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INVESTIGATIVE OUTCOME OF HOSPITALIZED COVID-19 PATIENTS IN A TERTIARY CARE HOSPITAL IN BANGLADESH

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ABSTRACT

Background: The novel Corona virus has been affecting human population in millions and seized lives of many more. COVID-19 presents with a wide range of symptoms, which may become severe in elderly and immunocompromised patients. This study was conducted with an aim to present the clinico-demographic characteristics, basic laboratory investigations and radiological findings in hospitalised COVID-19 patients. **Materials and methods:** This retrospective observational study recruited 150 COVID-19 cases from Sarkari Karmachari Hospital, Dhaka, Bangladesh, aged ≥ 25years who were admitted from April to June 2021. Inclusion criteria was based on exposure, symptoms, laboratory tests, chest X-ray, CT-scan and positive rt-PCR test reports. Complete relevant clinical data were collected by a structured questionnaire with informed consent from the patients, who were included through convenient sampling from the hospital register records. Statistical analysis was done by Statistical Package for Social Science (SPSS) version 22.0. Data were expressed as frequency, percentage and mean ± standard deviation. **Results:** Among the total 150 hospitalized COVID-19 infected patients, mean age was 57.3±10.1years (range 25-77years) with male predominance being 102(68%) patients and majority 108(72%) belonged to age group of 55-64years. They lived mostly in urban areas 111(74%) and 102(68%) patients had contact with COVID-19 patients in the last 14 days, while 48(32%) patients had history of exposure. Fever 141(94%), sore throat 135(90%), cough 129 (86%), shortness of breath 126(84%), fatigue 123(82%), anosmia 93(62%), headache 87(58%), diarrhea 84(56%), bodyache 81(54%), loss of appetite 78(52%) were the most common presentations. Hypertension 42(28%), diabetes mellitus 33(22%) and bronchial asthma 30(20%) were common comorbidities. Blood routine examination revealed monocytes and platelets were within normal range in most 138(92%) patients, leukocytes were below normal in 96(64%) patients, while 114(76%) patients had low lymphocyte count. Alanine transferase was elevated in 78(52%) and normal in 72(48%) patients, D-dimer was above normal in 126(84%) patients. C-reactive protein (CRP) was elevated in 123(82%) and normal in 27(18%) patients. Erythrocyte sedimentation rate (ESR) increased in 120(80%) patients. Among total 150 patients, rt-PCR test was found positive in 132(88%) and negative in 18(12%) patients. Maximum patients 141(94%) revealed pneumonia on Chest X-ray, mostly 111(74%) with bilateral pneumonia. Chest CT scan showed multiple mottling and ground glass opacity in majority 141(94%) of them. **Conclusion:** Epidemiological features vary countrywise. Detailed knowledge of disease according to regional context is essential for potential management in future. Basic instructions for prevention of COVID-19 stating proper and regular use of mask, sanitizing hands and maintaining social distance should be ensured.

KEYWORDS: Clinical presentation; investigations; COVID-19 patients; Bangladesh.

INTRODUCTION

The novel Corona virus disease caused by SARS-CoV-2 infection, has affected more than 43 million people worldwide and has been described as 'Pandemic' by the World Health Organization (WHO) on March 11, 2020.[1] Now a days, COVID-19 infection is a major public heath issues nationally and internationally.[2] Cases are increasing tremendously all over the country

for several months. Corona virus is predominantly a respiratory pathogen but, it may alter the other organs function like the heart, kidneys and thyroid glands.[3-7]

The pathogen is an enveloped RNA beta corona virus and it was renamed as COVID-19 by WHO.[8] Having fever, moderate to severe shortness of breath with cough, sore throat, body ache, loss of smell, loss of appetite, weakness, diarrhea were the main clinical presentations but atypical presentations are raising worldwide.[9] Several studies had been published elaborating local epidemiological and clinical presentations.[10-12] Understanding regional presentations are always important. Covid-19 infected patients were assessed by polymerase chain reaction (rt-PCR),[13] and also radiological changes with X-rays and CT-scans showing unilateral and bilateral pneumonia with multiple mottling and ground glass appearence.[14] Upon laboratory investigations, low lymphocyte count and total WBC count and raised level of CRP, ESR, D-dimer were the most common findings.[15] A national guideline was approved by the government as an effective drug management is also vital for Covid-19 infected patients.

The present study was conducted to highlight the clinico-demographic presentations and investigative outcome in hospitalised COVID-19 patients.

MATERIALS AND METHODS

This retrospective observational study was approved by the Ethical review committee of Sarkari Karmachari Hospital, Dhaka, Bangladesh. One hundred and fifty hospitalised patients (confirmed COVID-19 cases), aged ≥ 25years who were admitted in Sarkari Karmachari Hospital from April to June 2021 (12 weeks) were included in the study. After taking appropriate informed consent from the patients, data collection were done face to face interview using a structured questionnaire, through telephone interview and from hospital register records. All the patients' information were kept confidential. Demographic data, contact history vital signs, clinical data, basic hematological and radiological data and prescribed drugs were collected from hospital records. Statistical analysis was done by using Statistical Package for Social Science (SPSS version 22.0). Data were expressed as frequency, percentage and mean ± standard deviation.

RESULTS

One hundred and fifty Covid-19 patients were (both rt-PCR positive and negative) included in the study over a period 12 weeks (April to June 2021) in a COVID-19 dedicated tertiary hospital in Dhaka. Mean age of participants was 57.3±10.1years (range 25-77years) where majority 48(32%) belonged to age group of 55-64years. Male predominance 102(68%) was observed in this study (Fig.1,2). Most of them 111(74%) came from urban area and 39(26%) patients from rural area (Fig.3). Out of 150 patients 102(68%) had contact history with confirmed patients or patients having definite symptoms of Covid-19 and 48(32%) patients either travelled or attended social gatherings.

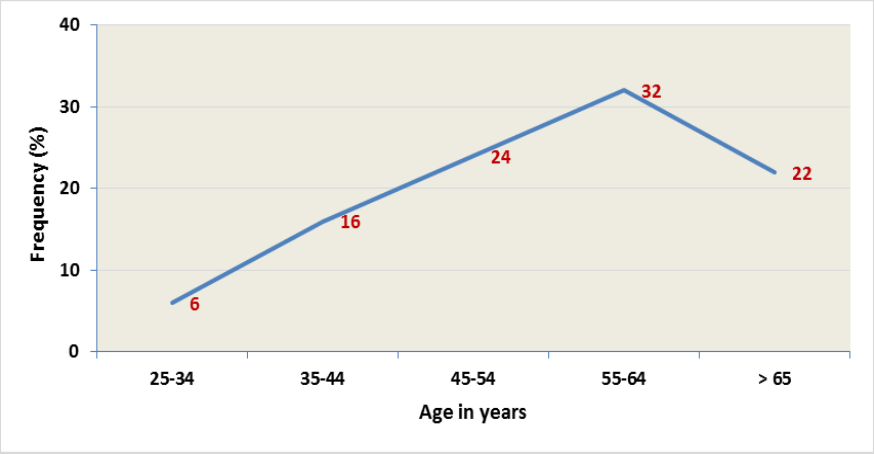

Figure 1: Age distribution among participants.

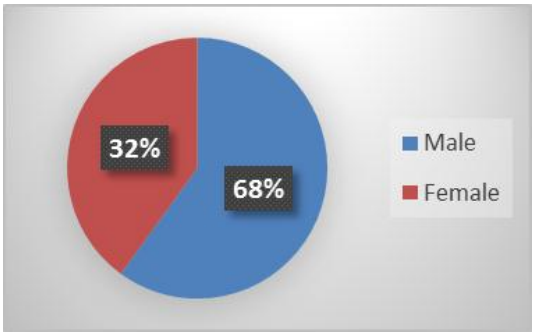

Figure 2: Gender distribution among participants.

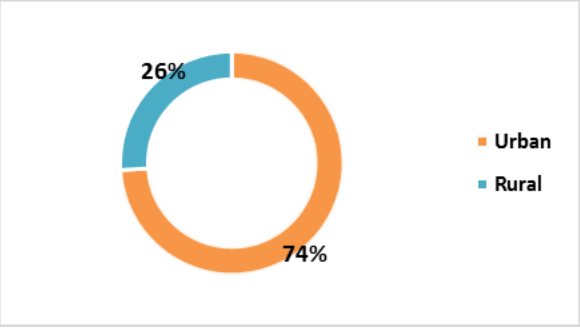

Figure 3: Area of residence.

Symptomatic patients who were admitted to hospital presented predominantly with fever 141(94%), sore throat 135(90%), cough 129(86%), shortness of breath 126(84%), fatigue 123(82%) followed by anosmia 93(62%), headache 87(58%), diarrhea 84(56%), bodyache 81(54%) and loss of appetite 78(52%). Less frequent symptoms included nausea/vomiting 30(20%), chest pain 12(8%), conjunctivitis 9(6%), skin rash 6(4%) and nasal congestion 3(2%) as displayed in Fig.4.

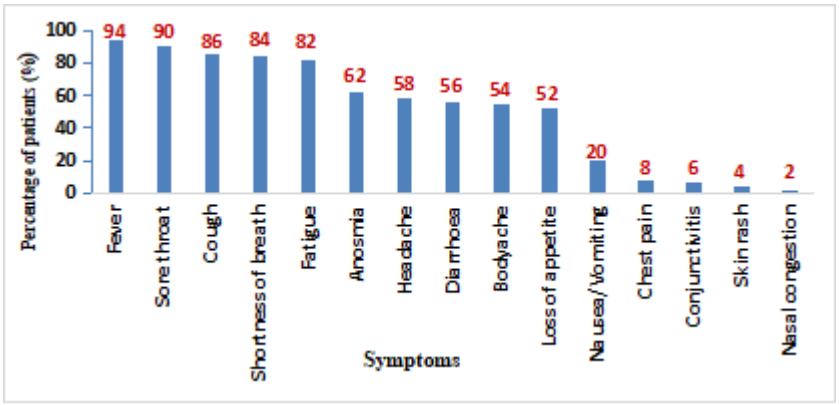

Figure 4: Clinical presentations for hospitalization.

Majority 126(82%) of patients also presented with comorbidities like hypertension 42(28%), diabetes 33(22%), bronchial asthma 30(20%), ischemic heart disease 9(6%), hypothyroidism 6(4%) and chronic kidney disease 6(4%) and the rest 24(16%) were free from any co-morbidities (Fig.5).

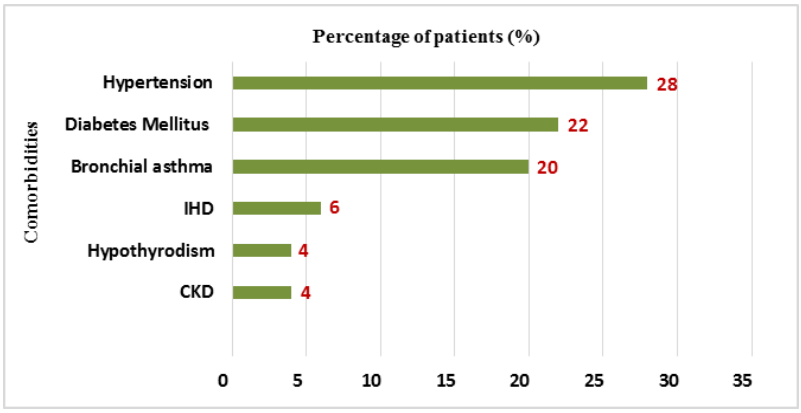

Figure 5: Co-morbidities of the patients.

Laboratory blood routine results revealed that monocytes and platelets were within normal range in most 138(92%) patients, leucocytes (WBC count) were below normal in 96(64%) patients and 114(76%) patients had low lymphocyte count. While ALT were elevated in 78(52%) and normal in 72(48%) patients, D-dimer was above normal range in majority 126(84%) patients. Regarding the infection index, C-reactive protein (CRP) elevated in 123(82%) patients and normal in 27(18%) patients. Erythrocyte sedimentation rate (ESR) increased in 120(80%) of patients (Table-1).

Table 1: Findings of blood examination of patients.

Blood routine examination	Normal range	Frequency with normal level (%)	Frequency with reduced level (%)
Monocytes	0.1-0.6×10^9/L	138(92%)	-
Platelets	100-400×10^9/L	132(88%)	-
Total WBC	3.5-9.5×10^9/L	54(36%)	96(64%)
Lymphocytes	1.2-3.2×10^9/L	36(24%)	114(76%)
			Frequency with raised level (%)
ESR	0-10mm in 1st hour	30(20%)	120(80%)
CRP	0-6mg/L	27(18%)	123(82%)
D-dimer	0.50-<500ng/ml	24(16%)	126(84%)
ALT	5-40 U/L	72(48%)	78(52%)

Although rt-PCR was regarded as the most accurate test for COVID-19 patients, sensitivity of this test was limited. Among total of 150 patients, rt-PCR was found positive in 132(88%) patients and negative in 18(12%) (Fig.6).

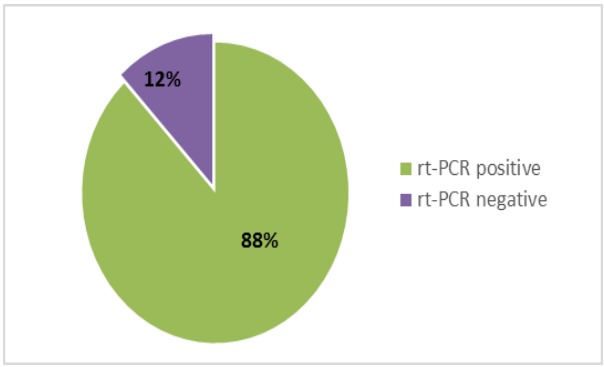

Figure 6: Pie chart with proportion of COVID cases.

Comparing with rt-PCR, Fig.7 shows maximum 141(94%) patients revealed pneumonia on Chest X-ray with unilateral pneumonia in 30(20%) patients and bilateral pneumonia in 111(74%). Chest CT scan revealed the most common feature, multiple mottling and ground glass opacity in majority 141(94%) of them.

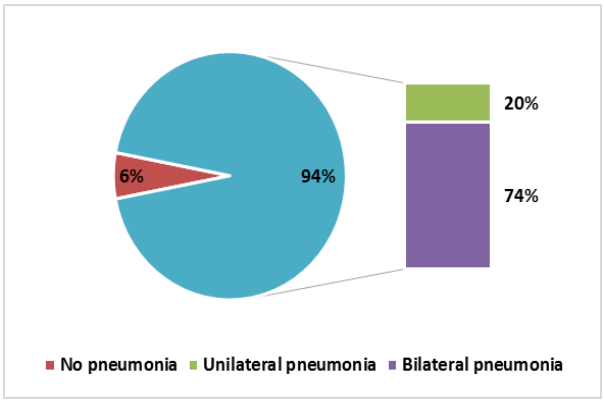

Figure 7: Pie chart showing chest X-ray findings.

DISCUSSION

In December 2019, a new highly infectious disease, SARS-CoV-2, swept through Wuhan and rapidly spread to all countries over the world.[16] First COVID-19 cases were declared by Bangladesh in Dhaka city on 8th March 2020.[3] Where highest number of COVID-19 cases were detected in Dhaka city. Thus Dhaka is considered as the core of disease transmission.[17,18]. Hossain I et al.[19] had showed that among most of the confirmed cases about 48.9% of Bangladesh reported that they lived in or came to Dhaka or had contact with Covid-19 patients within 14 days before the onset of illness.

In this retrospective study, one hundred and fifty cases were included based on exposure, symptoms, laboratory tests, Chest X-ray, CT-scan and positive rt-PCR tests who were admitted in a COVID-19 hospital. Mean age was 57.3±10.1 years, mostly of 55-64 years age group which is analogous with other studies being 55.5years,[20] 51years[21] and 41.7±16.3 years.[22] Male (68%) patients were more than female (32%) in our study, similar to multiple studies.[23,24,25] MERS-CoV and SARS-CoV had a similar pattern of sex distribution. It was found that more males were infected by SARS-CoV.[26,27] Male predominance maybe likely due to their high mobilization and prone to exposure than females. In Bangladesh, males are more engaged in outdoor activities like attending office, doing grocery shopping, etc. Moreover, majority (68%) had positive contact history in this study, highlighting the significance of preventive measures and lockdown process of pandemic situation, including social distancing, hand washing and appropriate usage of face mask.

Recent reports from China described fever, cough, shortness of breath, headache, loss of appetite were the typical clinical presentations of COVID-19.[9,10] Similarly, admitted patients in this study presented predominantly with fever (94%), sore throat (90%), cough (86%), shortness of breath (84%), fatigue (82%) followed by anosmia (62%), headache (58%), diarrhea (56%), bodyache (54%) and loss of appetite (52%). Less frequent symptoms included nausea/vomiting (20%), chest pain (8%), conjunctivitis (6%), skin rash (4%) and nasal congestion (2%). Among the co-morbidity, hypertension (28%), diabetes (22%), bronchial asthma (20%) and ischemic heart disease (6%) were most common and similar with other global research works.[27-29]

Current study revealed normal (24%) or decreased leucocytes (64%) and reduced lymphocytes evidently in (76%) COVID-19 patients, monocytes and platelets were within normal range, that was similar with other studies.[16,23,30] Elevated ESR (80%), CRP (82%) and D-dimer (84%) were related to disease severity, with raised ALT (52%) level which was in line with various researches.[23-27] Real time rt-PCR was considered as a standard assessment tool for COVID-19, but its sensitivity was lower than X-ray and CT-scans. While rt-PCR was (88%) positive, X-rays was 141 (94%) and CT-scans reached 141 (94%) which is similar with Fang.Y et al.[31]

Although our national guideline for clinical management of COVID-19 promoted supportive and symptomatic treatment protocols along with judicial use of different modalities of drug regimen found to be effective by different trials.[32] All physicians should pay special attention to identifying the treatable etiologies of shortness of breath including exacerbation of underlying cardio-pulmonary diseases and treat it prior to the pandemic. It is important to control co-morbidities with continuation of ongoing treatment, as some investigators find that co-morbidities are associated with high mortality rates.[28,29]

Our study is limited with small sample size which included only hospitalized patients, excluding the

asymptomatic and severe cases. Elaborate laboratory findings could have been included in our study. Multi-centered studies with extended follow up might be investigated in further research works.

CONCLUSION

As epidemiological features vary countrywise, it is essential to have detailed knowledge of the disease according to regional context for potential management in future. So far, global instructions for prevention of COVID-19 that states proper and regular use of mask, sanitising hands and maintaining social distance should be ensured.

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