Scholars Journal of Applied Medical Sciences
Abbreviated Key Title: Sch J App Med Sci
ISSN 2347-954X (Print) | ISSN 2320-6691 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Medicine

The Clinical and Laboratory Profile of RT-PCR Positive Covid-19 Patients in District Hospital in Bangladesh

Dr. Abdullah Al-Muti[1*]

[1]Junior Consultant, Medicine, Nagarpur Upazila Health Complex, Tangail, Bangladesh

DOI: 10.36347/sjams.2023.v11i05.012 | **Received:** 01.04.2023 | **Accepted:** 06.05.2023 | **Published:** 16.05.2023

***Corresponding author:** Dr. Abdullah Al-Muti
Junior Consultant, Medicine, Nagarpur Upazila Health Complex, Tangail, Bangladesh

Abstract **Original Research Article**

Objective: To assess the clinical and laboratory profile of RT-PCR positive covid-19 patients in district hospital in Bangladesh. ***Method:*** This cross-sectional study was done in 250 Bed General Hospital, Tangail, Bangladesh from January 2021 to Dec 2021. We included 95 patients having clinical symptoms and signs of COVID-19, above the age of 18 years, irrespective of sex. We defined probable and confirmed COVID-19 case according to 'National Guidelines on Clinical Management of Corona Virus Disease 2019 (COVID-19) Version 7.0, published on 28 May 2020.10 Data were collected in structured questionnaire from patients and hospital records. All laboratory tests were performed according to the clinical judgement. Laboratory assessments consisted of RTPCR for COVID-19, complete blood count, coagulation tests, assessment of liver and renal function, C-reactive protein, procalcitonin, lactate dehydrogenase (LDH) and ferreting. Radiological assessments included chest x-ray and high resolution computed tomography (HRCT) scan. ***Results:*** During the study, majority were belong to >56 years age group, 43.6% were female and 56.4% were male. Plus, majority didn't get their vaccination, 89.60%. In addition to that, 42.1% had DM followed by HTN cases was 36.8%, 8.4% had previously history of stroke, 10.5% had CKD. 69.5% had anorexia followed by 58.9% had nausea, 28.4% had vomiting, 14.7% had Abdominal pain. On laboratory investigations, we found most of the patients had elevated levels of C-reactive protein and D-dimer was positive in 99% cases. Plus,75% patient presents emergency signs with SpO2 <90% or respiratory rate >24. ***Conclusion:*** Considering the data of this investigation, it can be stated that, COVID-19 impacted mostly senior male patients. Most of them were diabetic and hypertensive. Common symptoms anorexia sore throat, diarrhea, vomiting, nausea, stomach ache. Key test results included lymphopenia, elevated CRP, positive D-dimer. Notwithstanding that most didn't take any of the immunization doses. Additionally, poor knowledge of the vaccine basically causes the covid-19 instances among people.

Keywords: RT-PCR positive, covid-19, Covid-19 vaccine.

INTRODUCTIONS

Coronavirus is an enveloped single stranded RNA virus [1, 2]. There are various corona viruses like severe acute respiratory syndrome coronavirus (SARS-CoV), Middle East respiratory syndrome coronavirus (MERSCoV) and now, severe acute respiratory syndrome corona virus 2 (SARS-CoV-2), previously which was known as 2019-nCoV [3]. This SARS-CoV-2 is responsible for corona virus disease 2019 (COVID-19) [4]. On 11 March 2020, COVID-19 was declared as global pandemic due to its spreading ability across the continents [5].

Globally, over the past 2 years, the COVID-19 pandemic has escalated and continues to threaten the health and well-being of the population. The virus has already infected more than 243 million people worldwide, with nearly 5 million deaths as of 26 October 2021. Early epidemiological studies on COVID-19 from Wuhan, China, reveals infection predominantly resulted in acute respiratory illness. However, the clinical spectrum ranged from asymptomatic or mild upper respiratory tract illness to severe viral pneumonia with respiratory failure and even death [2, 3]. Roughly 20% of cases lead to clinically complex and severe conditions. The most vulnerable group was adults older than 60 with comorbid conditions, including diabetes, hypertension and cardiovascular disease [3, 4] Recent studies have also indicated that COVID-19's clinical spectrum may vary worldwide across diverse ethnic backgrounds and geographical locations [5, 6].

Following the emergence of the pandemic, health systems were overwhelmed due to the sheer number of the cases, partially attributed to the comparatively high 'basic reproductive number' (R_0) of SARS-CoV-2, which is around 2.87 (95% CI 2.39 to 3.44) reported by a systematic review of 42 studies [7]. The high transmissibility of SARS-CoV-2 is particularly perilous for the densely populated countries, [8] specifically in Southeast Asia [9, 10]. Therefore, the 162.6 million people of Bangladesh, one of the most densely populated nations, are especially vulnerable to this highly contagious virus [11]. The first confirmed case of SARS-CoV-2 infection was reported in Dhaka, the capital of Bangladesh, on 8 March 2020, [12] which was followed by a nationwide lockdown from 26 March 2020 to mitigate the transmission of the virus and allowed the healthcare system to prepare itself from the onslaught of the COVID-19 cases [13].

However, during the lockdown's initial days, a mass exodus of 11 million residents from Dhaka took this opportunity to wait out the lockdown period in their home districts or villages, which likely only expedited the spread of the disease. On 25 April 2020, the lockdown was partially lifted to restart the economy by allowing workers to return to their station in ready-made garment factories, industries and private offices. The migrating workforce with limited awareness and opportunity for social distancing and safe, hygienic practices ultimately led to millions of viral transmissions [14]. Cases had already been identified in all 64 districts nationwide, and despite a series of extensions and relaxation of lockdown, the number of weekly cases and deaths gradually increased. By 18 October 2021, Bangladesh reported 1565488 confirmed cases of COVID-19, with 27768 deaths [15].

The first COVID-19 case was reported from Wuhan, China, in December 2019.6 In Bangladesh first three cases were detected on 8 March 2020 [7].

Clinical presentation of COVID-19 varies from no symptom to fatal disease. Fever, dry cough, breathlessness and fatigue are the most common clinical manifestations. Radiographic presentations of the chest are mostly peripheral in distribution with ground-glass opacity (GGO), crazy paving, fine reticular opacity, vascular thickening and pneumonia [8, 9]. Here, we have described the sociodemographic, clinical, biochemical, radiological profile and treatment of confirmed and probable COVID-19 patients in a tertiary care hospital of Bangladesh.

OBJECTIVE

To assess the clinical and laboratory profile of RT-PCR positive covid-19 patients in district hospital Bangladesh.

METHODOLOGY

This cross-sectional study was done in 250 Bed General Hospital, Tangail, Bangladesh from January 2021 to Dec 2021. We included 95 patients having clinical symptoms and signs of COVID-19, above the age of 18 years, irrespective of sex. We defined probable and confirmed COVID-19 case according to 'National Guidelines on Clinical Management of Corona Virus Disease 2019 (COVID-19)' Version 7.0, published on 28 May 2020.10 Data were collected in structured questionnaire from patients and hospital records. Clinical assessment was done by measuring temperature and fever was defined as an axillary temperature of 37.5°C or higher. All laboratory tests were performed according to the clinical judgement. Laboratory assessments consisted of RTPCR for COVID-19, complete blood count, coagulation tests, assessment of liver and renal function, C-reactive protein, procalcitonin, lactate dehydrogenase (LDH) and ferretin. Radiological assessments included chest x-ray and high resolution computed tomography (HRCT) scan. We defined the degree of severity of COVID-19 as per national guideline. Necessary information was collected during discharge or death, if were any. Data were analyzed by Statistical Package for Social Sciences (SPSS) version 20.0 for Windows.

RESULTS

Table-1 shows demographic status of the patients where majority were belong to >56 years age group, 43.6% were female and 56.4% were male.

Table-1: Demographic status of the patients

Age distribution	**Frequency**	**Percent**
15-25 years	3	3.2
26-35 years	22	23.2
36-45 years	29	30.5
>56 years	41	43.2
Total	95	100.0
Gender	**Frequency**	**Percent**
Male	53	56.4
Female	42	43.6

Figure-1 shows vaccination status of the patients where majority didn't get their vaccination, 89.60%

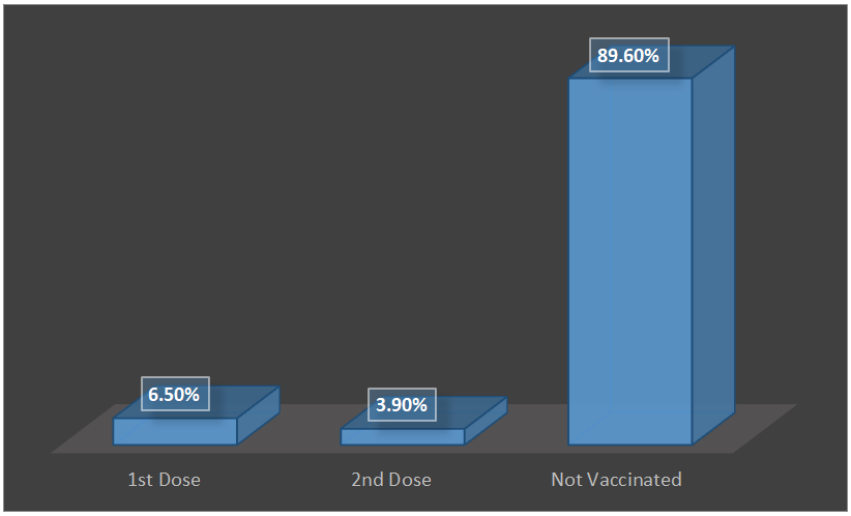

Figure-1: Vaccination status of the patients

Table-2 shows comorbidity of the patients where 42.1% had DM followed by HTN cases was 36.8%, 8.4% had previously history of stroke, 10.5% had CKD.

Table-2: Comorbidity of the patients

Comorbidity of the patients	N	Percentage (%)
DM	40	42.1
HTN	35	36.8
IHD	9	9.5
ON IN SULIN	95	100
HF	2	2.1
STROKE	8	8.4
TB	3	3.2
CKD	10	10.5
COPD	4	4.2

***multiple responses were noted.**

Figure-2 shows GIT symptoms of the patients where 69.5% had anorexia followed by 58.9% had nausea, 28.4% had vomiting, 14.7% had Abdominal pain.

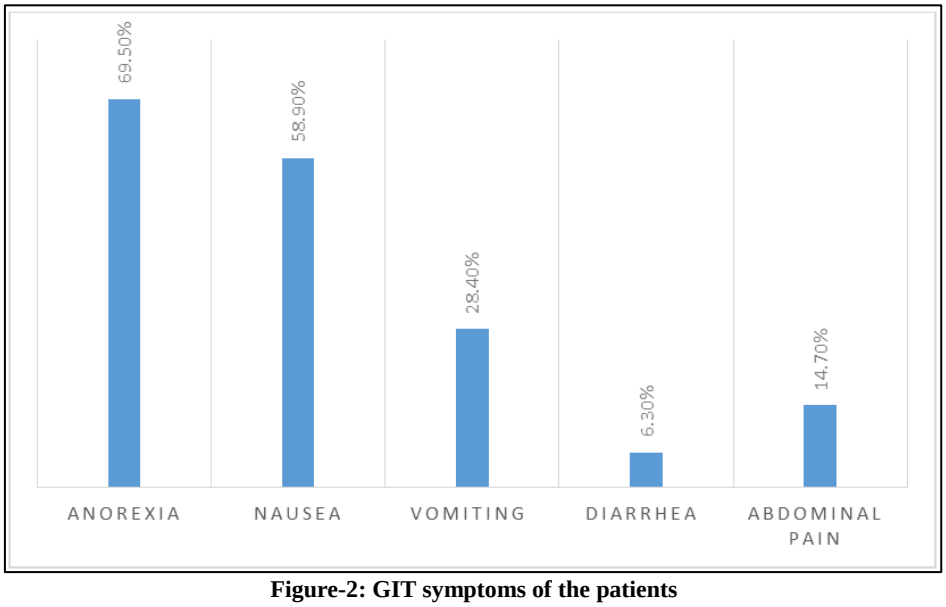

Figure-2: GIT symptoms of the patients
***multiple responses were noted.**

Figure-3 shows Chest X-ray findings monitoring COVID-19 disease course and severity where figure-3a shows initial chest X-ray showed bilateral peripheral mid and lower zonal air space consolidation opacities (arrows). Whereas 3b showed 44-year male was complaining of SOB, cough, and fever. Initial chest X-ray showed bilateral peripheral zonal air space consolidation opacities along the periphery of both lungs (arrows). Figure-3c showed 63-year male was complaining of cough and fever. Initial chest X-ray showed right peripheral mid and lower zonal air space consolidation opacities (arrows), smaller patches of consolidation is seen on the side (arrows), the severity score for the right lung was 2 and for the left lung was 1, so TSS was 3. Figure-3d showed 68-year female patient was complaining of SOB and cough. Initial chest X-ray showed bilateral air space consolidation opacities (arrows) of peripheral midzonal distribution in the right lung and neither peripheral nor perihilar mid and lower zonal distribution in the left lung (arrows).

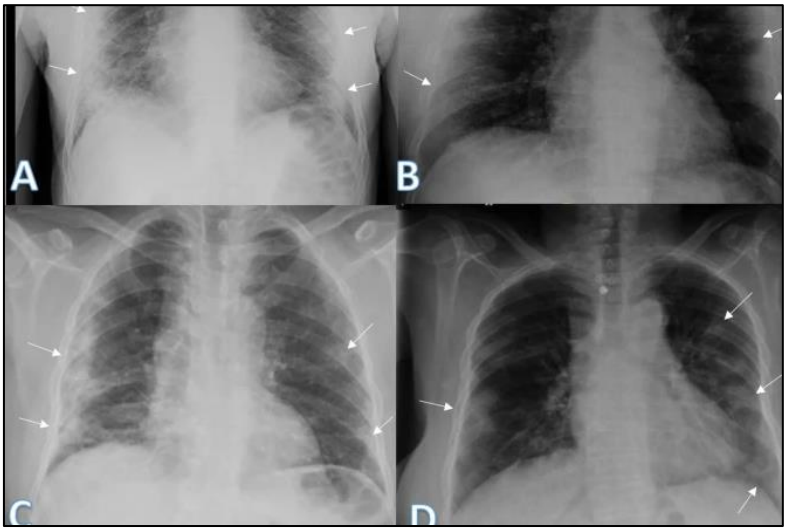

Figure-3: Chest X-ray findings monitoring COVID-19 disease course and severity. [12]

Table-4 shows laboratory profile of the patients where on laboratory investigations, we found most of the patients had elevated levels of C-reactive protein and D-dimer was positive in 99% cases. Plus, 75% patient presents emergency signs with SpO2 <90% or respiratory rate >24.

Table-4: Laboratory profile of the patients

Patient characteristics (reported sample size)	**All patients**
	Percentage (%)
X-ray finding suggestive of pneumonia	
Absent	60.95
Present	39.05
HRCT findings	
Ground glass opacity(GGO)	32%
GGO with Consolidation	40%
Crazy paving pattern	50%
Reverse halo sign	11%
Thickened vessels	10%
Sub-pleural band	3%
Enlarged mediastinal nodes	2%
SPO2 saturation	
<90%	75%
>90%	25%
Creatinine level (mg/dL)	
Abnormal: >1.2	20.54
Normal: ≤1.2	79.46
SGPT level (U/L)	
Abnormal: >40	58.54
Normal: ≤40	41.46

C reactive protein test (mg/L)	
Abnormal: ≥6	36.89
Normal: <6	63.11
D-dimer level (ng/mL)	
Abnormal: >500	99
Normal: ≤500	1
Blood haemoglobin level (g/L)	
Abnormal: <100	32.18
Normal: ≥100	67.82
WBC total count (/µL)	
Abnormal: <4000	2.53
Normal: ≥4000 and <11 000	97.47
Neutrophil:lymphocyte ratio	
Abnormal: >3.5	29.07
Normal: ≤3.5	70.93
Monocytes differential count (%)	
Abnormal: >8	25.58
Normal: 2–8	74.42
Eosinophil differential count (%)	
Abnormal: >4	9.30
Normal: 1–4	90.70
Platelet level ($\times 10^9$/L)	
Abnormal: <150	9.86
Normal: ≥150	90.14
High LDH	25.5%
High Ferretin (ng/ml)	36.7%

DISCUSSION

Globally until16 November 2020, there have been over 54 million COVID-19 cases confirmed with 1,316,502 deaths. From 8 March to 16 November 2020, according to the Directorate General of Health Services (DGHS) Bangladesh, 434,472 COVID-19 confirmed cases were detected by RT-PCR, including 6,215 COVID related deaths. Bangladesh is in the top 24th position in the world [11]. Our study showed that the age of the subjects ranged from 20-80 year with a mean age of 59.74 years, which was almost similar to the age of patients in different studies from China and India [12-17]. Male gender was more affected than female in our study, which was consistent with the results from abroad [12]. The comorbidities of our study were DM, hypertension, IHD and CKD, which were also common in Chinese population [18, 19].

Regarding clinical manifestations, in our study the most common symptom was anorexia; besides sore throat, diarrhea, vomiting, nausea, abdominal pain were also observed in a few cases which were more or less similar to the manifestations reported in several studies globally [6, 16-17]. Common laboratory parameters of our study subjects were normal leukocyte with lymphopenia, elevated CRP and positive D-dimer coinciding with results of numerous studies [6, 16-17] Deranged liver enzymes, hyperferritinemia, high LDH, abnormal ECG were observed in some cases. Majority of our study subjects had poor glycemic control and it is one of the most important risk factor for increased morbidity and mortality in COVID-19, reported in different studies [20, 21]. Imaging findings like chest x-ray and HRCT scan of chest varied from no shadow to extensive involvement of both lungs which were used to classify the severity and management of the cases as per national guideline [10, 22]. Seventy percent of our patients were shifted to COVID dedicated hospitals and rest of the subjects were treated at our hospital.

CONCLUSION

Considering the data of this investigation, it can be stated that, COVID-19 impacted mostly senior male patients. Most of them were diabetic and hypertensive. Common symptoms anorexia sore throat, diarrhea, vomiting, nausea, stomach ache. Key test results included lymphopenia, elevated CRP, positive D-dimer. Notwithstanding that most didn't take any of the immunization doses. Additionally, poor knowledge of the vaccine nasically causes the covid-19 instances among people.

REFERENCE

1. Su, S., Wong, G., Shi, W., Liu, J., Lai, A. C., Zhou, J., ... & Gao, G. F. (2016). Epidemiology, genetic recombination, and pathogenesis of coronaviruses. *Trends in microbiology*, *24*(6), 490-502.
2. Weiss, S. R., & Navas-Martin, S. (2005). Coronavirus pathogenesis and the emerging pathogen severe acute respiratory syndrome

coronavirus. *Microbiology and molecular biology reviews*, *69*(4), 635-664.
3. Centers for Disease Control and Prevention. (2019). novel coronavirus, Wuhan. *China. Information for Healthcare Professionals. https://www. cdc. gov/coronavirus/2019-nCoV/hcp/index. html*.
4. World Health Organization.Director-General's remarks at the media briefing on 2019-nCoV on 11 February 2020. http:// www.who.int/dg/speeches/detail/who-director-general-sremarks-at-the-media-briefing-on-2019-ncov-on-11-february2020.
5. World Health Organization. Coronavirus disease 2019 (COVID-19) situation report –75. Geneva, Switzerland: WHO, 2020.
6. Guan, W. J., Ni, Z. Y., Hu, Y., Liang, W. H., Ou, C. Q., He, J. X., ... & Zhong, N. S. (2020). Clinical characteristics of coronavirus disease 2019 in China. *New England journal of medicine*, *382*(18), 1708-1720.
7. Mowla, S. G. M., Azad, K. A. K., Kabir, A., Biswas, S., Islam, M. R., Banik, G. C., ... & Alam, M. A. (2020). Clinical profile of 100 confirmed COVID-19 patients admitted in Dhaka medical college Hospital, Dhaka, Bangladesh. *Journal of Bangladesh College of Physicians and Surgeons*, 29-36.
8. Centers for Disease Control and Prevention. (2019). novel coronavirus, Wuhan. *China. Information for Healthcare Professionals. https://www. cdc. gov/coronavirus/2019-nCoV/hcp/index. html*.
9. Bai, H. X., Hsieh, B., Xiong, Z., Halsey, K., Choi, J. W., Tran, T. M. L., ... & Liao, W. H. (2020). Performance of radiologists in differentiating COVID-19 from non-COVID-19 viral pneumonia at chest CT. *Radiology*, *296*(2), E46-E54.
10. National Guidelines on Clinical Management of Coronavirus Disease 2019 (COVID-19) Version 7.0 28 May 2020.
11. WHO BangladeshCOVID19SituationReport#38. https:// www.who.int/bangladesh/Emergencies/coronavirus-disease- (covid-19)-update/coronavirus-disease-(covid-2019)- Bangladesh-situation-reports.
12. Yasin, R., & Gouda, W. (2020). Chest X-ray findings monitoring COVID-19 disease course and severity. *Egyptian Journal of Radiology and Nuclear Medicine*, *51*(1), 1-18.
13. Coronavirus disease 2019 (COVID-19): current literature and status in India. (2020). Accessed:April 12, 2020: https:// www.preprints.org/manuscript/202004.0189/v1.
14. Wu, Z., & McGoogan, J. M. (2020). Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: summary of a report of 72 314 cases from the Chinese Center for Disease Control and Prevention. *jama*, *323*(13), 1239-1242.
15. Wang, W., Xu, Y., Gao, R., Lu, R., Han, K., Wu, G., & Tan, W. (2020). Detection of SARS-CoV-2 in different types of clinical specimens. *Jama*, *323*(18), 1843-1844.
16. Liu, Y., Du, X., Chen, J., Jin, Y., Peng, L., Wang, H. H., ... & Zhao, Y. (2020). Neutrophil-to-lymphocyte ratio as an independent risk factor for mortality in hospitalized patients with COVID-19. *Journal of Infection*, *81*(1), e6-e12.
17. Guan, W. J., Liang, W. H., Zhao, Y., Liang, H. R., Chen, Z. S., Li, Y. M., ... & He, J. X. (2020). Comorbidity and its impact on 1590 patients with COVID-19 in China: a nationwide analysis. *European Respiratory Journal*, *55*(5).
18. Yang, J., Zheng, Y. A., Gou, X., Pu, K., Chen, Z., Guo, Q., ... & Zhou, Y. (2020). Prevalence of comorbidities and its effects in patients infected with SARS-CoV-2: a systematic review and meta-analysis. *International journal of infectious diseases*, *94*, 91-95.
19. Zhu, L., She, Z. G., Cheng, X., Qin, J. J., Zhang, X. J., Cai, J., ... & Li, H. (2020). Association of blood glucose control and outcomes in patients with COVID-19 and pre-existing type 2 diabetes. *Cell metabolism*, *31*(6), 1068-1077.
20. Sanyaolu, A., Okorie, C., Marinkovic, A., Patidar, R., Younis, K., Desai, P., ... & Altaf, M. (2020). Comorbidity and its impact on patients with COVID-19. *SN comprehensive clinical medicine*, *2*, 1069-1076.
21. Li, K., Fang, Y., Li, W., Pan, C., Qin, P., Zhong, Y., ... & Li, S. (2020). CT image visual quantitative evaluation and clinical classification of coronavirus disease (COVID-19). *European radiology*, *30*, 4407-4416.