



Management of Diabetes with COVID Complications in Cardiovascular Patients

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DESCRIPTION

Diabetes is a chronic condition that affects how the body processes glucose, a type of sugar that is essential for energy and cellular functions. People with diabetes have either insufficient or ineffective insulin, a hormone that regulates blood glucose levels. As a result, they have high blood glucose levels (hyperglycemia) that can cause various health problems, such as nerve damage, kidney disease, eye disease, heart disease and stroke. COVID-19 is a novel coronavirus that emerged in late 2019 and has caused a global pandemic. It is a respiratory infection that can affect the lungs, airways and other organs. The most common symptoms of COVID-19 are fever, cough, shortness of breath and loss of taste or smell. Some people may have mild or no symptoms, while others may develop severe or life-threatening complications, such as pneumonia, Acute Respiratory Distress Syndrome (ARDS), septic shock and multi-organ failure.

People with diabetes are not more likely to get COVID-19 than the general population, but they are more likely to have serious complications if they do get infected. This is because diabetes can weaken the immune system and make it harder to fight off infections. Also, high blood glucose levels can increase inflammation and damage the blood vessels and organs. According to the Centers for Disease Control and Prevention (CDC), people with type 2 diabetes are at increased risk of severe illness from COVID-19, while people with type 1 or gestational diabetes might be at an increased risk. A review of 24 meta-analyses found that people with diabetes had higher rates of mortality, intensive care unit admission and mechanical ventilation than people without diabetes². Another study found that among patients hospitalized with severe COVID-19 complications, 39.7% also had diabetes as an underlying medical condition.

Diabetic Ketoacidosis (DKA) is a condition that occurs when the body breaks down fat for energy instead of glucose, producing acidic substances called ketones. This can happen when people with diabetes have very high blood glucose levels or do not take enough insulin. DKA can cause nausea, vomiting, abdominal

pain, confusion and coma. It can also lead to dehydration, electrolyte imbalance and kidney damage. People with diabetes are more likely to develop DKA when they are sick with a viral infection like COVID-19. Hyperglycemic Hyperosmolar State (HHS) is another condition that occurs when the blood glucose levels become extremely high and the body becomes dehydrated. It can cause thirst, dry mouth, weakness, confusion and coma. It can also lead to blood clots, seizures and organ failure. People with type 2 diabetes are more prone to HHS than people with type 1 diabetes. HHS can be triggered by infections like COVID-19.

Hypoglycemia occurs when the blood glucose levels become too low. It can cause shakiness, sweating, hunger, dizziness, headache and confusion. It can also lead to seizures, loss of consciousness and brain damage. People with diabetes may experience hypoglycemia when they take too much insulin or other medications that lower blood glucose levels, skip meals or exercise more than usual. Hypoglycemia can be worsened by infections like COVID-19. Cardiovascular complications in the people with diabetes have an increased risk of developing heart disease and stroke due to high blood pressure, high cholesterol and damage to the blood vessels. COVID-19 can also affect the heart and blood vessels by causing inflammation, clotting and reduced oxygen supply. Some of the cardiovascular complications that people with diabetes and COVID-19 may face include myocarditis (inflammation of the heart muscle), arrhythmias (irregular heartbeats), heart failure and ischemic stroke. Renal complications in the people with diabetes have an increased risk of developing kidney disease due to high blood pressure, high blood glucose levels and damage to the blood vessels in the kidneys. COVID-19 can also affect the kidneys by causing inflammation, reduced blood flow and direct viral invasion. Some of the renal complications that people with diabetes and COVID-19 may face include Acute Kidney Injury (AKI), Chronic Kidney Disease (CKD) and End-Stage Renal Disease (ESRD). This may include:

- Checking their blood glucose levels more often than usual.
- Checking their ketone levels if they have type 1 diabetes or if their blood glucose levels are very high.

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- Adjusting their insulin or other medications according to their blood glucose levels.
- Drinking plenty of fluids to prevent dehydration.
- Eating small frequent meals or snacks if they have appetite loss or nausea.
- Contacting their health care provider if they have any questions or concerns.

CONCLUSION

The best way to prevent COVID-19 complications is to avoid getting infected by following the public health guidelines such as

wearing a mask, practicing social distancing, washing hands frequently and getting vaccinated when eligible. People with diabetes should also monitor their blood glucose levels regularly and keep them within their target range by taking their medications as prescribed, following a healthy diet and being physically active. If people with diabetes do get infected with COVID-19, they should seek medical attention as soon as possible if they have any signs or symptoms of severe illness or complications. They should also follow their sick day plan as advised by their health care provider.