratory distress syndrome and multi-inflammatory syndrome is viral induced immune-dysrhythmia.

Key words: SARS CoV-2, COVID-19, Lichen planus like contact dermatitis, Cell mediated hypersensitivity, n-AIDs, Para COVID Syndrome.

Graphical abstract



To the Editor,

Dysregulated immune response was suggested to be correlated with COVID-19 mortality both in immunocompetent[1] and immunodeficient patients[2,3] and here we report a patient who has developed a post COVID abnormal immunological response that might help us to postulate a reciprocal interaction between SARS CoV-2 and the immune system which might also contribute to the pathogenesis of critical COVID-19 in other patients.

Case

A female in mid 30s, has been presenting, one month after COVID-19 recovery, with a clinically suspected lichen planus like contact dermatitis or an eczematous delayed type cell mediated hypersensitivity lichenoid reaction to gold, distally on her forearm, that has not ever been encountered before though wearing the same jewels for years (Figure 1), which has gradually resolved upon our advice to remove the jewels and to apply topical betamethasone which she has reported to use for one day and stopped after desquamation was noticed and she has experienced a similar, though milder, reaction when she moved the jewelry to her other forearm and thus decided to abandon wearing them and it took three months from stopping wearing the jewels until full skin recovery was reported.

Interestingly, her brother, in late 20s, also previously managed almost a year ago by us when he has encountered high fever and a first-time oral lichen planus, as clinically suspected through telemedicine, which we later considered a potential unusual manifestation belonging to our described COVID-19 spectrum. However, he was not counted among our COVID-19 patients due to insufficient suggestive criteria as he had declined to perform any further investigations and yet we recommended proper self-isolation while and after he was safely managed with our adopted COVID-19 protocol [4].

Discussion

Lichen planus and lichenoid eruptions have been previously described in some patients suffering from paraneoplastic pemphigus and suggested to be induced by dysregulated autoreactive T cell-mediated with subsequent B cell activation and humoral auto-immune responses [5] and dysregulated CD8+ T cells have also been described in both diseases[6] to be noted that half of hospitalized COVID-19 patients were reported to become, at least

transiently, positive for some potentially pathogenic autoantibodies[7] and COVID-19 has been described to induce several autoimmune diseases [8]. Interestingly, perivascular inflammatory lymphocytic infiltrate; 65% CD4+ and 35% CD8+ cells was described in the papillary dermis of a patient suffering from COVID-19 induced erythematous and pustular cutaneous rash and a direct SARS CoV-2 cytopathogenic effect on skin cells was suggested[9].

Importantly, we have recently suggested in a preprint, was recently revised at a reputable journal, that COVID-19, and other selected potentially fatal viral diseases, might be reclassified under a category of as immunopathological novel acute immune deficiency/ dysrhythmic Syndrome (n-AIDS)[10] and we have previously described an immunological monocytic dysrhythmia that plays a crucial role in development of the cytokine storm [1] while suggesting further investigations for a potential latency of SARS CoV-2 in some of the immune system cells especially the migrating interstitial macrophages [10]. Moreover, we have previously postulated lymphocyte distraction into and/or away from the lungs to reason for the lymphopenia frequently encountered in COVID-19 and previously with SARS[11] and we would like to present a combined theory to reason for COVID-19 pathogenesis especially in severe to critical cases that might also be determined, at least partly, on a genetic basis[12].

Taken together, we would like to postulate that SARS CoV-2, and other selected potentially fatal RNA viruses, might exploit the pattern recognition receptors expressing innate immune cells, which also function as antigen presenting cells to lymphocytes, e.g. monocytes, macrophages and tissue resident macrophages including the skin Langerhans cells, also described to share in the pathogenesis of our case report, triggering the cytokine storm in genetically predisposed patients through known and yet to be discovered cytokine and lymphokine dependent functional dysregulation or dysrhythmia and distraction of T and B lymphocytes as clinically manifested by lymphopenia, into the lung causing ARDS or away into other tissues causing multi-inflammatory syndrome, and thus n-AIDS might develop and we like to opt for immune dysrhythmia over immune deficiency as the immune system might express pseudo-hyperactivity though the ultimate outcome is incompetent and deficient immune response. Moreover, a potential direct or indirect SARS CoV-2

unconstrained immunological dysregulation might induce another form manifested with autoimmune responses causing one or several autoimmune proved and suspected diseases including the post or long COVID-19 (long haulers) and we would like to describe this form and its autoimmune correlated components as para COVID syndrome which might occur during or after recovery of COVID-19 and includes our case report.

Finally, we continue our one year repeatedly neglected/ignored call for a prompt adoption of our immunomodulatory COVID-19 management protocol which has been recently reprinted and updated to be tested in sufficiently powered clinical trials for the best interests of patients who are globally succumbed by COVID-19 every day [1,4].

Funding

None

Declaration of competing interest

The author has no conflicts of interest to disclose.

Acknowledgements

The patients in this manuscript have given written informed consent to publication of their case details.

References

1. Kelleni MT. NSAIDs/Nitazoxanide/Azithromycin Repurposed for COVID-19: Potential Mitigation of the Cytokine Storm Interleukin-6 Amplifier via Immunomodulatory Effects. Expert Review of Anti-infective Therapy. 2021;DOI: 10.1080/14787210.2021.1939683
2. Delavari S, Abolhassani H, Abolnezhadian F, et al. Impact of SARS-CoV-2 Pandemic on Patients with Primary Immunodeficiency. Journal of Clinical Immunology. 2021 2021/02/01;41(2):345-355.
3. Al-Saud B, Hazzazi KM, Mohammed R, et al. SARS-CoV-2–Related Acute Respiratory Distress Syndrome Uncovers a Patient with Severe Combined Immunodeficiency Disease. Journal of Clinical Immunology. 2021 2021/06/25.
4. Kelleni M. NSAIDs/Nitazoxanide/Azithromycin Immunomodulatory Protocol Used in Adults, Geriatric, Pediatric, Pregnant, and Immunocompromised COVID-19 Patients: A Prospective Observational Study and Case-Series. Authorea (Preprint) 2021. DOI: 10.22541/au.162126601.15715282/v4
5. Bowen GM, Peters NT, Fivenson DP, et al. Lichenoid Dermatitis in Paraneoplastic Pemphigus: A Pathogenic Trigger of Epitope Spreading? Archives of Dermatology. 2000;136(5):652-656.

6. Kuroda K, Hisanaga Y. The diagnosis of lichen-planus-like contact dermatitis to chlorpheniramine maleate. Dermatology. 2002;205(3):281-4.
7. Zuo Y, Estes SK, Ali RA, et al. Prothrombotic autoantibodies in serum from patients hospitalized with COVID-19. Science Translational Medicine. 2020;12(570):eabd3876.
8. Galeotti C, Bayry J. Autoimmune and inflammatory diseases following COVID-19. Nature Reviews Rheumatology. 2020 2020/08/01;16(8):413-414.
9. Drak Alsibai K, Michaud C, Taquet A, et al. Histopathology of cutaneous COVID-19 lesion: possible SARS-CoV-2 cytopathogenic effect. Pathology. 2020;52(7):816-818.
10. Kelleni M. COVID-19, Ebola Virus Disease and Nipah Virus Infection Reclassification as Novel Acute Immune Dysrhythmia Syndrome (n-AIDS): Potential Curative Role for Immunomodulators. Authorea (Preprint) 2021. DOI: 10.22541/au.162126701.10777816/v2
11. Kelleni MT. Early use of non-steroidal anti-inflammatory drugs in COVID-19 might reverse pathogenesis, prevent complications and improve clinical outcomes. Biomed Pharmacother. 2021 Jan;133:110982.
12. Kelleni M. ACE2 Polymorphisms Reflected on the Immune and Apelinergic Peptide Systems: Potential COVID-19 Tools for Risk Stratification and Therapy.Authorea (Preprint) 2021. DOI: 10.22541/au.162126670.06196092/v2

Figure Legend

Figure 1

Eczematous lichenoid eruption/ lichen planus like contact dermatitis