

COVID-19 Can Induce Diabetes in Healthy Patients

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Editorial

The coronavirus is more aggressive in “fragile” individuals, namely: people suffering from chronic diseases, people with immunosuppression, people over 65 years of age. We have known since the start of the Covid-A19 epidemic that diabetes is one of the aggravating factors. But what we did not know is that not all diabetics are at the same risk of developing severe forms [1, 2].

Epidemiological data since the start of the pandemic indicates that patients with type 1 or 2 diabetes have a greater risk of developing severe forms of COVID-19. New observations have shown that the virus is also capable of causing diabetes in healthy patients [3].

Diabetes: a risk factor for COVID-19

The ACE2 protein (Angiotensin Converting Enzyme 2) is an enzyme involved in the regulation of blood pressure. It is considered to be the virus’ “gateway” into the body. We know that cardiovascular disease, particularly heart failure, high blood pressure, and diabetes, are associated with an increase in the expression of this “gateway.” The risk of contamination of diabetic patients with SARS-CoV-2 is not higher than that of other citizens, on the other hand with unbalanced diabetes; the risk of developing a severe form is increased [4].

Studies have shown that SARS-CoV-2 can induce diabetes

In addition to causing lung damage, it seems that COVID-19 is the cause of the onset of diabetes in many people! The journal Nature describes, among other things, the story of a young 18-year-old student, infected by his parents, but asymptomatic, reached a few days later by extreme fatigue and a feeling of thirst. The diagnosis is made: it is type 1 diabetes [5].

Type 1 diabetes is caused by the destruction of insulin-producing cells and is most often seen in childhood. Type 2 diabetes is caused by resistance in target cells to the action of insulin and appears on

average after 40 years [6].

Different hypotheses try to explain the possible causes of this phenomenon:

- Since the pancreas, which regulates blood sugar, is rich in ACE2, the virus may be able to enter and then destroy insulin-producing cells;
- The immune and inflammatory response produced by the entry of the virus could be the cause of the damage to the cells of the pancreas
- The virus may bind to a protein (DPP4) which plays a major role in the metabolism of glucose and insulin [7, 8].

The question is crucial for those concerned: can I minimize my risk by balancing my diabetes as well as possible? It is also for the infectious diseases: this patient has an infection with SARS-CoV-2; can I reduce his risk of severe form by intensifying his treatment of diabetes? The stakes are therefore high, because depending on the response, prolonged hospitalization may be necessary, even though available hospital beds are scarce during a pandemic. Today that answer is still lacking. But French diabetologists and infectious disease specialists have taken up this problem urgently, and will provide useful information to healthcare professionals around the world [9, 10].

Another important point: how long the diabetes has been, and hence the possible chronic complications. A person who has lived with diabetes for many years is more likely to have retinopathy, but also kidney failure, heart failure, etc.

However, in the studies already mentioned, patients who died or were affected by severe forms of Covid-19 frequently suffered from these pathologies. In addition, a patient living with diabetes for a long time is also potentially an elderly person, and age also places an increased risk of death from Covid-19 [11].

To conclude, it should be noted that studies of similar methodology have also established that people suffering from diabetes had a poor prognosis during the two previous coronavirus epidemics - the extremely serious severe acute respiratory syndrome (SARS) which affected from 2002 more than 8,000 people, especially in Asia, and Middle East Respiratory Syndrome (MERS), which in 2012 mainly affected Saudi Arabia [12].

Taken together, these findings support the belief that there is a genuine association between the risk of severe form of the current viral infection and diabetes. They underline the urgency of collecting and then making public data on patients suffering from Covid-19, including precise parameters on their possible diabetes: a collaboration between infectious diseases and diabetologists, necessary, has already been established [1].

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