Variation of Clinical Features of Covid19 Patients

Nusrat Mannan[1], Arifa Akram[2]

[1]Assistant Professor, Department of Microbiology, US-Bangla Medical College, Narayangonj, Bangladesh; [2]Assistant Professor, Department of Virology, National Institute of Laboratory Medicine and Referral Center, Dhaka, Bangladesh

Abstract

In December 2019, the novel coronavirus (2019-nCoV) outbreak, began in China, which has now spread many countries around the globe in a form of pandemic, with the number of confirmed cases increasing every day. With a death toll exceeding that of the SARS-CoV outbreak, 2019-nCoV has led to a public health emergency of international concern, putting all health organizations around the world on a high alert. Here, we presented an overview of the currently available information on the clinical presentation and complication of this virus. [*Bangladesh Journal of Infectious Diseases, April 2020;7(suppl_1):S54-S57*]

Keywords:

Introduction

Corona viruses belongs to a family of viruses which cause illnesses such as the common cold, sore throat, severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS). A new coronavirus identified as the cause of a disease outbreak which was first originated in China, in 2019.

In this twentieth century, several viral epidemics such as the severe acute respiratory syndrome coronavirus (SARS-CoV) in 2002 to 2003, and H1N1 influenza in 2009, and recently, the Middle East respiratory syndrome coronavirus (MERS-CoV) was detected in Saudi Arabia in 2012. These viruses have probably originated from bats and then moving into other mammalian hosts the Himalayan palm civet for SARS-CoV, and the dromedary camel for MERS-CoV before jumping to humans[1].

In the present day, an epidemic of cases with unexplained lower respiratory tract infections detected in Wuhan, the largest metropolitan city in China's Hubei province, was first reported to the WHO Country Office in China, on December 31, 2019. Literatures published traced back the beginning of symptomatic individuals in the beginning of December 2019. However, were unable to identify the causative agent, they were first named as pneumonia of unknown etiology. The virus is later named as the severe acute respiratory

syndrome coronavirus 2 (SARS-CoV-2). The disease it causes is named as coronavirus disease 2019 (COVID-19)[2].

As of March 29, 2020, the 2019 novel coronavirus (SARS-CoV-2) has been responsible for more than 575,444 infections and 26,654 deaths worldwide[3]. The dynamics of SARS-Cov-2 are currently unknown, but there is speculation that it also has an animal origin like the other common human CoV.

Clinical Features & Complications of COVID19

The clinical spectrum of COVID-19 varies from asymptomatic to a few symptomatic clinical conditions that can range from respiratory failure that requires mechanical ventilation and support of an intensive care unit (ICU), to multiorgan and systemic manifestations in the form of sepsis, septic shock, and multiple organ dysfunction syndromes[4]. Signs and symptoms of COVID-19 may appear two to 14 days after exposure and can include fever, cough, and shortness of breath or difficulty breathing. Other symptoms may include tiredness, aches, runny nose and sore throat. Though like SARS-CoV, intestinal presentations like diarrhea seem to be infrequent in patients with 2019-nCoV.

Complications can include pneumonia in both lungs, organ failure in several organs and death. In one of the first reported cases on COVID-19 published on January 24, 2020, illustrated by Huang et al[5], the patients (n. 41) suffered from fever, dry cough, and myalgia or fatigue; fewer common symptoms were sputum production, headache, haemoptysis, and diarrhea. More than half of these patients (55.0%) developed dyspnoea. Most of these 2019-nCoV infected patients were men (73%); 49.0% patients were aged 25 to 49 years and 14 (34%) cases were aged 50 to 64 years. There were no clinical cases of children below 15 years of age. Chest computerized tomography (CT) scans of these patients showed pneumonia with abnormal findings in all cases. About a third of these patients who needed ICU care, typical findings of chest CT images of the ICU patients were bilateral multiple lobular and sub-segmental areas of consolidation and 15% of these cases were fatal.

Similar findings have been also published by other researchers[6]. Most of the researchers found a greater number of men than women were affected by 2019-nCoV. Their study also showed that more men of older age group with chronic diseases are more likely to be infected with the new coronavirus because of their weakened immune system[7-9].

Guan et al[10] published on February 28, 2020, the clinical characteristics of 1099 patients with laboratory-confirmed COVID-19 from 552 hospitals in mainland China. The median age of the patients was 47 years; 41.9% of the patients were female. 0.9% of the patients were younger than 15 years of age. Most of these patients admitted with a diagnosis of pneumonia from a physician (91.1%), followed by ARDS (3.4%) and shock (1.1%) and 5(2.5%) died.; 43.8% of the patients presented with fever on admission but 88.7% developed during hospitalization. Cough (67.8%) was the second most common symptom; however, nausea or vomiting (5.0%) and diarrhea (3.8%) were quite uncommon. In the total population, 23.7% had at least one coexisting illness like hypertension and chronic obstructive pulmonary disease. In the total population, 23.7% had at least one coexisting illness like hypertension and chronic obstructive pulmonary disease. The most common patterns on chest CT were ground-glass opacity (56.4%) and bilateral patchy shadowing (51.8%). Most of the patients had elevated levels of C-reactive protein. Patients with severe disease had more prominent laboratory abnormalities including lymphocytopenia (83.2%) and leukopenia (33.7%).

The Chinese CDC shared regarding 72,314 case records[11]. In their report they classified the clinical manifestations according to the severity of the disease.

Mild disease: non-pneumonia and mild pneumonia (in 81% of cases).

Severe disease: dyspnea, respiratory frequency ≥ 30/min, blood oxygen saturation (SpO2) ≤ 93%, PaO2/FiO2 ratio or P/F [the ratio between the blood pressure of the oxygen (partial pressure of oxygen, PaO2) and the percentage of oxygen supplied (fraction of inspired oxygen, FiO2)] < 300, and/or lung infiltrates > 50% within 24 to 48 hours; (in 14% of cases).

Critical disease: respiratory failure, septic shock, and/or multiple organ dysfunction (MOD) or failure (MOF) (in 5% of cases).

The overall case-fatality rate was 2.3% (on confirmed cases). To be noted; all the fatal cases were primarily elderly patients, particularly those aged ≥80 years (about 15%), and 70 to 79 years (8.0%). Approximately half (49.0%) of the critical patients and affected by preexisting comorbidities such as cardiovascular disease, diabetes, chronic respiratory disease, and oncological diseases, died.

While no fatal cases were seen in 1.0% of patients aged 9 years or younger age group.

Lu et al[12] collected demographic data and clinical features of 171(12.3%) confirmed cases of SARS-CoV-2 infection among 1391 children. They showed that the median age of the infected children was 6.7 years. About 41.5% of the children presented with fever at any time during the illness. Other common signs and symptoms included cough (48.5%) and pharyngeal erythema (46.2%). 15.8% did not have any symptoms of infection or radiologic features of pneumonia. A total of 12 patients had radiologic features of pneumonia but did not have any symptoms of infection. Around 19.3% cases were suffering from upper respiratory tract infection. All of them had coexisting conditions like hydronephrosis, leukemia patient receiving maintenance chemotherapy and patient with intussusception. Lymphopenia (lymphocyte count, less than 1.2×109 per liter) was present in 6(3.5%) patients. The most common radiologic findings were bilateral ground-glass opacity (32.7%). There was one death of a 10 months old child with intussusception had multiorgan failure.

Among the first 18 patients diagnosed with SARS-CoV-2 infection in Singapore, median age is 47 years and 50.0% cases are women. Clinical presentation was the upper respiratory tract infection in 67% cases. Fever (72%), cough (83%), and sore throat (61%) were common symptoms, and viral shedding from the nasopharynx was prolonged for 7 days or longer among 15(83%); while 6(33%) patients had an abnormal chest radiograph finding or lung crepitations. Six (33%) individuals have required supplemental oxygen; of these, 2 required intensive care. No deaths were reported. Virus was detectable in the stool in 50.0% cases and blood in 8.0% cases by PCR but not in urine. Lymphopenia (<1.1 ×109/L) was present in 7 of 16 patients (39.0%) and an elevated C-reactive protein level (>20 mg/L) in 38.0% [13].

In a retrospective, single-center study, published on March 24, 2020 seven pregnant patients were included by Yu et al[14]. In their study, the mean age of the patients was 32 years (range 29 to 34 years) and the mean gestational age was 39 weeks plus 1 day (range 37 weeks to 41 weeks plus 2 days). Clinical manifestations were fever (86%), cough (14%), shortness of breath (14%) and diarrhoea (14%) patient. All of their clinical presentation was like non-pregnant adult as mentioned in the study. One neonate was infected with SARS-CoV-2 around 36 hours after birth. No intensive care was required for mothers throughout the study period,

including before and after delivery. Five of the patients presented with comorbid conditions; 29% cases had chronic diseases like hypothyroidism and polycystic ovary syndrome and 43% patients had uterine scarring.

Qiu et al[15] mentioned in their study published on March 24, 2020 about 36 children with the mean age of 8.3±3·5 years who were identified to be infected with severe acute respiratory syndrome coronavirus 2. Around 36.0% children were female. Among them 53.0% of the patients had moderate clinical type with pneumonia; 47% presented with mild clinical type like acute upper respiratory tract symptoms. Common symptoms on admission were fever (36.0%) and dry cough (19.0%). Of those with fever, 11.0% cases had a body temperature of 38.5°C or higher and 25.0% cases had a body temperature of 37.5 to 38.5°C. Typical abnormal laboratory findings were elevated creatine kinase MB in 31.0% patients, decreased lymphocytes in 31.0% patients, and leucopenia 19.0% patients. Besides radiographic presentations, variables that were associated significantly with severity of COVID-19 were decreased lymphocytes, elevated body temperature, and high levels of procalcitonin, D-dimer, and creatine kinase MB. There was no case fatality and all of them were cured.

Conclusion

The severity of COVID-19 disease ranges from mild symptoms of upper respiratory tract infection to severe pneumonia and respiratory failure that requires mechanical ventilation, though most reported cases are benign. Outbreaks like this urges our attention to the importance of effective public health strategies to combat against the incessant threats imposed by these novel pathogens.

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