

## COVID-19 and diabetes: The importance of blood sugar control

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*One study reports that people with diabetes are more at risk of developing complications and dying from COVID-19, in those who fail to maintain stable blood sugar levels.*

It has long been known that people with diabetes are more likely to develop a variety of bacterial infections, for example in the foot, ear (malignant otitis externa), face (mucormycosis) or gallbladder (gangrenous cholecystitis). The increased susceptibility to these opportunistic pathogens is a direct consequence of an immune dysfunction caused by excess blood sugar. In addition, certain damage caused by diabetes, such as damage to the nerves (neuropathies) and a reduction in blood circulation at the extremities (micro- and macro-angiopathies), increase patients' vulnerability to infections.

### VIRAL INFECTIONS

This greater sensitivity of diabetics to pathogens is also observed for viral infections. For example, during the 2002 Severe Acute Respiratory Syndrome (SARS) epidemic, pre-existing diabetes was observed to be associated with a 3-fold increase in the risk of mortality (1). Several studies indicate that a similar phenomenon is found in the current Covid-19 pandemic: in all the cohorts examined so far, diabetes is one of the most frequent comorbidities and considerably increases the risk of developing severe forms of illness and die.

The largest study to date on this subject (7337 patients, hospitalized in 14 different establishments) confirms this association and sheds new light on the mechanisms responsible for this link between diabetes and COVID-19 (2).

Researchers have observed that people with diabetes have several metabolic abnormalities (hyperglycemia, inflammation, reduced kidney function, blood clots) that are correlated with an increased risk of developing several serious complications of COVID-19, particularly distress syndrome, acute respiratory disease as well as heart and kidney damage. As a result, the mortality rate for people with diabetes was much higher (3 times more) than that for non-diabetics (7.8% vs. 2.7%).

### BLOOD SUGAR CONTROL

Not all people with diabetes are at high risk for complications from COVID-19. The researchers noticed that in approximately half of the patients in the study, the blood sugar level was much closer to normal than in the other half (6.4 vs 10.9 mmol / L) and that these people were struck much less harshly with COVID-19, with incidences of severe complications (respiratory, cardiac and renal) 3 to 5 times lower than diabetics whose blood sugar was too high.



Overall, the mortality rate for diabetics with controlled blood sugar was only 1.1%, compared to 11% for those with too high blood sugar, this is 10 times lower.

It was already known that too pronounced variations in blood sugar levels are an important risk factor for serious complications and mortality in people with diabetes (3).

By showing that controlling blood sugar is also essential in preventing the complications of COVID-19, this study illustrates how being metabolically healthy also plays a key role in the fight against viral infections. We are therefore not as destitute as we might believe in the face of infectious agents such as SARS-CoV-2: by adopting a healthy lifestyle that helps prevent the development of chronic diseases and their complications. We give ourselves at the same time all the chances of effectively fighting this type of virus.

Remember that being overweight is a major factor in increasing the risk of diabetes (8 times more), even worse with obesity (20 to 40 times increasing). Finally, obesity is a risk factor for major clinical complications of COVID-19 now identified in young adults. This is one more reason to stay slim !!!

- (1) Yang JK et coll. Plasma glucose levels and diabetes are independent predictors for mortality and morbidity in patients with SARS. *Diabet. Med.* 2006; 23: 623-628.
- (2) Zhu et al., Association of blood glucose control and outcomes in patients with COVID-19 and pre-existing type 2 diabetes. *Cell Metabolism*, (published online, May 1<sup>st</sup>, 2020).
- (3) Forbes A et coll. Mean HbA1c, HbA1c variability, and mortality in people with diabetes aged 70 years and older: a retrospective cohort study. *Lancet Diabetes Endocrinol.* 2018; 6: 476-486.