Diabetics 2020: Coronavirus infection and diabetes mellitus pathogenesis - Viroj Wiwanitkit - DY Patil University

Viroj Wiwanitkit

DY Patil University, India

Coronaviruses are enveloped, positive single-stranded RNA viruses widely distributed in humans and animals worldwide. Deep sequencing analysis from lower respiratory tract samples indicated a novel coronavirus as the causative agent, which was named Severe Acute Respiratory Syndrome-Coronavirus. Most initial COVID-19 patients had a direct contact history with local Chinese seafood and wildlife market, suggesting a common-source zoonotic exposure as the main mode of transmission .It is uncertain how long an individual with COVID-19 remains infectious. The period of infectivity is often assessed indirectly by detection of viral RNA from respiratory specimens. However, viral RNA does not necessarily confirm the presence of infectious virus. Higher viral loads have been detected soon after symptom onset, suggesting that transmission may be more likely to occur in the earlier stages of infection and Even though all age groups have been affected by COVID-19, the median age appears to be around 47–59 years and usually higher among severe cases and non-survivors. No specific gender bias seems to exist for the contamination with the virus, but men tend to have a higher propensity of the cases. The diagnosis of COVID-19 cannot be made without microbiologic analysis. Patients who meet the criteria discussed below should undergo testing for SARS-CoV-2, in addition to testing for other respiratory.

Although many laboratory tests have been developed, real-time fluorescence (RT-PCR) has been the current standard diagnostic method for diagnosis of COVID-19, by detecting the positive nucleic acid of SARS-CoV-2 in sputum, throat swabs, and secretions of the lower respiratory tract sample or patients with severe lower respiratory tract illness, who have been in contact with COVID-19 patients or travelled within 14 days to a location where community transmission of SARS-CoV-2 is present. Furthermore, patients older than 60 years of age, as well as those with underlying conditions like diabetes, hypertension, cardiovascular diseases, chronic renal disease, cancer and immunocompromising conditions, who develop symptoms of fever, cough and/or dyspnea should be prioritized for testing With a high prevalence of diabetes, it is important to understand the special aspects of COVID-19 infection in people with diabetes. This becomes even more important, as most parts of the world are seeing restrictions on mobility of patients in order to contain the pandemic.

Diabetes and associated complications can increase the risk of morbidity and mortality during acute infections due to suppressed innate and humoral immune functions. Past viral pandemics have witnessed the association of diabetes to increased morbidity and mortality. Diabetes was considered as independent risk factor for complications and death during 2002–2003 outbreak of Severe Acute Respiratory Syndrome. Although a significant number will remain asymptomatic and be able to transmit the virus, the estimated proportion of symptomatic individuals requiring hospitalization increases. Its complications in patients with these conditions, it is likely the pandemic has the potential to cause significant mortality and morbidity. Specialists and health care providers will be providing clinical care to many patients with COVID-19 in inpatient, outpatient, and telehealth settings. Increased awareness of the clinical features, pathophysiology, and potential mechanisms that increase the risk is needed to provide better care and spur new investigations, both basic and clinical, to better understand COVID-19 in patients with diabetes. Transmission rates and respiratory viral load in asymptomatic carriers are similar to symptomatic patients.

In addition to a laboratory-confirmed COVID-19 diagnosis, patients with ARD manifest with fever, fatigue, respiratory (cough, dyspnea) or gastrointestinal (nausea, diarrhoea, vomiting) symptoms, and no significant abnormalities on chest imaging. Cellular CoV entry is a complex process that involves receptor binding and proteolysis leading to virus-cell fusion. Individuals with diabetes mellitus, hypertension, and severe obesity are more likely to be infected and are at a higher risk for complications and death from COVID-19. Hypertension and severe obesity are present in 68.4% and 15.5% of individuals diagnosed Specialists and health care providers will be providing clinical care to many patients with COVID-19 in inpatient, outpatient, and telehealth and also Lacking further evidence of risk or benefit, the American College of Cardiology, the American Heart Association, and the American Society of Hypertension have recommended that patients should continue treatment with their usual antihypertensive therapy.

Diabetes Mellitus inhibits neutrophil chemotaxis, phagocytosis, and intracellular killing of microbes. Impairments in adaptive immunity characterized by an initial delay in the activation of Th1 cell-mediated immunity and a late hyper inflammatory response is often observed in patients with diabetes. Following MERS-CoV infection, the disease was more severe and prolonged in diabetic male mice and was characterized by alterations in CD4+ T cell counts and abnormal cytokine responses. Finally, we need to develop novel ways to deliver care to our patients with Diabetes Mellitus (DM) using telehealth, remote patient monitoring, and wearable technologies.