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

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Keywords

Covid19; coronavirus; hyperglycemia; DPP4; human

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 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].

Conflict of interest statement

The authors declare no conflict of interest

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References

- [1] P.E. Marik, R. Bellomo
Stress hyperglycemia: an essential survival response!
Crit Care, 17 (2013), p. 305
[CrossRef](#) [Google Scholar](#)
- [2] N. Chen, M. Zhou, X. Dong, et al., Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study, Lancet 395 (2020), pp. 507-513.
[Google Scholar](#)
- [3] J.K. Yang, S.S. Lin, X.J. Ji, L.M. Guo
Binding of SARS coronavirus to its receptor damages islets and causes acute diabetes
Acta Diabetol, 47 (2010), pp. 193-199
[CrossRef](#) [View Record in Scopus](#) [Google Scholar](#)
- [4] H. Kleine-Weber, S. Schroeder, N. Kruger, *et al.*
Polymorphisms in dipeptidyl peptidase 4 reduce host cell entry of Middle East respiratory syndrome coronavirus
Emerg Microbes Infect, 9 (2020), pp. 155-168
[CrossRef](#) [View Record in Scopus](#) [Google Scholar](#)
- [5] V.S. Raj, H. Mou, S.L. Smits, *et al.*
Dipeptidyl peptidase 4 is a functional receptor for the emerging human coronavirus-EMC
Nature, 495 (2013), pp. 251-254
[CrossRef](#) [View Record in Scopus](#) [Google Scholar](#)
- [6] S.O. Butler, I.F. Btaiche, C. Alaniz
Relationship between hyperglycemia and infection in critically ill patients
Pharmacotherapy, 25 (2005), pp. 963-976

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