Covid-19 in Saudi Arabians with Diabetic Mellitus

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Abstract

The purpose of this review is to discuss the status of COVID-19 among people with diabetes, those who have just been diagnosed with diabetes, diabetic ketoacidosis, and programmatic efforts like vaccinations at the present time. Diabetes has been identified as one of the most common comorbidities among COVID-19 patients in the majority of studies conducted in Saudi Arabia. There are currently only a few studies from Saudi Arabia on COVID-19-related newly diagnosed diabetes and diabetic ketoacidosis. Comprehensive guidelines and vaccinations in order of priority have been implemented by the Saudi ministry to reduce the impact of COVID-19 on diabetics. The utilization of tele health services significantly increased in Saudi Arabia's diabetes clinics during the COVID-19 pandemic. To manage the effects of COVID-19 on diabetics, targeted, evidence-based interventions are essential.

Keywords: SARS-CoV-2; COVID-19; Diabetes mellitus; Vaccination

Introduction

A novel form of the Coronavirus known as Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) is responsible for the Coronavirus Disease 2019 (COVID-19) pandemic, which is currently the most difficult pandemic of the 21st century. The World Health Organization (WHO) reported that as of July 15, 2021, there had been approximately 188,128,952 confirmed cases, 4,059,339 deaths, and 3,402,275,866 vaccine doses given out worldwide. The World Health Organization (WHO) is currently bringing together scientists and medical professionals from around the world to accelerate research and development, establish new standards, and assist in the care of those who are affected by the Coronavirus [1].

Diabetes mellitus (DM) and COVID-19 clearly have a significant impact on global health, including Saudi Arabia. Diabetes patients have been shown to be more susceptible to the infection and to have a higher mortality risk from this disease since the beginning of the COVID-19 pandemic. Additionally, it has been demonstrated that a high glucose concentration is an independent predictor of mortality and morbidity in previous infectious disease epidemics (SARS and MERS); COVID-19 is likely to be the same way [2].

Due to Saudi Arabia's high diabetes prevalence, this population is particularly at risk for COVID-19 infection. Saudi Arabia had 506,125 cases as of July 15, 2021 (with 486,918 recovered), with 8035 confirmed deaths. As a result of the rising prevalence of diabetes and COVID-19 in Saudi Arabia, more attention should be paid to diabetes patients in order to lessen the likelihood of further complications and death [3]. We discuss the current status of COVID-19 among diabetics, newly diagnosed diabetics, diabetic ketoacidosis, and programmatic efforts such as vaccinations in this review.

In Saudi Arabia, 18.3 percent (4,275,200) of the adult population is living with diabetes, and many more are being identified as pre-diabetic, according to the ninth edition of the International Diabetes Federation (IDF) Diabetes Atlas, which was published in 2019. It is essential to focus on the prevalence of COVID-19 among diabetics because diabetes is a major health issue in Saudi Arabia [4]. According to previous research, excessive visceral adipose tissue causes low-grade chronic inflammation, which is linked to diabetes. The regulation of homeostatic glucose and peripheral insulin sensitivity is disrupted by this inflammatory condition. Chronic hyperglycemia and inflammation can be determined by an abnormal and ineffective immune response. In addition, recent studies have demonstrated that diabetics with severe COVID-19 had a severe inflammatory response, were more likely to require mechanical ventilation, and had a higher mortality rate than non-diabetic patients [5]. In fact, people with diabetes are worried about the mortality rate of 81% in patients with severe COVID-19 disease who have diabetes, compared to 48% in those without diabetes. In addition, studies have shown that patients with T1D and T2D have comparable adjusted odds ratios for hospitalization (3.9 for T1D vs. 3.36 for T2D), illness severity (3.35 vs. 3.42), and in-hospital mortality (3.51 vs. 2.02) [6]. Numerous scientific studies on COVID-19 have shown that 11−58% of all COVID-19 patients also have diabetes, and that patients with diabetes have a 8% COVID-19 mortality rate. COVID-19 patients with diabetes comorbidity have a 14.2% higher risk of being admitted to the intensive care unit (ICU) than patients without diabetes. According to a Saudi study, diabetes patients had a significantly higher death rate than non-diabetic patients, and diabetes patients generally had worse clinical symptoms and metabolic profiles than non-diabetic patients [7]. These studies made it abundantly clear that diabetics are more likely to experience severe COVID-19 complications, which necessitated careful nursing care. Diabetes patients have a higher risk of severe illness from SARS-CoV-2 than people without diabetes. This is due to a number of factors, most notably that their immune systems are weaker, making them unable to fight the virus and likely leading to a longer recovery time, and that the virus may thrive in an environment with elevated blood glucose. White cell count, neutrophil count, C-reactive protein, lactic dehydrogenase, Interleukin (IL) 2R, IL-6, IL-8, D-dimer, N-terminal pro-B-type natriuretic peptide (NT-proBNP), and lymphocyte count were all higher in diabetic patients. According to these findings, diabetics have a stronger pro-inflammatory cytokine response than non-diabetics [8].

Situation currently in Saudi Arabia Diabetes has been identified as one of the primary risk factors for COVID-19 based on a few studies conducted in Saudi Arabia. From the 220 comorbidities that were reported, 83 of the COVID-19 positive patients had diabetes, according to the findings of a multi-center, retrospective, cross-sectional study that was conducted across all parts of the country from March 1, 2020, to March 31, 2020. A retrospective study conducted in March 2020 on 648 COVID-19 patients in Saudi Arabian healthcare facilities found that 73 (11.3 percent) had diabetes. 150 COVID-19 patients were used in a single-center retrospective study at Al Noor Specialist Hospital, Mecca, from March 12 to March 31, 2020. Diabetes was found in 26% of the patients who were admitted to the hospital. 26 percent of 82 adult COVID-19 patients in a separate study conducted from March 1, 2020, to April 5, 2020, were found to have diabetes [9]. Diabetes was found to be the most common comorbidity among 99 COVID-19 patients undergoing hospitalization in one of the studies conducted at King Saud University Medical City in Riyadh from March 22, 2020 to May 31, 2020. From March 1, 2020 to May 20, 2020, a descriptive, cross-sectional study with 458 COVID-19 patients at the Prince Mohammed bin Abdul Aziz Hospital in Riyadh found 62 (13.6%) patients to have diabetes [10]. Another retrospective study was conducted at King Abdullah Hospital in the province of Bisha in Saudi Arabia from March 20 to June 30, 2020, and diabetes was found in 37 (or 27%) of the 137 patients. 768 COVID-19 patients from King Saud Medical City in Riyadh, Saudi Arabia, were

included in a record-based, case-series study from March 23, 2020, to June 15, 2020. Of those 768 patients, 96.3 percent had more than one comorbidity, with diabetes mellitus being the most common (46.4%) [11]. Diabetes was found to be the most common comorbidity among COVID-19 patients (37.3%) in a subsequent study from King Saud Medical City, Riyadh, Saudi Arabia.

Vaccination Within less than a year of the beginning of the COVID-19 pandemic, numerous research groups rose to the occasion and developed COVID-19 vaccines. The first vaccine that was approved for use in Saudi Arabia at the middle of December 2020 was the BNT162b2 mRNA vaccine. The second vaccine that was approved for use in Saudi Arabia beginning in February 2021 was the Oxford-AstraZeneca chimpanzee adenovirus vectored vaccine ChAdOx1 nCoV-19 (AZD1222) [12] vaccines are identical to those found in previous clinical trials of the vaccines. The Saudi Arabian government has announced that all citizens and expatriates will receive free vaccines, with diabetes sufferers, for example, being given preference. The Saudi Arabian Health Ministry reported on July 15, 2021, that at least 21,533,971 COVID vaccines were being administered to 587 Saudi Arabian locations [13]. Vaccination is a safe and effective method of controlling COVID-19, particularly in vulnerable individuals, as diabetes sufferers are more likely to experience severe symptoms if they contract the virus [14].

Conclusion

Diabetes has been identified as one of the most common comorbidities among COVID-19 patients in the majority of studies conducted in Saudi Arabia. Diabetes management in COVID-19 patients presents a number of clinical challenges that necessitate a much more integrated team approach. This is an essential strategy for minimizing the likelihood of medical complications and death. In light of the fact that diabetes is one of the most prevalent health problems in Saudi Arabia, we stress the importance of conducting in-depth studies as soon as possible to gain a deeper comprehension of COVID-19 and its connection to diabetes in order to design and implement policies that are based on solid evidence in the nation.

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