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 known, 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.

REFERENCES


Antonio Ceriello
IRCCS MultiMedica, Via Milanese 300, 20099 Sesto San Giovanni, Milan, Italy
E-mail address: antonio.ceriello@hotmail.it

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