Clinical and Laboratory Features of Covid19 Patients Admitted in Shaheed Syed Nazrul Islam Medical College Hospital, Kishoreganj - A Descriptive Study

* Belal MM,[1] Rahman MA,[2] Bhuiyan MR,[3] Shamme SS,[4] Rahman MM,[5] Akter M,[6] Pandit D[7]

Abstract

Background: Corona virus disease 2019 (COVID-19) is an infectious disease caused by a Novel corona virus named Severe Acute Respiratory Corona Virus-2 (SARS-CoV-2). The spectrum of this disease ranges from mild to life-threatening illness. Patients with uncomplicated upper respiratory tract viral infection may have nonspecific symptoms such as fever, fatigue, cough, sore throat, nasal congestion, malaise or headache. Rarely patients may also present with diarrhoea, nausea and vomiting. The objectives of this study were to evaluate the clinical and laboratory features of Covid 19 positive Bangladeshi patients and also to see their clinical outcome within defined period.

Methods: This descriptive study on 110 Bangladeshi patients was done in Shaheed Syed Nazrul Islam Medical College Hospital, a tertiary level hospital in Kishoreganj, Bangladesh from 15th June 2020 to 15th September2020. Total 110 COVID-19 cases were enrolled after getting the result positive for RT-PCR. After collection, data were analysed to show the clinical and laboratory features of Covid 19 and their outcome after treatment.

Results: Total 110 patients were enrolled for our study. Mean age of all patients were45.22±15.53 years (range: 18-85 years) with maximum belonged to ≥60 years of age (24.3%). Major part of the patients were male (78.2%) with a male: female ratio 3.59:1.The most common co morbidity was diabetes mellitus (32.4%) followed in decreasing order hypertension (25.5%), bronchial asthma (7.3%), chronic heart disease (4.6%), chronic kidney disease (3.6%), cerebrovascular disease (3.6%), obesity (2.8%) and COPD (2.7%), respectively. Fatigue (90.9%) was the most frequent complaints among study patients, followed in decreasing order fever (84%), cough (73.1%), dyspnea (49.5%), altered smell (44.5%), anorexia (39.4%), altered taste (30%), myalgia (19.3%), headache (13.6%), vomiting (7.3%), sore throat (6.4%), nasal congestion (4.5%), diarrhoea (4.5%), confusion (3.6%) and chest pain (2.8%), respectively. Only 2 patients (1.8%) were asymptomatic. Chest X-ray of study patients showed that maximum patients had bilateral involvement (97.1%) of COVID-19 pneumonia. Maximum patients had needed oxygen therapy (61.8%), whereas none had required any pressure support or mechanical ventilation. Besides, majority patients had recovered (98.1%) from COVID-19 pneumonia, whereas only 2 patients had been expired (1.9%).

Conclusions: In this single-centre, descriptive study, fever, fatigue, cough and shortness of breath were the most common symptoms. Old age (>60 years), male sex and chronic underlying comorbidities may be risk factors. Lymphopenia, and increased CRP were common lab findings. The most common radiographic sign was bilateral involvement. The outcome of study needs to be further verified by large sample with multi-centre study.

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1. ** Dr. Munshi Mohamamad Belal, Assistant Professor (Medicine), Shaheed Syed Nazrul Islam, Medical College, Kishoreganj. pavelpavel37310@gmail.com*
2. *Dr. Muhammad Ataur Rahman, Assistant Professor (Medicine), Shaheed Syed Nazrul Islam Medical College, Kishoreganj*
3. *Dr. Mohammad Abedur Rahman Bhuiyan, Resident Physician (Medicine), Shaheed Syed Nazrul Islam Medical College, Kishoreganj*
4. *Dr. Sheikh Shamsunnahar Shamme, Jr. Consultant (Paediatrics), Shaheed Syed Nazrul Islam Medical College, Kishoreganj*
5. *Dr. Md. Mojibur Rahman, Assistant Professor (Cardiology), Shaheed Syed Nazrul Islam Medical College, Kishoreganj.*
6. *Dr. Morium Akter, Junior Consultant(Obs &Gynae), 250 Bed District Hospital,Kishoreganj*
7. *Dr. Debanjon Pondit, Intern Doctor, Shaheed Syed Nazrul Islam Medical College, Kishoreganj.*

**For correspondence*

Introduction

A cluster of pneumonia cases with unknown etiology emerged in Wuhan city of China in early December 2019. The causative agent was defined as a novel enveloped RNA beta-coronavirus, named as a severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2).[1] The illness was subsequently termed as the Coronavirus disease 2019 (COVID-19) by the World Health Organization (WHO). On 30 January 2020, WHO declared COVID-19 as a Public Health Emergency of International Concern.[2] The clinical spectrum ranges from asymptomatic or mildly symptomatic flu-like illness to potentially life-threatening critical conditions.[3] Recent studies suggest that the clinical spectrum of COVID-19 can vary among different ethnicities and geographical locations across the world.[4] Around 80% of COVID-19 infections present as a mild respiratory illness in a patient who is ambulatory and can generally be managed outside the hospital. Around 15% typically need hospital care(usually for moderate to severe pneumonia), and another 5% have critical illness requiring more intensive supports.[5] Studies have shown that COVID-19 could induce fever, dry cough, dyspnoea and fatigue in infected patients. In more severe cases, infections caused viral pneumonia could lead to severe acute respiratory distress syndrome (ARDS) and even death.[6] Treatment is largely supportive although multiple experimental antiviral medications are being evaluated.[7] Thus prevention and rapid diagnosis of infected patients is crucial. To date, the published clinical studies of Bangladesh are quite small and give variable findings. Here we will evaluate the clinical features and laboratory findings of COVID-19 infected patients in order to assist in its understanding, prevention, and treatment.

Methods

Study design and participants

This descriptive study was conducted in Shaheed Syed Nazrul Islam Medical College Hospital, Kishoreganj, a tertiary level hospital of Bangladesh from 15th June 2020 to 15th September 2020. We selected consecutive 110 patients from a specific corona dedicated isolation ward of this hospital. All patients were confirmed by real-time polymerase chain reaction and were diagnosed as having COVID-19 according to WHO interim guidance.

Procedures

The demographics data, clinical characteristics, laboratory data, treatment programs, and outcome measures were recorded prospectively. Throat swab specimens from the upper respiratory tract obtained from all patients were immediately maintained in a viral transport medium and were tested to confirm COVID-19 by real-time polymerase chain reaction.

Outcome data

We extracted the history, demographic data, clinical characteristics including symptoms on admission and co-morbidities, laboratory data, treatment programs, and clinical outcomes. All the data were collected in predefined data collection sheet and statistical analyses were performed in SPSS Version 17.

Results

Total 110 patients were enrolled for our study. Mean age of all patients were 45.22±15.53 years (range: 18-85 years) with maximum belonged to ≥60 years of age (24.3%) followed by 30-39 years (23.4%), 50-59 years (18.7%), <30 years (17.8%) and 40-49 years of age (15.9%) in decreasing order. Major part of the patients were male (78.2%) with a male: female ratio 3.59:1.The most common comorbidity was diabetes mellitus

(32.4%) followed in decreasing order hypertension (25.5%), bronchial asthma (7.3%), chronic heart disease (4.6%), chronic kidney disease (3.6%), cerebrovascular disease (3.6%), obesity (2.8%) and COPD (2.7%), respectively (Figure 3).

Maximum patients had moderate level of severity (43.1%), followed by mild (35.6%), severe (17.4%) and critical level of severity (3.7%), in decreasing order (Figure-4). Figure -5 showed Fatigue (90.9%) was the most frequent complaints among study patients, followed in decreasing order fever (84%), cough (73.1%), dyspnea (49.5%), altered smell (44.5%), anorexia (39.4%), altered taste (30%), myalgia (19.3%), headache (13.6%), vomiting (7.3%), sore throat (6.4%), nasal congestion (4.5%), diarrhoea (4.5%), confusion (3.6%) and chest pain (2.8%), respectively. Only 2 patients (1.8%) were asymptomatic.

Table I showed the mean ±SD values of different biochemical parameters. Chest X-ray of study patients showed that maximum patients had bilateral involvement (97.1%) of COVID-19 pneumonia. Maximum patients had needed oxygen therapy (61.8%), whereas none had required any pressure support or mechanical ventilation. Besides, majority patients had recovered (98.1%) from COVID-19 pneumonia, whereas only 2 patients had been expired (1.9%) (Table II).

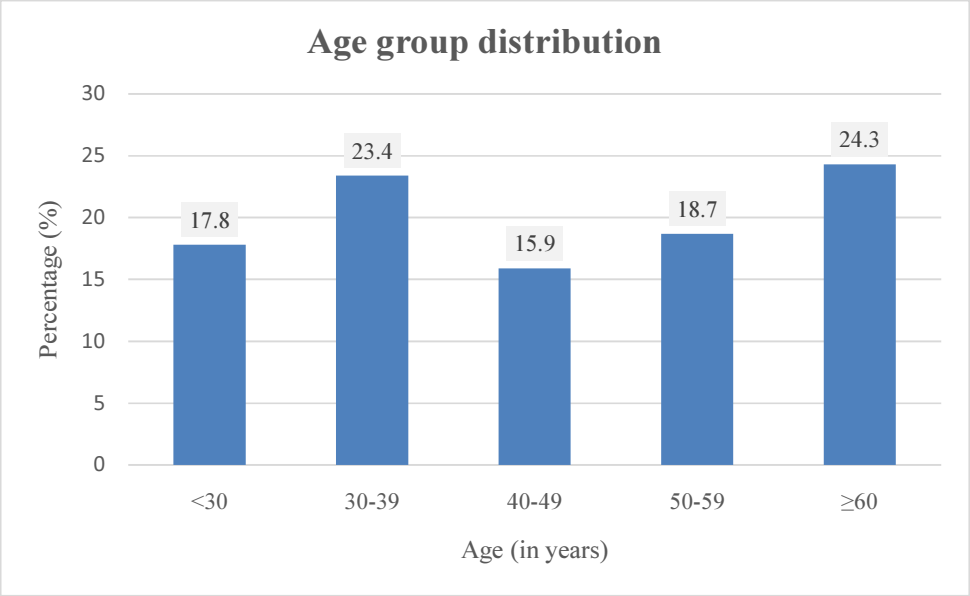

Figure 1. Age distribution of study patients (n=110)

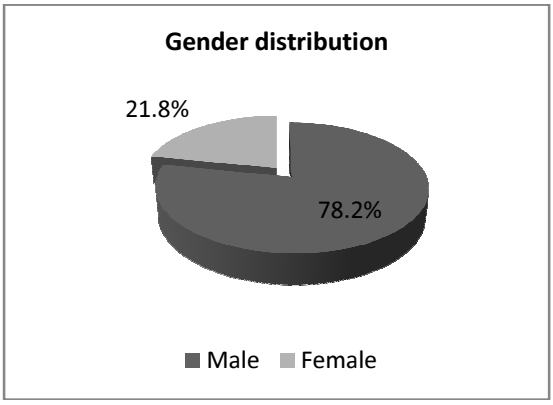

Figure 2. Gender distribution of study patients (n=110)

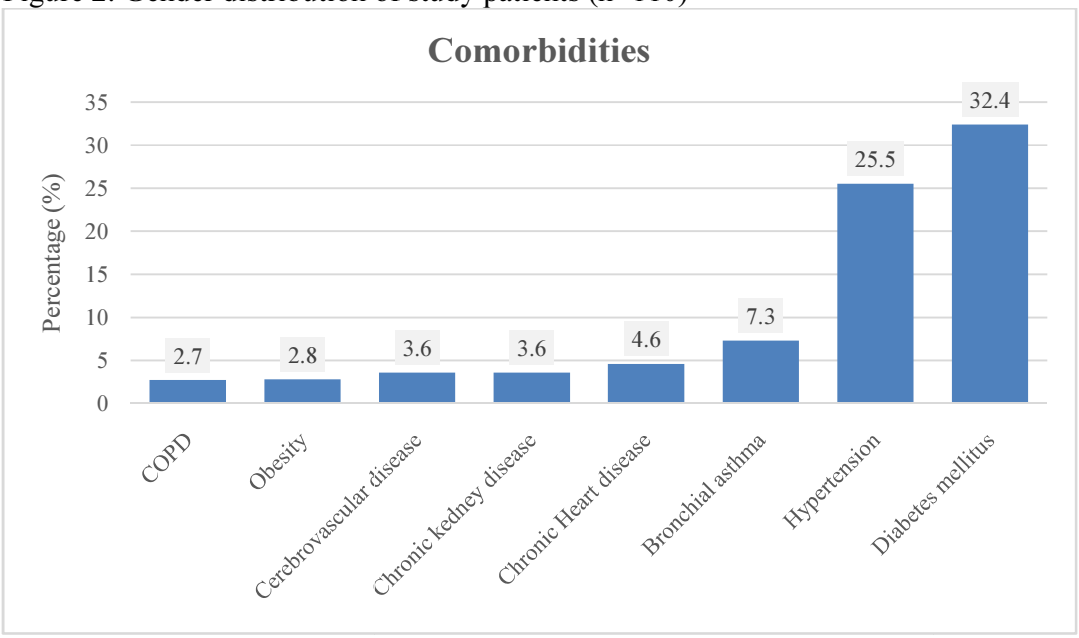

Figure 3.Co-morbid diseases among study patients (n=110)

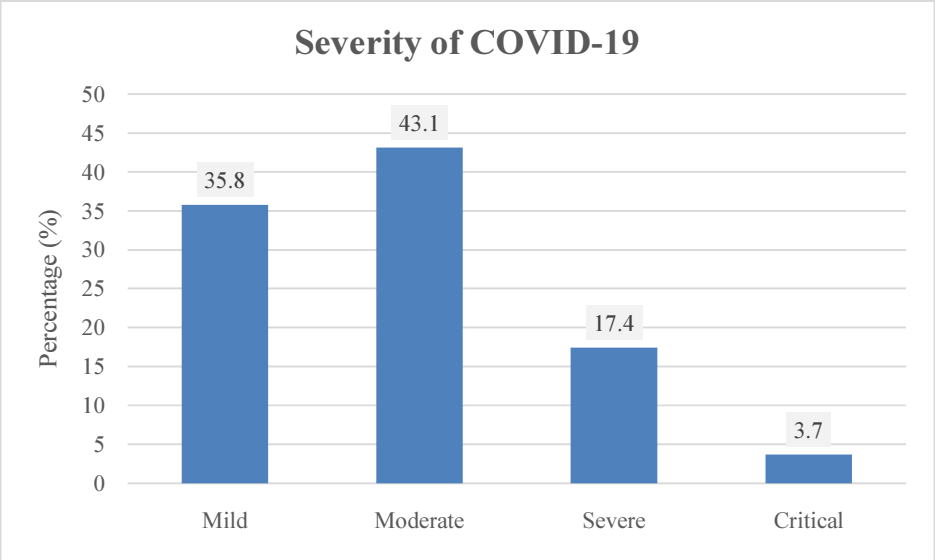

Figure 4. Severity of COVID-19 pneumonia (n=110)

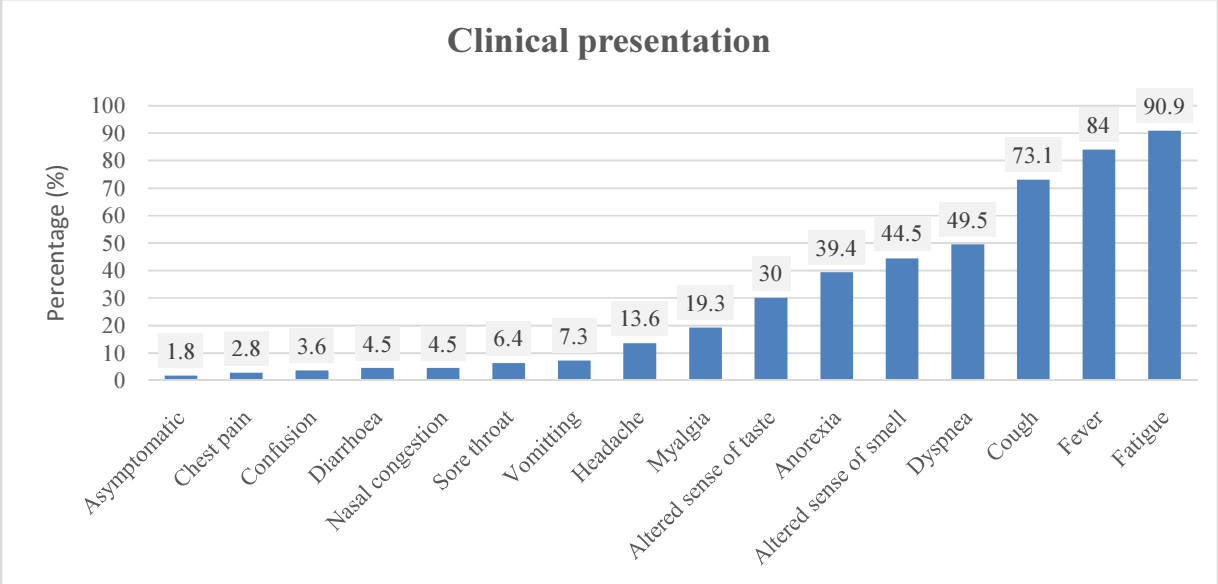

Figure 5. Clinical presentation of COVID-19 pneumonia (n=110)

Table I: Biochemical and radiological manifestation of COVID-19 patients (n=110)

Variables	Frequency	Percentage (%)
	Mean±SD (Minimum-maximum)	
Chest x-ray findings (n=34)		
Bilateral pneumonia	33	97.1
Unilateral pneumonia	1	2.9
Biochemical parameters		
Haemoglobin(in g/dL, n=82)	12.46±1.82 (1.50-15.30)	
Total WBC (per mm^3, n=79)	7677.01±2300.57 (94-17100)	
Neutrophil (in %, n=51)	69.43±10.26 (42-85)	
Lymphocyte (per mm^3, n=94)	134.92±491.50 (5.80-2600)	
Total platelet (per mm^3, n=78)	243089.74±64682.28 (85000-431000)	
RBS (in mmol/L, n=80)	8.93±4.07 (4.90-23)	
CRP (in mg/L, n=41)	21.79±15.97 (2.90-66.90)	
D-dimer (in ng/mL, n=22)	165.78±436.16 (0.10-1776)	
S. creatinine (in mg/dL, n=63)	1.15±1.22 (0.08-10.30)	

Table II: Treatment and outcome of COVID-19 patients (n=110)

Variables	Frequency	Percentage (%)
Oxygen therapy (n=110)	68	61.8
IV fluid (n=110)	1	0.9
Pressure support required (n=110)	0	0
Mechanical ventilation (n=110)	0	0
Dialysis (n=110)	2	1.8
Steroid (n=109)	13	11.9
Anti-viral (n=109)	8	7.3
Outcome (n=107)		
Recovered	105	98.1
Death	2	1.9

Discussion

This is a descriptive study on the clinical and laboratory features of COVID-19 including data of 110 RT-PCR positive COVID-19 patients who were admitted in COVID ward of Shaheed Syed Nazrul Islam Medical College Hospital, Kishoreganj.

COVID-19 belongs to the Coronaviridae family and is the newest serious zoonotic virus after the related viruses SARS and MERS.[8] Prior to 2002, corona viruses were associated with mild respiratory illness, but with the emergence of SARS in 2002, MERS in 2012, and now in late 2019, COVID-19, establishes that corona viruses can be associated with severe respiratory disease. Genetic variation and phylogenetic analysis of these viruses show that the COVID-19 virus has 84% homology to other beta-corona viruses, 96% sequence similarity at the whole genome level to a bat corona virus and 79.5% similarity to the SARS virus.[9]

We observed a greater number of men than women in the 110 cases of SARS-COV-2 infection. Major part of the patients was male (78.2%) with a male: female ratio 3.59:1 which was consistent with the result of the study performed by Zhong et al.[10] The reduced susceptibility of females to viral infections could be attributed to the protection from X chromosome and sex hormones, which play an important role in innate and adaptive immunity.[11] There may be other behavioural and social differences that favour women, with prior studies suggesting women are more likely than men to follow hand-

hygiene practices[12] and seek preventive care.[13]

Wang *et al.* reported findings from 138 patients of COVID-19 among which 64 (46.4 %) had co morbidities.[14] Similarly the prevalence of co morbidities was 52.7 % in our study, including diabetes (32.4%), hypertension (25.5%), asthma (7.3%), cardiovascular (4.6%) and cerebrovascular diseases (3.6%) and that was consistent with the prevalence of hypertension in Chinese COVID-19 studies, which stood at 17.1 % but contrarily to prevalence of diabetes in Chinese COVID-19 studies which stood only 9.7 %.[15] Our results suggest that SARS-COV-2 is more likely to infect older adult males with chronic co morbidities as a result of the weaker immune functions of these patients.[16]

A study by Adam Bernheim et al. showed that among 121 COVID-19 patients, fever, cough and sputum production were the most common clinical symptoms.[17] Our study found utilizing data from 110 patients with COVID-19 infection, that in additional to these, fatigue and myalgia were also common.

On March 22, 2020 the American Academy of Otolaryngology stated that anosmia and dysgeusia have been reported by patients of COVID-19 and proposed to add these symptoms to the list of screening tools for possible COVID-19 infection.[18] In our study there were 44.5% patients whose initial complaints included anosmia and 30% complaints dysgeusia. Very few patients were presented with atypical symptoms like confusion (3.6%) and chest pain (2.8%).

Leucocyte count was normal in most of the cases. Some patients showed lymphopenia, 27.2% cases showed neutrophillia. CRP and D-dimer were increased in 30% and 10% cases respectively which was consistent with the results of the study performed by Pormohammad et al. Chest x-ray of study patients showed that maximum patients had bilateral involvement (97.1%) of COVID-19 pneumonia where as a meta analysis performed by Pormohammad et al found that 81% of COVID-19 patient had bilateral involvement.[19]

In our study Maximum patients had moderate level of severity (43.1%), followed by mild (35.6%), severe (17.4%) and critical level of severity (3.7%), in decreasing order and the mortality rate was 1.9% between all infected patients. The mortality rate is lower than some studies (for example 11% at Nanshan et al)[20] but still higher than many viral illness.

Limitations

Several limitations of this study exist. This is a single centre study and the sample size is small. Our study likely overestimates disease severity due to lack of screening of asymptomatic or mildly symptomatic individuals. It is very likely that many infected persons have not been detected, thus falsely elevating the rates of hospitalization, critical condition, and mortality.

Conclusion

Fever and cough are the most common symptoms of COVID-19 infection in the literature published to date. Lymphopenia, and increased CRP were common lab findings.The most common radiographic sign was bilateral involvement. The outcome of study needs to be further verified by large sample with multi-centre study. Extended follow up would provide more detailed information about potential risk factors for the disease and the factors that would influence clinical outcomes.

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