



ORIGINAL RESEARCH PAPER

General Medicine

UNCONTROLLED BLOOD SUGARS AS A PRESENTING SYMPTOM OF COVID 19 AND ITS IMPACT ON CLINICAL OUTCOMES IN A TERTIARY CARE HOSPITAL IN CHENNAI

KEY WORDS:

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ABSTRACT

Introduction: Covid 19 Was Declared As A Global Pandemic In March 2020.in Tamilnadu, The First Case Was Reported On March 7,2020.a Large Proportion Of Patients With Covid 19 Presented With Uncontrolled Sugars On Admission. **Methods:** Retrospective Observational Study Of Laboratory Confirmed Covid 19 Cases Was Done And The Number Of Patients Who Presented With Uncontrolled Sugars Were Evaluated And The Impact On Clinical Outcomes Was Studied.uncontrolled Hyperglycemia Was Defined As Blood Sugar Value Of Greater Than Or Equal To 180mg/dl Within 24 Hours Of Admission. **Results:** Among 695 Patients Studied, 461 Patients Were Males While 234 Were Females.out Of This 433{62.30percent}patients Presented With Uncontrolled Hyperglycemia.of This 166 Were Known Diabetics {38.33 Percent} And Remaining Were Non Diabetics{61.66percent}.regarding Treatment Status In Hospital 189 Patients{43.64percent} Were Treated Without Oxygen Support ,166 {38.33 Percent} Required Oxygen Support And 78 Patients{18.01percent} Were On Mechanical Ventilation.244{56.34percent} Patients Were Discharged From Hospital In Stable Condition While 189{43.64} Patients Succumbed To Death **Conclusion:** These Results Suggested That Covid 19 Patients Can Present With Uncontrolled Sugars. A Strong Association Was Also Found Between Uncontrolled Blood Sugars And Clinical Outcome. Among Covid 19 Cases, Higher Mortality Rate Was Noted In Patients With Uncontrolled Sugars When Compared To Patients With Normal Blood Sugar Levels.

INTRODUCTION

In December 2019 a lot of pneumonia cases attributed to unknown etiology was reported from wuhan city in China. The causative organism was later found to be SARS-COV2 which belongs to the corona virus family.SARS -COV2 is a single stranded RNA virus which attaches itself to ACE2 receptor on host cells via the spike protein and induces a cascade of events finally leading on to wide spread systemic inflammation, coagulopathy and culminating in acute respiratory distress syndrome .The first case of Covid 19 in India was reported in kerala and the first case in Tamilnadu was reported on March 7 th 2020.Most of the patients presented with symptoms of fever ,cough , breathlessness, upper respiratry symptoms, gastrointestinal symptoms and also a few patients presented with thrombotic events.However a large number of patients also had uncontrolled sugars on admission.This lead to the possibility that uncontrolled sugars can be a presenting symptom of the disease.Uncontrolled sugars was defined as blood sugar value more than 180mg/dl within 24 hours of admission.SARS -COV2 infection leads to pancreatic beta cell destruction leading to impaired insulin secretion causing appearance of hyperglycemia in non diabetic patients or worsening the glycemic status in a known diabetic patient.A research article on clinical picture of COVID 19 conducted in china also concluded that SARS-COV 2 infection can cause insulin resistance which favors high sugars as a presenting features.Several studies conducted around the world also emphasized that poor glycemic control was associated with poor clinical outcome.Persistent hyperglycemia leads to reduction in CD3 and CD4 T cell count impairing immune dysregulation and early onset of cytokine storm.Also glycation of immunoglobulins in diabetic patients may harm

the biological function of the antibodies which in turn causes decrease in immunity –The above postulates explains the reason of poor clinical outcome in patients with poor glycemic status.

**METHODS
STUDY DESIGN AND PARTICIANTS**

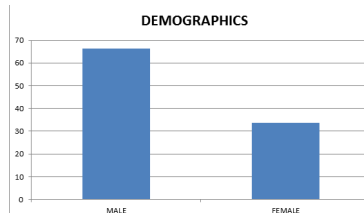
A retrospective observational study was conducted among patients tested positive for COVID 19 in Government Kilpauk medical college between August 10 th and September 10th.

DATA COLLECTION

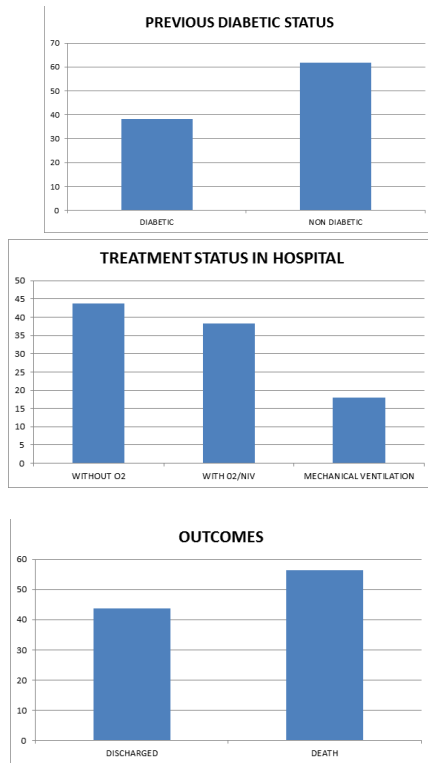
Capillary blood glucose values were obtained from the hospital records and was documented in a prestructural proforma and statistical analysis was done.

RESULTS

Hospital records of 695 patients who were COVID 19 positive and admitted during the period of August 10-2020 and September 10-2020 were compiled and analysed.Among them 461 were males and 234 females.166 patients were known diabetics ,while 267patients did not give a past history of Diabetes mellitus.The other details are plotted as bar diagrams below



MALE 66.33
FEMALE 33.66



DISCUSSION

We did a retrospective observational study among COVID 19 patients admitted in Govt Kilpauk medical college from August 10 to September 10 in the year 2020. Our aim was to identify the incidence of COVID 19 patients presenting as uncontrolled hyperglycemia and also the effect of it on in hospital mortality. SARS COV2 binds to ACE 2 receptor which is located on respiratory epithelium, GIT , myocardium and CNS. The clinical spectrum ranges from a flu like illness to ARDS and in extreme forms leading to widespread systemic coagulopathy. During our study period we found a large number of COVID 19 patients presenting with uncontrolled blood sugar levels. Some of the reasons for this association is discussed below. SARS –COV2 infection leads to pancreatic beta cell destruction leading to impaired insulin secretion causing appearance of hyperglycemia in non diabetic patients or worsening the glycemic status in a known diabetic patient. A research article on clinical picture of COVID 19 conducted in china also concluded that SARS-COV 2 infection can cause insulin resistance which favors high sugars as a presenting feature in a known diabetic. Several studies conducted around the world also emphasized that poor glycemic control was associated with poor clinical outcome. Persistent hyperglycemia leads to reduction in CD3 and CD4 T cell count impairing immune dysregulation and early onset of cytokine storm. Also glycation of immunoglobulins in diabetic patients may harm the biological function of the antibodies which in turn causes decrease in immunity –The above postulates explains the reason of poor clinical outcome in patients with poor glycemic status.

Evidence of pancreatic involvement in COVID 19 was also supported by certain postmortem findings. Immunohistochemical stains of the cadaveric pancreatic tissue showed ACE 2 immunostaining in the islet cells of the pancreas which are mainly similar to those that are present in the lung epithelium and myocardium. So SARS COV2 attaches to this receptor on pancreatic tissue and causes direct islet cell injury⁽¹⁾

Since the beginning of the COVID 19 era Corticosteroids have been extensively used in the treatment of the same. Given the fact that steroids can cause hyperglycemia, injudicious use of steroids especially without proper glycemic control can worsen the patient outcome. Out of the steroids used for the treatment of COVID 19 , hyperglycemic risk is maximum for dexamethasone.

CONCLUSION: According to the study, 62.30 percentage of the COVID19 patients presented with uncontrolled hyperglycemia. Also patients with inadequate glycemic control had poor clinical outcome in hospital. Early recognition of diabetes on admission and prompt glycemic control with insulin can improve clinical status of the patient.

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