Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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International Diabetes Federation

Editorial

Hyperglycemia and the worse prognosis of COVID-19. Why a fast blood glucose control should be mandatory

Evidence in the COVID-19 pandemic shows that hyperglycemia, not only in people with diabetes, worsens the prognosis and increases the risk to die [1,2]. It is, moreover, emerging that particularly the hyperglycemia at the admission in the hospital is a very bad prognostic factor [1,2], suggesting that hyperglycemia in the very early phase of the disease may play a particular role in determining the seriousness of the prognosis.

There are at least two reasons why hyperglycemia, particularly an acute one, can be very dangerous during the SARS-CoV-2 infection. One is that an acute increase of glycemia is accompanied by a huge increase of inflammatory mediators [3].

Clearly, knowing the role of the "cytokines storm" in the COVID-19 this is an effect that must be avoided. Another reason seems to be very specific for COVID-19 and it is related to the binding of SARS-CoV-2 to ACE2 [4]. The glycosylation, a reaction that can be induced by hyperglycemia, of the ACE2 is needed for the linkage of the virus to this cellular receptor [4]. Therefore, high and aberrantly glycosylated ACE2 in the tissue in uncontrolled hyperglycemia could favor the cellular intrusion of SARS-CoV2, thus leading to a higher propensity to COVID-19 infection and a higher disease severity [4]. It is also likely that it is the amount of glycosylated ACE2 receptor, and not simply the amount of ACE2 alone, that is responsible for virus binding and fusion [4]. It is well know, however that the hyperglycemia-related process of glycosylation is at the beginning a reversible process, going through the so called "labile glycosylation", which is reversible also in vivo [5].

Therefore, it is conceivable that a fast normalization of hyperglycemia during COVID-19 may results in a decrease of inflammatory cytokines release and in a lower ACE2 binding capacity for the virus, two facts which consistently might help in improving the prognosis in people affected by SARS-CoV-2.

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.

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