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Clinico-Pathological Findings of Bangladeshi Covid 19 Patients with their Clinical Outcome: Study of A Cohort of 201 Cases

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Abstract:

Introduction: COVID-19 is a major threat to human beings. Clinical characterization, rapid identification of cases and isolation are vital for containments of rapidly spreading disease. The objectives of the study were to evaluate the clinico pathologic profile of Covid 19 positive Bangladeshi patients and also to see their clinical outcome within defined period.

Methods: This cohort study on 201 Bangladeshi cases was done in Combined Military Hospital, a tertiary level hospital in Dhaka, Bangladesh from April 2020 to May 2020. Total 201 COVID-19 cases were enrolled after getting the result positive for RT-PCR. After collection, data were analysed to show the characteristics of Covid 19 and their outcome after treatment.

Results: Among 201 cases, 180 (90%) were male and 21 (10%) were female. The most prevalent affected age groups were 71 (35.5%) patients in 26-35 years age, 54 (27%) in 16-25 years, 49 (24.5%) in 35-45 years. Mean age is 32.2±2. Among the total cases, 146 (73%) have positive history of contact, 37 (18.5%) have no history of any contact, 8 (4%) denied any contact with COVID-19 patients. Regarding clinical presentations, 67 (33.5%) patients presented with only one symptoms, 125 (62.5%) had multiple symptoms and 9 (4.5%) cases were asymptomatic. 154 (77%) patients presented with fever. Other presentations were cough 71 (35.5%), headache 27 (13.5%), myalgia 25 (12.5%), sore throat 25 (12.5%), malaise 15 (7.5%), respiratory distress 11 (5.5%). Respiratory system was the dominant domain of clinical presentation. Leukopenia was presented by 12 patients and 12 had lymphopenia. 18 patients had mild thrombocytopenia. Pulse oxymetry showed oxygen saturation below 88% in 12 cases. After oxygen therapy 7 cases were improved and 5 cases were shifted to Corona ICU as their saturation fell below 70. These 5 patients are categorised as severe disease, rest 196 patients were mild in nature.

Conclusion: COVID 19 affects male more than female. Common symptoms are fever, cough, headache, myalgia, sore throat, malaise, respiratory distress. Respiratory system is the dominant domain of clinical presentation. ICU support was needed in 2.5 % cases and death rate was 1% which was associated with comorbidity of CKD.

Key Words: Bangladeshi patients, COVID 19, Cohort study, RT PCR.

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Introduction:

Coronaviruses have long been recognized as important pathogens that infect the respiratory tracts of domestic and companion animals and are the causes of mild and severe respiratory diseases in humans.[1,2] Coronaviruses are enveloped single-stranded RNA viruses that are zoonotic in nature.[3] Although most human coronavirus infections are mild, the epidemics of the two betacoronaviruses, severe acute respiratory syndrome coronavirus (SARS-CoV) [4-6] and Middle East respiratory syndrome coronavirus (MERS-CoV),[7,8] have caused more than 10 000 cumulative cases in the past two decades, with mortality rates of 10% for SARS-CoV and 37% for MERS-CoV.[9,10] On 31st December 2019, 27 cases of pneumonia of unknown aetiology were identified in Wuhan City, Hubei province in China.[11] The causative agent was identified from throat swab samples conducted by the Chinese Centre for Disease Control and Prevention (CCDC) on 7th January 2020, and was subsequently named Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). The disease was named COVID-19 by the World Health Organization

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(WHO).[12] COVID-19 is mainly transmitted through respiratory droplets and contact.[13] At present, patients with COVID-19 are the main source of infection.[14] What's more remarkable is that asymptomatic infections can also be a source of infection.[15] 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.[16]

Studies have shown that COVID-19 could induce fever, dry cough, dyspnea, and fatigue in infected patients. In more severe cases, infections caused viral pneumonia and could lead to severe acute respiratory distress syndrome (ARDS) and even death.[17] Pharyngodynia, nasal congestion, and rhinorrhoea have been reported in patients with COVID-19.[18]

In this study, the clinical characteristics of 201 patients diagnosed and admitted with COVID-19 in Dhaka Combined Military Hospital were evaluated. The objectives of the study were to evaluate the clinico pathologic profile of Covid 19 positive Bangladeshi patients and also to see their clinical outcome within defined period.

Materials and method:

Study design and participants

This cohort study was conducted in CMH, Dhaka, a tertiary level hospital, Bangladesh from April 2020 to May 2020. We selected consecutive 201 patients from a specific corona dedicated isolation ward of this hospital. We applied 2 inclusion criteria: (i) all patients were confirmed by real-time polymerase chain reaction and were diagnosed as having COVID-19 according to WHO interim guidance and (ii) all patients who underwent chest X-ray and complete panel of routine laboratory tests, including complete blood count, blood biochemistry, serum LDH, D-dimer, Ferritin and procalcitonin. Patients who did not meet the above inclusion criteria were excluded from our study.

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 at admission 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 (i.e., clear contact history and unclear contact 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:

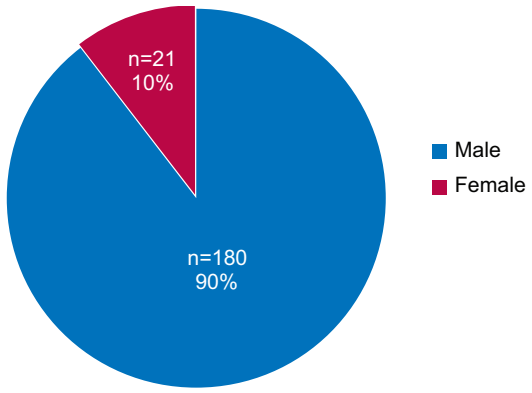

Fig.-1: *shows sex distribution of cases (n=201): Male were 180 (90%) and Female were 21 (10%).*

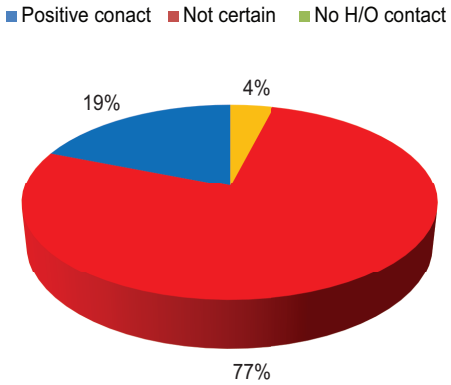

Fig.-2: *shows history of contact with COVID-19 patients 146 (76%), not aware of contact 37 (19%) and no history of contact 8 (4%) (n=201).*

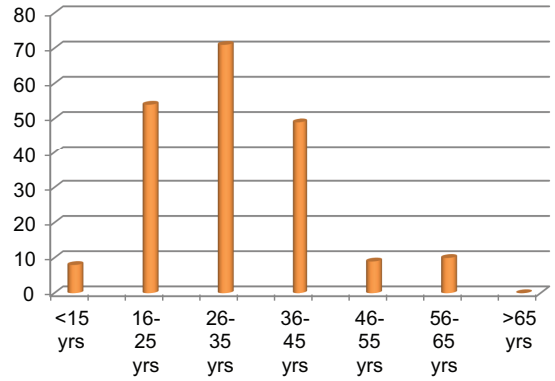

Fig.-3: *Shows Age Distribution of COVID-19 Patients (n=201).*

Here 8 patients (4%) were below 15 years, 54 (27%) were in 16-25 years, 71 (35.5%) were in 26-35 years, 49 (24.5%) were in 35-45 years, 9 (4.5%) were in 46-55 in years, 10 (5%) were in 56-65 years age group.

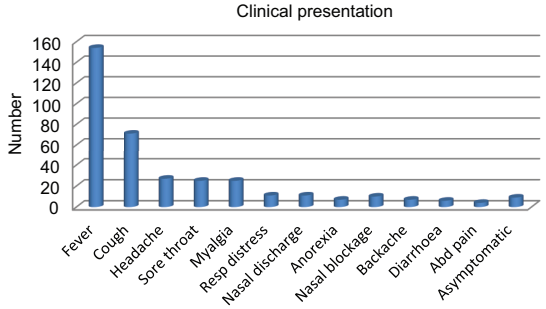

Fig.-4: *shows clinical presentation of COVID-19 patients (n=201)*

Here shows symptoms of fever 154, cough 71, headache 27, sore throat 25, myalgia 25, respiratory distress 11, nasal discharge 11, anorexia 7, nasal blockage 10, backache 7, diarrhoea 6 patients.

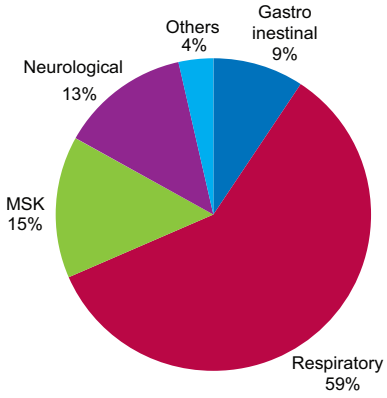

Fig.-5: *shows system wise presentation of COVID-19 patients of which respiratory symptoms were 59%, MSK 15%, Neurological 13%, Gastrointestinal 9% and others 4%. (n=201)*

Table-I

Clinical parameters and their values (in mean)

Parameter	Values in mean
Pulse	84±SD9.82
SBP	115±SD10.11
DBP	74±SD5.90
Temp	100±SD1.39
R/R	19±SD1.26

Total 201 COVID-19 patients were enrolled. Among them 180 (90%) were male and 21 (10%) female. Most patients were from 26-35 years age group which was 71 (35.5%); then from 16-25 years age group 54 (27%), from 35-45 years 49 (24.5%), 8 patients (4%) below 15 years, 9 (4.5%) from 46-55 years, 10 (5%) from 56-65 yrs. Mean age is 32.2±2. Among the patients 21 had multiple co-morbidities like DM, HTN, IHD, ESRD ON MHD, bronchial asthma and pheochromocytoma. Among 201 patients 146 (73%) have positive history of contact with COVID-19 patients, 37 (18.5%) not aware of any contact. Only 8 (4%) patients denied any contact with COVID-19 patients. Regarding clinical presentation, 67 (33.5%) patients presented with only one symptoms, 125 (62.5%) had multiple symptoms, 9 (4.5%) were asymptomatic. Fever was the dominant presenting feature. 154 (77%) patients presented with fever. Other presentations were cough 71 (35.5%), headache 27 (13.5%), myalgia 25 (12.5%), sore throat 25 (12.5%), malaise 15 (7.5%), respiratory distress 11 (5.5%). Rare symptoms were nasal obstruction (10), backache (7), diarrhoea (6), abdominal pain (4), chest pain (4), palpitation (3), burning whole body (2), and toothache (2). Oral ulcer, constipation, red eye, fall, thigh pain were also the presenting feature of each of 1 patient. Respiratory system was the dominant domain of clinical presentation. 133 patients had respiratory symptoms, 33 have musculoskeletal symptoms, 30 had neurological symptoms and 21 had gastro intestinal features.

Mean pulse were 84.62±SD9.82 bpm, mean SBP 115.72±SD10.11 mm of Hg, mean DBP 74.63±SD5.908 mm of Hg, mean temperature 100.27±SD1.39 F, respiratory rate 19.17±SD1.26/m.

Blood picture showed mean Hb 14.20±SD1.46 gm/dl, TLC 5.09±SD1.59×10^9, mean Neutrophil count 54.94±SD10.34×10^9, mean Lymphocyte count

36.29±SD9.68×10^9, mean Platelet count 229.22± SD184.47×10^9. Leucopenia were presented by 12 patients and 12 had lymphopenia. 18 patients have mild thrombocytopenia.

Oxygen saturations were measured by pulse oximetry showed 12 patients below 88%. After oxygen therapy all improved except 5 who were shifted to Corona ICU as their saturation fell below 70. These 5 patients were categorised as severe disease, rest 196 patients were mild in nature. Their chest X-ray had no evidence of pneumonia. ICU support was needed in 2.5 % cases and death rate was 1% which was associated with comorbidity of CKD.

Discussion:

In our study there was significant difference in the proportion of male and female patients, and infection in children was rare, which was consistent with the results of a study performed by Zhong et al.[19] Their results showed that males were more likely to be infected than females.[19]

A total of 73% of the patients included in this study had contact history which again verified the conclusion of human to human transmission.[20] Some COVID-19 cases had atypical symptoms or were asymptomatic (4.5%). Furthermore, asymptomatic persons are potential sources of SARS-CoV-2 transmission[21]. It appears that transmission is possible during the incubation period, and the carrier cannot be spotted.[21]The age group mostly affected were 26-35 years (35.5%). In 16-24 years age group (27%), in 36-45 age groups (24.5%), in 56-56 year age group 5%, in 46-55 years age group 4.5% were affected. Youngest patient was 2 years 6 months of age. Mean age 32.2±SD2. In our study fever was the dominant symptoms. 154 (77%) patients presented with fever which was consistent with Guan et al,[22] Wang et al,[23] Zangh et al,[24] Next to fever cough was also prominent presenting feature (35.5%) which was also consistent with other research findings. [22-24]

A systematic review by Rodriguez-Morales et al [25] of data on 656 cases published in January and February 2020 reported fever in 88.7%, cough in 57.6%, dyspnoea in 45.6%, myalgia or fatigue in 29.4%, sore throat in 11.0%, headache in 8.0%, and diarrhoea in 6.1%. In our study sore throat was (12.5%), myalgia (12.5%), fatigue (7.5%) diarrhoea (3%) also consistent with that findings though headache (13.5%) little higher than that.

On March 22, 2020, the American Academy of Otolaryngology—Head and Neck Surgery stated that anosmia and dysgeusia have been reported by patients ultimately testing positive for SARS-CoV-2 and proposed to add these symptoms to the list of screening tools for possible COVID-19 infection.[26] In our study there were 5 patients (2.5%) whose initial complaints included anosmia or dysgeusia. Very few patients were presented with atypical symptoms like burning body (1%), toothache (1%), itchiness (0.5%), red eye (o.5%), oral ulcer (0.5%), constipation (0.5%) and fall (0.5%). In our study 21 patients having multiple co-morbidities which included DM, HTN, CKD on MHD, IHD, bronchial asthma, pheochromocytoma. 3 patients were on maintenance haemo-dialysis and so shifted to corona dedicated dialysis unit in our centre. One patient was special child.

It is understandable that, faced with a devastating pandemic and a medical and societal imperative, there is great enthusiasm for promising news of treatments. Picking and supporting the best therapies and preventions to tackle the COVID-19 pandemic head on is one of the scientific community's most urgent priorities.[27] Though there was no specific therapy against this virus but in this study group of patients were treated with protocol of treatment made by hospital which included antipyretics, antihistamine, supplemental Vitamin-C, Zinc, high calorie diet, oxygen supplementation where needed. All the patients were given either Hydroxychloroquine, Doxycycline, Azythromycin or Favipiravir alone or in combination accordingly. D-dimer positive patients were given enoxaperin. All patients were discharged 10 days course of treatment. Some groups were discharged even early. Discharge criteria were two negative RT-PCR 24 hours apart. 5 patients were shifted to ICU out of them 2 patients died. One of them was admitted in critical state with history of CKD on MHD, not attending dialysis for 02 sessions. Fatal outcome was 1%.

Conclusion:

Covid 19 affects male more than female. Common symptoms are fever, cough, headache, myalgia, sore throat, malaise, respiratory distress. Respiratory system is the dominant domain of clinical presentation. Rare symptoms were nasal obstruction, backache, diarrhoea, abdominal pain, chest pain, palpitation, burning whole

body, toothache, Oral ulcer, constipation, red eye and thigh pain. Some cases show Leucopenia, lymphopenia and mild thrombocytopenia. Sometimes patients present with gradual lowering of oxygen saturation for which oxygen therapy according to the demand is needed and in rare situation ICU support becomes necessary. In this study, ICU support was needed in 2.5 % cases and death rate was 1% which was associated with comorbidity of CKD.

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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