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EDITORIAL

Consequences of COVID-19 on people with diabetes☆

Consecuencias de la COVID-19 sobre las personas con diabetes

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In December 2019, the new severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), causing the disease known as COVID-19, was identified in Wuhan, China. Since then, the disease has spread rapidly to over 200 countries, affecting more than two million people and causing over 190,000 deaths.

Diabetes is one of the most common comorbidities in people with COVID-19, with a prevalence ranging from 7 to 30%, depending on the series.[1] In a meta-analysis of 12 studies in the Chinese population, including outpatients and hospitalized individuals, with a mean age of 49.6 years, the prevalence of diabetes was found to be 10.3%, which is similar or even slightly lower than the age-adjusted prevalence of diabetes in the Chinese general population.[2] However, once COVID-19 has been acquired, diabetes has consistently been shown to be a risk factor for a poor patient outcome. The probability of developing a severe condition and of requiring admission to intensive care is over twice as high in people with diabetes,[3] and the reported mortality rate is up to three times higher (21–31%).[4]

In diabetes, the background presence of a chronic inflammatory state, impaired immune response, and altered coagulation could contribute to an increased morbidity-mortality of COVID-19 in diabetic individuals. A possible direct SARS-CoV-2 mediated damage to the pancreas has also been described, which could worsen hyperglycemia or even induce the appearance of transient diabetes.[5] No studies relating hyperglycemia to clinical outcomes in patients with diabetes and COVID-19 have been published to date. However, experimental data suggest that hyperglycemia plays a role in the pathogenesis and prognosis of other viral diseases. Hyperglycemia is associated with an increased risk of different types of infection[6] and to increased morbidity and mortality in patients with severe acute respiratory syndrome (SARS).[7] The optimization of blood glucose control reduces the complications, including infections. In this context, clinical practice should seek to maintain good glycemic control in patients with and without COVID-19, as doing so may help reduce the risk of infection and modulate the severity of the disease.

The current pandemic scenario may favor worsened glycemic control in people with diabetes, due to difficulties accessing the healthcare system, a lack of physical activity, and increased stress associated with mandatory confinement. Strategies therefore should be designed to facilitate access to the healthcare system through telemedicine for counselling on treatment adaptation or any other remotely manageable medical situation, and for guiding patients and caregivers in the control of diabetes with a view to preventing the need for hospital admission. Regarding the management of antihyperglycemic drugs in non-hospitalized patients, the available information does not allow for the definition of specific clinical guidelines related to COVID-19, and good glycemic control should be our goal, without one drug being given priority over another.[8] It has been postulated that the use of dipeptidyl peptidase 4 inhibitors (DPP-4is)[9] and/or glucagon-like peptide receptor agonists (GLP-1 RAs)[10] may exert a protective effect

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against COVID-19, though further data are needed to confirm this hypothesis. In patients with COVID-19, the suppression of SGLT2is should be considered if there is a risk of hypovolemia and/or diabetic ketoacidosis. It has been acknowledged by international scientific bodies that in the case of angiotensin-converting enzyme inhibitors (ACEIs) and angiotensin II receptor blockers (ARBs) there is no conclusive evidence to support the discontinuation of such treatments, and attention has been drawn to the increased risk derived from their suppression in patients with COVID-19. Furthermore, lower mortality has been reported in patients with arterial hypertension admitted to hospital due to COVID-19 and subjected to treatment with ACEIs/ARBs as compared to subjects treated with other antihypertensive drugs (3.7% versus 9.8%).[11]

In patients with diabetes hospitalized due to COVID-19, the few available data indicate inadequate glycemic control. A study of the patient glycemic profile during admission found that 39.1% of the values were above 180 mg/dl, and that the mean blood glucose concentrations were above 180 mg/dl during 37.8% of the duration of admission.[12] In addition to the stress produced by the infection and factors common to other causes of hospital admission, a number of factors associated with blood glucose fluctuations are of particular relevance in patients with diabetes and COVID-19. Glucocorticoid use results in great glycemic excursions over the 24-h period that need to be considered in establishing the insulin regimen,[13] while hydroxychloroquine treatment increases insulin sensitivity. The adjustment of glucose-lowering treatment may therefore be required.[14] Although there is controversy regarding the optimum glycemic control targets in hospitalized patients, blood glucose levels ranging from 110–180 mg/dl are considered appropriate. Insulin is the drug of choice for the treatment of hyperglycemia in hospital, and the most effective and safe insulin administration regimens are continuous intravenous insulin infusion in critically ill patients and the subcutaneous dosing of insulin in a basal-bolus-correction regimen, adapted to the type of nutrition, in non-critically ill patients.[15] Considering that the success of a clinical management protocol is largely dependent upon the training of the staff in charge of applying it, and that the magnitude of the current pandemic situation implies that many of the healthcare professionals in first-line care are less experienced than previously, the participation of endocrinologists and nurses specializing in diabetes in adapting the protocols and in the care of hospitalized patients with hyperglycemia will undoubtedly contribute to improving the management of diabetic patients with COVID-19.

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