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Clinico-Etiological Profile of Neonatal Seizures in Term Neonates

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Abstract

Background: This study aims to reveal the clinical course of moderate to severe COVID-19 patients from admission with different outcomes. Does Advanced age and gender co relate with severity, is one of the major concerning factors. Covid 19 presents with wide variety of symptoms to the hospital viz Fever, palpitations, breathlessness, asthenia, myalgia, diarrhoea. Wide variety of studies have revealed the co relation between various laboratory parameters and their correlation with the severity of outcome of the disease. Most commonly used inflammatory parameters are the values of CRP, D dimer, N/L Ratio, IL6, Ferritin i.e. Covid profile. Another important aspect of this infection is, its correlation with the comorbidities the patient has. Various studies have stated Diabetes mellitus has worse outcome with more severe inflammation. also, patients with More than one comorbidity have worse prognosis. Patients with severe covid-19 with multiple comorbidities were more likely to receive mechanical ventilation and admission to ICU, and have higher mortality. Multiple comorbidities in one patient were consistent with poorer outcome. hence, we need to look for these predictive factors and use them in prognosis of COVID 19 patients.

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Introduction

The Chinese city of Wuhan, which serves as the capital of the central Hubei province, saw an outbreak of the 2019 coronavirus illness (COVID-19) in December 2019.[1,2] On January 30, 2020, the World Health Organization issued a global health emergency declaration.[3]

A sizable family of RNA viruses includes coronaviruses. The term "coronavirus" derives from the fact that the surface of the viral particles is coated in numerous spikes and the viral particles as a whole resemble a corona. Six subtypes were identified; four of them are less pathogenic and typically result in minor symptoms following infection, whereas the other two can result in serious infections. The novel coronavirus is a brand-new variety of coronavirus that hasn't been identified in people before. Although its genes share more than 85% homology with a SARS-like virus in bats, it is currently thought to be the seventh subtype.[4]

More than 216 countries have been impacted. More than 43 million cases have been diagnosed as of this writing, and the disease has claimed 1.1 million lives. India has a greater case and mortality rate, affecting 43.1 million people and exceeding 0.5 million deaths.[5] acute respiratory distress syndrome (ARDS), acute heart damage, and secondary infections are just a few of the illnesses that can occur as a result of the viral infection, which first manifests as common cold symptoms including fever and throat swelling. [6] Patients with underlying medical issues and older persons are more likely to acquire a serious respiratory disease that will result in mortality.[6]

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Both in clinical signs and laboratory tests, COVID-19 lacks specificity. Fever, exhaustion, a dry cough, and, in severe cases, multi-organ failure are the predominant clinical symptoms of the illness. [7,8] Myalgia and diarrhea may be among your unusual symptoms. Laboratory testing have revealed that the lymphocyte count gradually fell, the total number of white blood cells in the initial peripheral blood was normal or declined, and C-reactive protein and serum sedimentation rates rose in the majority of patients.[8,9]
The utilization of circulating biomarkers that depict inflammation and the immune system may be extremely important when taking into account the prognostic indicator of COVID-19-positive patients. Nevertheless, there hasn't been much in-depth research done on the clinical relevance in terms of disease diagnosis, monitoring, and risk stratification. [10] In order to assess the outcomes of patients with mild and severe Covid 19.

Methodology

It was prospective observational study conducted in Department of Medicine of a tertiary care hospital during the study period of 18 months.
This was an observation study. Hospitalized Patients of COVID 19, Age >18 years with or without comorbidities, Patients with moderate to Severe COVID 19, Antigen or RTPCR positive for COVID 19 cases were included. Cases not willing to participate in the study, Mild or Asymptomatic COVID 19, pregnant female and post-partum female were excluded.

Data collection

After obtaining permission from ethics committee data collection was started by using preformed pre structured questionnaire. Patients were classified into three categories, Mild, Moderate and Severe disease patients. Sociodemographic factors like age, sex were noted.

Mild patients: Patients with uncomplicated, upper respiratory tract infection may have mild symptoms such as fever, cough, sore throat, nasal congestion, malaise, headache. They had no evidence of breathlessness of hypoxia.
• Moderate patients: Pneumonia with no signs of severe disease. Patients with presence of clinical features of dyspnea and hypoxia, fever, cough, including Spo2 <94% (range from 90 to 94%) on room air, Respiratory rate more or equal to 24 per minute.
• Severe disease patients: clinical signs of Severe pneumonia with one of following respiratory rate >30 breaths/ min, Severe respiratory distress, SPO2 <90% on room air.68
• Only Moderate and Severe disease patients were considered.
• Clinical symptoms like cough, Taste loss, Smell loss, Asthenia, Breathlessness, Diarrhoea, Chest pain, Palpitations were noted.
• Comorbidities like Hypertension, Diabetes, Asthma, Obesity, Cerebrovascular Accident and Cardiovascular Diseases, Autoimmune disease, Alchholic Liver Disease, Chronic Obstructive Pulmonary Disease and Chronic Kidney Disease were studied.
• Outcome is measures on Day 0, Day 3, Day 7, Day 14 of Laboratory values of RTPCR conversion Like CRP, DDimer, LDH, Ferritin, IL6 and Neutrophil: Lymphocyte ratio.
• Outcome of patients who were given remdesivir was noted and analyzed by comparing between moderate and severe patients.
Statistical analysis:

Data collected was entered in Excel 2019, and analysis of data were done using Statistical Package for Social Sciences for Windows, Version 22. The data on categorical variables were shown as n (% of cases), and the data on continuous variables were presented as mean,

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and standard deviation (SD). Comparison of the distribution of categorical variables were done using the Chi-Square or Fisher's exact test. Comparison of continuous variables were done by using student T test. The value <0.05 was considered as statistically significant. Multiple logistic regression was done on Laboratory values of RTPCR conversion Like CRP, DDimer, LDH, Ferritin, IL6 and Neutrophil: Lymphocyte ratio.

Results

Table 1: Demographic profile

Demographic profiles	**Moderate disease**	**Severe disease**	**P value**
Age			
≤ 30	6	0	0.004**
31 – 60	50	26	
> 60	36	43	
Gender			
Male	54	40	0.93
Female	38	29	

Table 2: Symptoms

Symptoms	**Moderate disease**	**Severe disease**	**P value**
Fever	82	64	0.43
Cough	51	48	0.06
Taste loss	50	38	0.92
Smell loss	48	43	0.19
Asthenia	51	45	0.21
Breathlessness	52	45	0.26
Diarrhea	21	16	0.95
Chest pain	19	20	0.22
Palpitation	23	26	0.08

Table 3: Comorbidities

Comorbidities	**Moderate disease**	**Severe disease**	**P value**
One Comorbidity	14	48	0.0001
Two Comorbidity	16	27	0.002
Three Comorbidity	17	23	0.03
Diabetes Mellitus, Obesity, IHD, cerebrovascular accident as one of the comorbidity	21	20	0.006
Diabetes	32	38	0.035
Chronic Kidney Disease	14	21	0.021
Chronic Obstructive Pulmonary Disease	14	20	0.034

Table 4: CT Scan and outcome

Variables	**Moderate disease**	**Severe disease**	**P value**
CT Scan			
Not done	26	14	0.02
0 – 7	33	15	

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18 – 25	7	13	
Outcome			
Alive	92	58	0.02
Mortality	0	11	

Table 5: Laboratory Parameters on Day of admission and Outcome

Lab Parameter	Multiple Logistic Regression Score	Differentiation Factor	Significance
CRP	48.444	1	0.002
D-Dimer	15.347	1	0.005
Ferritin	15.93	1	0.005
Neutrophil/Lymphocyte Ratio	6.93	1	0.008
IL6	11.69	1	0.007

Discussion

The objective of this retrospective study was to identify the clinical traits of patients with severe COVID-19 who also had diabetes and assess the impact of diabetes on the prognosis of patients with severe COVID-19. Our main point was to show that patients with severe COVID-19 who also had diabetes were older and had a more severe inflammatory response than patients with severe COVID-19 who did not have diabetes.

Our investigation found that individuals with severe COVID-19 and diabetes shared a number of clinical traits with patients with severe COVID-19 without diabetes. Although cough and dyspnea symptoms were prevalent in patients with severe COVID-19 and diabetes, there was no statistically significant difference between the groups.

In our present study out of 161 patients, 150 patients survived and 11 were dead. The prevalence of mortality was 6.83%. When compared severity of disease with Mortality, among 92 moderate disease study individuals, all 92 survived. among 69 Severe disease study individuals, 58 survived and 11 were dead. All patients who died had severe disease and the P-value is less than the level of significance 0.05, there is significant association between severity of patient and Mortality. In a study by Gupte V et al.[11], the clinical outcome of cure or improvement was noted in 83.99% of the patients (improved, 56.33%; cured, 27.66%), mortality was noted in 6.77% of cases, and 9.16% of patients showed no improvement. The death rate reported in Gupte V et al[11] and the death rate seen in our investigation were consistently similar.

Of of 161 individuals in our current study, 94 were male and 67 were female. 54 men and 38 women out of the 92 study participants with moderate disease were found to have more severe disease when compared to their gender. There is no statistically significant relationship between severity of patient (severity 76) and gender among the 69 participants in the severe disease study, of whom 40 were men and 29 were women.

In a study done by Izcovich A et al[12], as a Mortality predictor Gender Male Had Odd ratio 1.72, there was 5% more risk in mortality among males than females. Certainty of evidence was Moderate. As a Severe COVID 19 disease predictor Gender Male Had Odd ratio 1.53, there was 4.7% more risk in Severe COVID 19 disease among males than females. Certainty of evidence was Severe.

Of the 92 patients in our study with moderate severity diseases, 36 had hypertension, 32 had diabetes, 14 had Chronic Obstructive Pulmonary Disease, 10 had asthma, 6 had obesity, 10 had cerebrovascular accident, 14 had chronic kidney disease, and 11 had cardiovascular disease, while 4 had autoimmune illness and 13 had Alcholic Liver Disease. 20 had

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hypertension, 38 had diabetes, 20 had Chronic Obstructive Pulmonary Disease, 7 had asthma, 5 had obesity, 8 had Cerebrovascular Accident, 21 had chronic kidney disease, 8 had cardiovascular disease, 1 had autoimmune illness, and ten had Alcholic Liver Disease among the 69 people with severe severity diseases. Comorbidities such Hypertension, Asthma, Obesity, cerebrovascular accident and Cardiovascular disease, Autoimmune illness, and Alcholic Liver Disease did not significantly affect the severity of the disease.

In a study done by Gupta V et al[11], Diabetes (29.6 percent) and 77 hypertension were the most frequent comorbidities among COVID 19 participants (20.3 percent). Patients with heart disease had a 14.73 percent higher death rate, followed by those with lung illness (10.75 percent), diabetes (9.93 percent), and hypertension (9.93 percent) (5.32 percent).

In our present study we had done logistic regression to predict the severity of COVID 19 patient at the time of admission. In our model we consider those categorical variables that were associated with severity of patient and we found that CT scan 1 to 7, CT Scan Score 18 to 25, All ages groups, Diabetes Mellitus, CRP on Day 0, D dimer, on Day 0 N/C Ratio on Day 0, IL6, on Day 0, Ferritin on Day 0 these variables were affected to Severity of Patient.

In a study done by Izcovich A et al[12] , as a mortality indicator, High procalcitonin (OR 12.42, 95% CI 7.18 to 21.5; RD 32.3%, 95% CI 25% to 38.1%), myocardial injury markers (OR 10.89, 95% CI 5.39 to 22.04; RD 16.9%, 95% CI 13.4% to 19%), high white cell count (WBC) (OR 4.06, 95% CI 2.7 to 6.12; RD 16.9%, 95% CI 11% to 23.3%), high lactate (OR 3.66, 95% CI 2.26 to 5.94; RD 14.3%, 95% CI 8.3% to 20.6%), low platelet count (OR 5.43, 95% CI 2.55 to 11.56; RD 14.3%, 95% CI 8.3% to 18.6%), high D-dimer (OR 4.81, 95% CI 3.15 to 7.34; RD 11.2%, 95% CI 8.8% to 13.1%), high lactate dehydrogenase (LDH) 81 (OR 4.09, 95% CI 1.18 to 14.17; RD 10.4%, 95% CI 1.4% to 15.3%), high c-reactive protein (CRP) (OR 6.6, 95% CI 3.36 to 12.99; RD 7.9%, 95% CI 6.4% to 8.7%), decrease in lymphocyte count (OR 3.57, 95% CI 2 to 6.67; RD 17.1%, 95% CI 7.5% to 30.7%), high aspartate aminotransferase (AST) (OR 3.5, 95% CI 1.59–7.71; RD 11.1%, 95% CI 4% to 16.8%), albumin increase (OR 1.53, 95% CI 1.32 to 1.78; RD 4.2%, 95% CI 2.5% to 6%) and creatinine increase (OR 1.14, 95%CI 1.02 to 1.28; RD 1.1%, 95% CI 0.2% to 2.3%).

Conclusion

This study revealed the clinical course of moderate to severe COVID-19 patients from admission with different outcomes. Advanced age was consistent with poorer prognosis with no apperant predilaction for gender. Fever was most common presenting complaint in COVID19 Patients in this study. The values of CRP, D dimer, N/C Ratio, IL6, Ferritin on the day of admission co relate with severity of disease as well as prognosis of disease.

Our findings demonstrated that patients with severe covid-19 with multiple comorbidities were more likely to receive mechanical ventilation and admission to ICU, and had higher mortality. Worse prognosis was associated with pre existing comorbodities like Diabetes Mellitus, Chronic Obstructive Pulmonary Disease and Chronic Kidney Disease patients. Multiple comorbidities in one patient were consistent with poorer outcome. Hence We need to look for these predictive factors and use them in prognosis of COVID 19 patients.

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