Editorial DOI: http://doi.org/10.4038/sjdem.v11i2.7463

Impact and challenges of SARS-CoV-2 (COVID-19) in patients with type 2 diabetes

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In late 2019, a new form of coronavirus infection emerged in Wuhan, a city in the Hubei Province of China. In the subsequent period, it rapidly spread throughout the world in pandemic proportions, leading to an unexpected increase in morbidity and mortality. The virus that causes coronavirus disease 2019 (COVID-19) is designated severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and mainly involves the respiratory system causing moderate to severe pulmonary disease. However, its widespread effects on the body including glucose homeostasis are now well recognized (1).

Type 2 diabetes is one of the most prevalent non-communicable diseases in Sri Lanka. Being such a highly prevalent disease makes it important comorbidity to consider during the Covid-19 pandemic. Chronic hyperglycemia is a well-known risk factor that increases the susceptibility to infections and there is evidence to suggest that patients with poorly controlled diabetes are more susceptible to Covid-19 infection (2). SARS-CoV-2 enters the host cells by binding to ACE2 receptor and elevated ACE2 expression, related to poor glycaemic control seems to be the possible reason for the increased incidence of Covid -19 among patients with diabetes (3). When these patients get Covid-19 infection, they are more likely to develop severe or critical disease compared to non-diabetic patients (2). For this reason, there should be a low threshold to admit these patients to provide inward care. Having type 2 diabetes also seems to be a clear risk factor for mortality following Covid-19 infection. This increase in mortality is not only due to the comorbidities associated with diabetes but also due to poor metabolic control (4). Achieving glycaemic control has been challenging even in patients treated in intensive care units due to the ongoing infection, use of high dose steroids, precipitation of severe manifestations of diabetes including hyperosmolar hyperglycemic state, and severe insulin resistance. Out of nearly 13000 Covid-19 related deaths in Sri Lanka, a significant number had diabetes or its related comorbidities. Therefore, emphasis should be on achieving optimum glycaemic targets during this period to reduce the incidence of Covid -19 infection and to reduce Covid-19 related mortality among patients with type 2 diabetes. Covid-19 vaccination which is undoubtedly the most effective method in reducing mortality among patients is expected to reduce the high level of mortality when combined with good glycaemic control. Although Sri Lanka has managed to vaccinate most of its population successfully with a very well-coordinated vaccination program, achieving optimal glycaemic control in patients with type 2 diabetes has become an uphill task due to island-wide lockdowns, disruptions to routine diabetic clinic activities, restrictions for physical activities in outdoor environments and unwillingness among patients to attend to hospitals during the pandemic times. It is encouraging to see the resumption of routine clinic activities in many hospitals for type 2 diabetes patients following the decline in Covid-19 infections and Covid-19 related hospitalizations. Restoring patient confidence and, making them feel safe in the hospital environment should now be the priority for hospital administrators.

There are some reassuring data on the safety of some of the routinely used medicines in patients with diabetes. Initially, there were safety concerns about the use of angiotensin-converting enzyme

(ACE) inhibitors and angiotensin receptor blockers (ARBs) as these agents were thought to be involved in increased ACE2 expression (5). However, accumulating evidence suggests that there seems to be no increase in severe disease with the use of these agents. Multiple guideline panels now recommend continuing ACE inhibitors and ARBs without disruption in patients with diabetes who get Covid-19 infection unless there are other reasons to discontinue (e.g., hypotension, acute kidney injury) (6,7). In asymptomatic and mild Covid-19 infection, all patients with type 2 diabetes should continue their routine medicines without any interruption to achieve the best possible glycaemic control. In moderate to severe Covid-19 infection, certain oral antidiabetic medicines may need to be changed and even need to be substituted with insulin under direct medical supervision. There is also evidence to suggest that some of the routinely used medicines in diabetes management such as statins, sitagliptin, and aspirin have a beneficial effect on mortality in patients with Covid-19 infection in patients with diabetes (8,9,10). However, these findings need to be confirmed with more data in future studies. There have been many myths about diabetes medicines which have led to type 2 patients avoiding using these medicines during the Covid-19 pandemic. Restarting the routine clinics would allow educating patients on new findings and restoring patient confidence in their medicines.

New-onset diabetes following Covid-19 infection has also been consistently reported in previously non-diabetic patients. Pancreatic beta cells express ACE2 receptors, and it is possible that beta cells get damaged following Covid-19 infection in these patients (11). Severe insulin resistance which improves following the resolution of infection has also been documented in severely ill patients with Covid-19 (12). However exact mechanisms of new-onset diabetes following Covid-19 infection or whether this condition persists beyond the period of Covid-19 infection is not well known at this time. Ongoing studies in this area would provide answers in the near future and vigilance is needed in the meantime. A relook at the current screening strategies for type 2 diabetes would be more appropriate when much is known about this condition as a significant number of patients have been affected with Covid-19 infection in Sri Lanka. Undoubtedly SARS-CoV-2 brought many new challenges to the management of type 2 diabetes which has been a daunting task even before the current pandemic. However, a very successful vaccination program and the courage shown by the health care workers in Sri Lanka in these unprecedented times have bought us all new hope in overcoming these challenges.

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