Diabetes Mellitus and Covid-19 Review Article

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ABSTRACT

I look out that Diabetes mellitus is considered a common coexisting (multiple chronic conditions) of covid-19;observational studies investigating blood glucose ,or glycated hemoglobinA1c (HbA1c) according to severity of covid-19 were considered. The severe acute respiratory syndrome(SARS-CoV) and recently emerged middle east respiratory syndrome(MERS-CoV) epidemics have proven the ability of coronaviruses to cross species barrier and emerge rapidly in humans. Other Coronaviruses such as porcine epidemic diarrhea virus (PEDV) are also known to cause major disease epidemics in animals with huge economic loss. The virology journals aims to highlight the advances and key discoveries in the animal origin, viral evolution, epidemiology, diagnostic and pathogenesis of the emerging and re-emerging coronavirus in both humans and animals. The ongoing pandemic of covid-19 is now the major issue in global health.Studies and evidence implies that patients with diabetes are at a high risk of severe disease or death due to covid-19 than individuals without diabetes.I understand from other articles that the preexisting pathological pathways in patients with poorly controlled diabetes increases the risk of infectivity and are responsible for higher levels of tissue injury and death in patients with diabetes.

KEYWORDS

DM, COVID -19, Management, Pathophysiology, Risk Factor, Type 1,Type 2

INTRODUCTION

Corona viruses are a family of viruses with a genome size of around 26 to 32 kilo bases and a size of 80 to 220nm in diameter, making them the largest among RNA viruses. Corona viruses are enveloped viruses with a single-stranded, positive –sense RNA genome known to cause respiratory infections in humans. Two highly pathogenic CoV have resulted in outbreak of severe acute respiratory syndrome (SARS) in 2003 in Guangdong province, china and Middle East respiratory syndrome (MERS). In Dec 2019, a novel coronavirus, SARS-CoV-2, was identified as the pathogen causing corona virus diseases (COVID-19) in Wuhan, China. On March11, 2020, COVID-19 was declared a pandemic by the WHO. Globally 27,324 deaths have been reported among 595,800 confirmed cases.

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. Considering the high risk prevalent of cardiovascular disease, Obesity and Hypertension in patients with DM, it is unknown whether DM independently contributes to this increased risk.

Corona viruses are surrounded and enveloped by a fatty layer and commonly have spherical shapes with crown or "corona "of club-shaped spikes on their surfaces. These spikes are responsible for the virus-receptor binding in cell surface. As stated earlier, DM increases the complications of COVID-19 and the risk of COVID-19 related mortality. Current evidence demonstrates that patients with DM are more likely to experiences severe symptoms and complications than patients without DM due to COVID 19. One hypothesis is that hyperglycaemia facilitates the virus entry into the cells and viruses both need glucose for their function. It plays an essential role in pathophysiology of various complications of DM as well as viral respiratory disorders. In addition to damaging various biological molecules in the respiratory tract.

Diabetes mellitus is a well known risk factor for worse clinical outcomes in patients with corona virus disease 2019 (COVID 19). As a direct effect the covid 19 infection has resulted in striking changes in patients' metabolism with significant elevation in blood glucose. This led to increase insulin resistance and the associated hyperglycaemia. In addition, it has been suggested that covid 19 might be involved in developing DM in certain patients by targeting pancreatic islets of cells resulting in pancreatic injury.

OBJECTIVES OF THE STUDY

The aim of this study is to analyse how the impact of diabetes mellitus in patients with COVID 19 varies according to altitudinal gradient.

RESEARCH METHODOLOGY

Retrospective cohort study was conducted using deidentified claims and electronic health record data from the opium labs data between January 2017 and November 2020. Research has found that corticosteroids can cause insulin resistance and increase the risk of diabetes, the researchers excluded patients who already had diabetes. Follow up both the control group and covid 19 patients, and their results shows COVID 19 were more likely to develop type 2 diabetes compared to those in the control groups. Specifically, for every 1000 COVID 19 patients, about 15.8% developed diabetes.

LITERATURE REVIEW

Infection with SARS-CoV-2 in the setting of Diabetes mellitus (DM) initiates a flywheel of cascading effects that result in increased mortality. Some finding suggests that there were no significant differences in symptoms between patients who suffered from both diabetes and COVID-19 and those who only suffered COVID-19. In the subsequent meta-analysis 14.5% of the subjects were diabetic patients. In addition, it is suggested the diabetic patients will be treated with antibiotic, antiviral, and HCQ. Diabetes mellitus is associated with the proinflammatory state and the attenuation of the innate immune response. Patients with diabetes usually have concurrent disease such as hypertension, ischemic heart disease (IHD).It is known that diabetes is associated with microvascular and macrovascular complications. COVID-19 is a newly emerged respiratory infectious disease; there are no effective antiviral agents for treatment. It is known that glucocorticoids treatment is associated with a variety of common metabolic side effects including diabetes, hypertension, and osteoporosis. A high dose of glucocorticoids may result in impairement of multiple pathways including beta-cell dysfunction, manifested as impaired sensitivity to glucose and ability to release insulin, and insulin resistance in other tissues. Diabetes mellitus describes a group of metabolic disorders characterized by hyperglycaemia and defects in insulin secretion and insulin action. Several studies have described the indirect effects of the COVID-19 pandemic on diverse populations during the lockdown.Some studies indicated that there is an improvement in glycemic control, while others state ther is no significant change or that the glycemic control in this population has worsened.

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