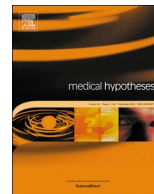




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Letter to Editors

Hyperglycemia and the novel Covid-19 infection: Possible pathophysiologic mechanisms



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Acutely ill patients present often with hyperglycemia (caused among other factors by endogenous stress-induced glucocorticoid hypersecretion) [1]. In preliminary reports, presenting clinical characteristics of patients with the novel Covid-19 infection, hyperglycemia was noted in 51% of cases [2]. Interestingly, transient hyperglycemia was also noted in patients with SARS (Severe Acute Respiratory Syndrome in 2003, caused by another coronavirus, closely related to Covid-19, SARS-CoV) [3]; the virus leads to transient impairment of pancreatic islet cell function [3]. Additionally, the also closely related, Middle Eastern Respiratory Syndrome (MERS in 2013) coronavirus (MERS-CoV) as well as human coronavirus-EMC are anchored to host cells via dipeptidyl peptidase 4 (DPP-4, which physiologically is implicated in the modulation of insulin action and as an enzyme plays a major role in glucose metabolism and is responsible for the degradation of incretins such as glucagon like peptide -1, GLP-1) [4,5]. Thus, we believe that the hyperglycemia noted in patients with Covid-19 may be caused via such (or analogous) mechanisms; this remains to be assessed by ulterior studies. Nevertheless, the issue of hyperglycemia should not be overlooked, since it may lead to additional immune suppression and further complications [6].

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to

influence the work reported in this paper.

References

- [1] Marik PE, Bellomo R. Stress hyperglycemia: an essential survival response!. *Crit Care* 2013;17:305.
- [2] Chen N, Zhou M, Dong X, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *Lancet* 2020;395:507–13.
- [3] Yang JK, Lin SS, Ji XJ, Guo LM. Binding of SARS coronavirus to its receptor damages islets and causes acute diabetes. *Acta Diabetol* 2010;47:193–9.
- [4] Kleine-Weber H, Schroeder S, Kruger N, et al. Polymorphisms in dipeptidyl peptidase 4 reduce host cell entry of Middle East respiratory syndrome coronavirus. *Emerg Microbes Infect* 2020;9:155–68.
- [5] Raj VS, Mou H, Smits SL, et al. Dipeptidyl peptidase 4 is a functional receptor for the emerging human coronavirus-EMC. *Nature* 2013;495:251–4.
- [6] Butler SO, Btaiche IF, Alaniz C. Relationship between hyperglycemia and infection in critically ill patients. *Pharmacotherapy* 2005;25:963–76.

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