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Analysis of Covid-19 Complications in Diabetic Patients

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ABSTRACT

Currently, the whole world is facing the pandemic which is caused by covid-19 or SARS-CoV-2. The corona virus infection with its mutant strains is causing massive, rapid transmission globally. Its most common symptoms are fever, dry cough, headache, running nose, body ache and sometimes diarrhoea too. The underlying medical problems like diabetes mellitus and old age are some factors which may contribute to the severity of the disease. Since, the diabetic patients are immunocompromised; they must take proper care necessary precautions against the covid-19 infection. If there is infection in diabetic patients, then frequent monitoring of blood sugar level is required. The patients with uncontrolled diabetes are at higher risk of hospitalization and mortality. Thus, covid-19 results in worsening of the diabetic conditions. But, the reason behind this is still not clear, as the evidences available are limited.

KEY WORDS: COVID-19, SARS-COV-2, DIABETES MELLITUS, COMPLICATIONS AND MORTALITY.

INTRODUCTION

COVID-19 is an infectious disease caused by a newly discovered novel corona virus or severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) (Roncon et al. 2020; Tadic et al., 2020; Huang et al., 2020). It was first observed in the Wuhan district of China, on December 31st, 2019 (Abdi et al., 2020). Starting then, it has been rapidly spreading all over the world. Most of the covid-19 patients experiences mild to moderate respiratory symptoms such as fever, dry cough and headache. Those people who have underlying medical problems like diabetes mellitus, hypertension may suffer from severe complications, if infected with covid-19 (Parveen et al., 2020; Anuja et al., 2020; Hussain et al., 2020; Pugliese et al., 2020).

Diabetes mellitus is a chronic metabolic disease characterized by elevated blood sugar levels (Pugliese et al., 2020). The most common type is type 2 diabetes or insulin- independent diabetes, which usually occurs in adults (Baidya et al., 2020; Vaibhav et al., 2020). It is seen that the diabetic patients are more prone to covid-19 infection (Muniyappa and Gubbi, 2020; Abu-Farha et al., 2020). Also, they are at higher risk of having complications, which may ultimately lead to higher mortality rate (Pal et al., 2020). However, some studies show that there is not enough evidence to elaborate the effect of corona virus in diabetes.

Effects of covid-19 on diabetic patients: Several researchers and a number of studies have analyzed the co-relation between diabetes and covid-19 severity. It is seen that corona virus has a bad effect of diabetic patients (Rajpal et al., 2020; Kaple et al., 2020; Zhou and Tan, 2020; Kumar et al., 2020; Zhang et al., 2020). It is also observed that the maximum percentage of the hospitalized corona patients are diabetic. A few studies

proposed that, the patients with diabetes and covid-19 are likely to have higher chances of ICU (Intensive Care Unit) admission (Jayshri Sadashiv et al., 2020; Priyal et al., 2020; Yaribeygi et al., 2020., Kosinski et al., 2020). Therefore, in these type of patients there is high risk of severity and mortality.

The factors contributing to the complications in the patients with diabetes and covid-19 are still not clear because the current evidences are limited. Since,the innate immunity in the diabetic patients is low; they are more prone to complications (Villabona, 2020). It is also observed that not all diabetic patients may suffer from co morbidities. Also, it is found that the occurrence of severe complications is more in those individuals with uncontrolled diabetes as compared to the controlled ones (Nida Taher et al., 2020; Poonam et al., 2020; Stehouwer et al., 2021).Apart from the poorly controlled diabetes other factors like old age, high cholesterol levels also contribute to the severity of the disease.

According to a statement released by the International Diabetes Federation (IDF), diabetes patients' symptoms are similar to those of other COVID-19 patients (Ashfaque et al., 2020).Diabetic patients, on the other hand, are thought to have more evolved symptoms.In diabetic patients with COVID-19 infection, glycemic variability is a prognostic factor. The cytokine storm, endothelial dysfunction, and multiple organ injuries that hyperglycemia causes worsen the outcome (Kaple et al., 2020). COVID-19 infection exacerbates diabetes mellitus stress by releasing glucocorticoids and catecholamines into the bloodstream. These wreak havoc on glycemic regulation and increase the formation of glycation end products in a variety of organs, both of which worsen prognosis.

CONCLUSION

Therefore, it is observed that the covid-19 has an adverse effect on the diabetic patients, especially in the uncontrolled ones. This may ultimately lead to higher mortality rate. No definite statement can be made regarding the effects of covid-19 in diabetes. Due to the limited resources, a detailed analysis between covid-19 and diabetes is yet to be concluded by the researchers.

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