ejpmr, 2022,9(4), 81-86

SJIF Impact Factor 6.222

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Review Article

ISSN 2394-3211

EJPMR

FIGHTING AGAINST COVID 19: A 7 DAYS EXPERIENCE OF ARESIDENT PHYSICIAN FROM BANGLADESH

Md. Arif Hossain* and Kamrul Laila

26 Free School Street, Hatirpool, Dhaka, Bangladesh.

***Corresponding Author: Md. Arif Hossain**

26 Free School Street, Hatirpool, Dhaka, Bangladesh.

Article Received on 02/02/2022 **Article Revised on 23/02/2022** **Article Accepted on 15/03/2022**

ABSTRACT

Frontline workers were facing heavy workload, personal risk and social pressure while fighting against COVID 19. This is an experience sharing of COVID 19 duty period of a field level medical professional where a cross sectional observational study was carried out using a structured questionnaire. Data were compiled and tabulated accordingly. Working as a front liner strengthened the professional attitude, though challenging. It is important to acknowledge this risk taking activities of front liners and pay special attention to their needs and to uphold their honor in the society.

BACKGROUND

Corona virus disease 2019 (COVID-19) caused by severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) first emerged from China in December 2019 and during 2020 spread to every continent including Antarctica.[1] It was first identified in Wuhan, a port city in Hubei province, China on 31 December 2019. The WHO declared the outbreak as a pandemic on 11 March 2020.[2] The first confirmed case of COVID-19 in Bangladesh was announced on 08 March and the first death was reported on 18 March 2020.[3]

Institute of Epidemiology, Disease Control and Research (IEDCR) in the capital city, Dhaka first started testing, although patients with symptoms were reported all around the country.

Hotline numbers, email addresses and the Face book page of the IEDCR were provided for people to contact if they suspect COVID-19 infection or need more information. Gradually test facility spread all over the country.[3]

For prevention and control of SARS-COV-2, Government of Bangladesh has taken necessary steps including enhancement of public awareness on hand hygiene, respiratory hygiene, social distancing, wearing of masks, avoidance of public gatherings, campaign against myths, fake news and stigma; preparing the health care services including expansion of hospital facilities, training and protective measures for the health workforce and other frontline fighters.[4]

Its symptoms range from mild fever, cough, fatigue, diarrhea, severe pneumonia, acute respiratory distress syndrome (ARDS), and multi organ failure.[5]

To combat this situation, Bangabandhu Sheikh Mujib Medical University (BSMMU), a pioneer in the country's health care sector launched a specialized fever clinic on 29th April 2020, specially for the treatment of patients with fever and cough. On 4th July 2020, BSMMU launced corona dedicated inpatient center in its cabin block.[6] Initially, all patients attend the COVID unit triage at ground floor. Proper history taking, physical examination and necessary investigations are done there. If there is admission criteria according to the BSMMU management synopsis, patients are shifted to red zone (RT PCR Positive and having sysmptoms), yellow zone (symptoms suggestive but RT-PCR negative) and ICU (critical patient). Patients were grouped into mild, moderate, severe and critical and treatment is given according to BSMMU protocol.[7]

Frontline workers were facing heavy workload, personal risk and social pressure to meet extraordinary demands for healthcare. Doctors fight from the front and plays critical roles in diagnosis and management and their commitments to serve COVID patients are tremendous despite of increased personal risks of being affected by COVID-19. Till now no one had shared experience of their COVID duty period. So it is our privilege to share experience of 7 days duty of a resident doctor in COVID ward.

Personal experience

I, Md. Arif Hossain, had been working as a resident physician in the Department of Paediatrics, Bangabandu Sheikh Mujib Medical University, Dhaka, Bangladesh for last 4 years. As the COVID-19 pandemic spread to

the country, I was able to provide service to the hospitalized COVID 19 cases as a healthcare professional in BSMMU. Though my duty time lasted for a week in a single roster, I have seen and learnt many things about healthcare, humanity, compassion and life that I will carry with me forever. In this document, I am going to share the experience from my first 7 days roster duty.

My role was there as a ward doctor for all the admitted patients irrespective of age and specialty. There were numerous anonymous people behind masks and gowns diligently working by patients' bedsides with many machines dispersed in between. The duty week consisted of many hours in extremely uncomfortable mandatory attires including, coverall, face masks, face shields, gloves and wipe-able shoes. It was a shifting duty, but the feeling of working there lasted even after going back to the dormitory after my duty period was over. I could feel the phantom PPE mask on my face and dreaming about my ward experiences. I noticed a constant daze of tiredness, my body was aching more, skin became dry and there were pressure sores on my facefrom the masks.

There was an overall understanding of how devastating this disease was, and a lot to learn. After a few days, I started to feel more confident and comfortable with making management decisionsof patients. No matter how small, but these were extremely satisfying.

The supply of PPE kits was adequate. The kit comprises mask, gloves, shoe cover, head cover, face shield, gown and goggles. Before starting duty in COVID ward, an orientation and training program had been organized by the institution. The duty tenure was 7 days followed by a period of mandatory isolation for another 7 days. We were tested regularly for suspected COVID positivity.

The experiences of anxiety, stress and fear had impact on the care of patients with COVID-19 as there was complete understanding of the consequences of these conditions on care during the current corona virus crisis, the environment, separation from family etc. It is to be noted here that no vaccines were available during our initial rosters and we had been totally unprotected other than wearing personal protective equipment (PPE). There were emotional upset upon the suffering and affliction of patients with serious health conditions caused by COVID-19 and by the sense of waiting to die.

COVID 19 duty period

During COVID 19 duty period, a cross sectional observational study was carried out from 12th to18thJuly, 2021 in BSMMU COVID unit. Permission for the study was taken from proper authority. All diagnosed cases (both RT-PCR for covid-19 positive and negative) were enrolled in the study. After taking informed consent from patients/legal guardians, data were collected in a predesigned structured questionnaire. Demographic data such as name, age, sex, residency, occupation, clinical characteristics including fever, cough, loss of smell, diarrhea, respiratory distress, contact history and clinical examination including pulse, blood pressure, respiratory rate, temperature, oxygen saturation level were recorded in the data sheet. Relevant investigations including complete blood count with Erythrocyte Sedimentation Rate (ESR), serum alanine aminotransferase (ALT), serum creatinine, C-reactive Protein (CRP), D- dimer, serum ferritin, serum pro-calcitonin, chest X ray (CXR), high resolution computed tomography (HRCT), random blood sugar (RBS) and other individualized to specific patients were includedin the questionnaire. Management of the patients with oxygen (O2) inhalation, antibiotics, anti- coagulants, steroids and their outcomes were also recorded. The entered data were checked, verified and appropriate statistical analysis were done by using specific tools.

Observation

During my duty period as a resident, I have observed 90 patients from 1 to 90 years of age. Most of the patients (55.6%) were within 50 to 70 years age range. Mean age was 52 years and male: female ratio was 1.4:1. Majority was from urban area. They were from various professional backgrounds, but most of them were housewives. There was no known COVID contact in 51.1% of patients (Table I). Almost 93% cases had constitutional symptoms, followed by respiratory involvement (85.5%), GIT manifestation (77%) and cardio-vascular involvement in 31% (Table II). More than sixty percent patients were diagnosed as severe COVID infection (Table III). Different co-morbidities were present including hypertension (55.5%), diabetes mellitus (50%) and bronchial asthma (13.3%) were associated with patients mostly over 30 years of age (Table IV). Mean value of inflammatory markers including CRP, IL-6, Ferritin, Pro-calcitonin, D dimer, and also pro BNP and random blood sugar was raised (Table V).

Tables

Table I: Socio-demographic profile of the Study population (n=90)

Variable	**N**	**%**
Age group (years)		
0-18	3	3.3
18-30	3	3.3
30-50	24	26.7
50-70	50	55.6
70- 90	10	11.1
Mean age (years)	52.86±16.27	
Male : Female	52:38(1.4:1)	
Residence		
Urban	70	77.8
Rural	12	13.3
Semi-urban	8	8.9
Occupation		
Housewife	27	30

Private job	18	20
Doctor	13	14.5
Business	10	11
Teacher	4	4.5
Banker	3	3.3
Student	2	2.2
Retired	13	14.5
H/O Known Contact		
Absent	46	51.1
Present	44	48.9

Table II: Clinical Presentation of the Study Population (n=90).

Clinical presentation	N	%
Constitutional symptoms	84	93
Respiratory symptoms	77	85.5
Cardiovascular symptoms	28	31
Gastrointestinal symptoms	7	7.7
Musculoskeletal symptoms	6	6.6

Table III: Severity of Covid-19 Cases.

Severity of presentation	N	%
Mild	15	16.7
Moderate	19	21.1
Severe	52	57.7
Critical	4	4.5

Table IV: Co-morbidities of the Study Population (n=90)

Age (Years)	DM N(%)	HTN N(%)	BA N(%)	Malignancy N (%)	CKD N(%)	CVD N(%)	Others N(%)
0-18 (n=3)	-	-	-	1/3 (33.3%)	-	-	SMA (1. 33%) CP (1, 33%)
18-30 (n= 3)	-	-	1/3 (33.3%)	-	-	-	-
30-50 (n= 24)	10/24 (41.6%)	7/24 (29.1%)	5/24 (20.8%)		2/52 (3.8%)		PCOS(1) Hypothyroidism(1)
50-70 (n= 50)	31/50 (62%)	38/50 (76 %)	6/50 (12 %)	1/32 (3.1%)	4/50(8%)		IHD(1) Arthritis (1)
70-90 (n=10)	4/10 (40%)	5/10 (50%)		1 (10%)	1 (10%)	2 (20%)	IHD(3)

- Many patients had more than one co-morbidities, that's why the total numbers >100%
- Elaborate Abbreviations

Table V: Laboratory Findings of the Cases (n=90).

Investigation	Mean ± SD	Range	Normal Range
CBC			
Hb (gm/dl)	11.8±1.834	**7**-17	M-13-17
			F-11.5-16
TC(Thousand /cmm)	7.9±3.23	3-21	4500-11,000
N (%)	72.5% ±14.18%	11%-95%	40-75%
L (%)	17±9.3	3-80%	20-50 %
PC (lac/cmm)	2.3±0.952	0.50 -6.5 lac	1.5-4.5
ESR (mm in 1sthr)	34.4±18.67	3-86	M-0-10,
			F-0-15
SGPT(u/l)	62.24±64.3	10-350	M-<50 u/l,F-<35u/l
S. Creatinine(mg/dl)	1.01±0.50	0.07-3.2	Ch-0.5-1.1, M-0.7-1.3, F-0.6-1.2
Inflammatory Markers			
CRP(mg/l)	44±59.16	1.08-333.7	< 5
D dimer (microg/dl)	0.734±1.23	0.10-10	< 0.50
S. Ferritin (ng/ml)	477±534	13-3525	M-20-250F-10-120
IL 6 (pg/ml) (n=6)	26.52±21.29	6.08-62.4	Upto 7.5
Procalcitonin (ug/l) (n=37)	1.06±3.88	0.02-21.5	<0.05
Others			
Pro- BNP(pg/ml) (n=8)	294.5±157	35-457	up to 125
RBS (mmol/l)	9.637±3.7	5-19	6-7

Table VI: Radiological findings of the covid-19 cases (n=90).

Radiological findings	N	%
CXR(n=90)		
Pulmonary inflammatory lesion	35	38.8
Basal pneumonitis	34	37.7
Consolidation	22	24.4
Normal findings	20	22.2
Pleural effusion	12	13.3
HRCT(n=60)		
Bilateral ground glass opacity with consolidation	50	83.3
Crazy paving	45	75
Pleural effusion	38	63.33
Sub-pleural fibrotic band	30	50
Vascular thickening	26	43.3

❖ Many patients had more than one radiological findings, that's why the total numbers >90

Table VII: Management and outcome of the patients (n=90)

Variables	N	%
Rx	84	93.3
O2 supplementation	5	5.5
Nasal prongs and face muskHFNC	4	4.5
Mechanical Ventilator	78	86.7
Low molecular weight heparinSteroid	70	77.8
Remdesivir	20	22.2
Outcomes	78	86.7%
Improved	10	11.1
Improved with complicationExpired	2	2.2

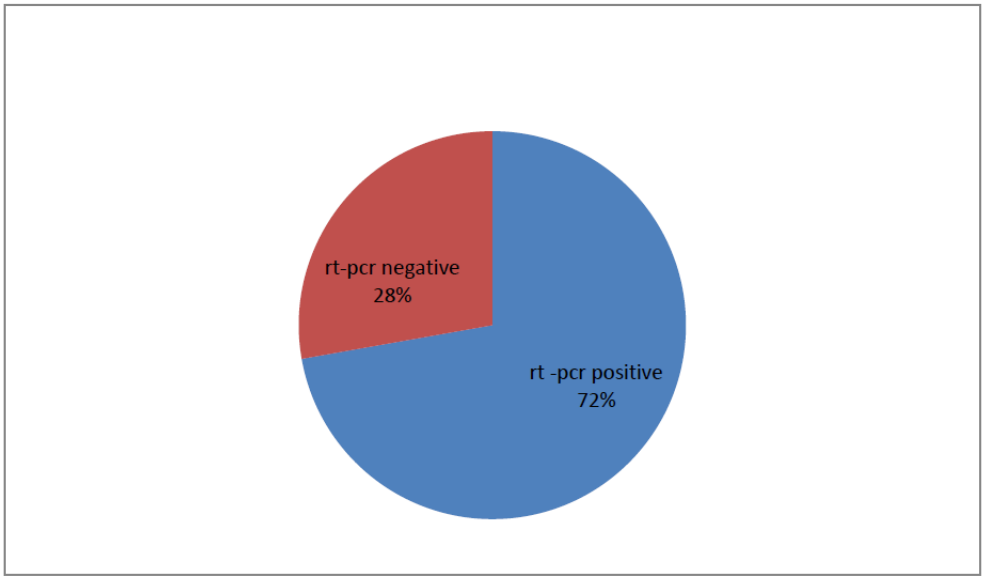

Figure 1: RT-PCR for covid-19 positivity.

DISCUSSION

Corona virus disease is a new deadly viral disease that constitutes a global health challenge and increasing number of fatalities. During the initial period of Covid-19 outbreak clinical presentation, diagnosis and management were difficult due to lack of information and understanding. With time, guidelines werepublished by different countries and World Health Organization for appropriate management of Covid-19 disease.

In Bangladesh, government has formulated a guideline for diagnosis and management and selected hospitals for covid-19 management.[8,9] In this study, the intention is to share the experience of the clinical course and outcome of patients suffering from COVID 19 in a tertiarycovid-19 dedicated hospitalduring the duty period of a resident.

Most of the patients belonged to middle and elderly age group and mean age was 52.9 years. Male was more

(52%)and patients came mainly from urban areas(70%). A large number of patients (48.9%) had history of contact. This findings are consistent with Chaolin Huang et al. 2020 findings where mean age of disease development was 49 years, 73% of their cases were male and 66% had history of contact.[5] There is an explanation of male dominance is that, Asian males has higher expression of angiotensin converting enzyme-2(ACE2) than females which is thought to be responsible for disease transmission and development.[10]

In some studies published in 2020, clinical symptoms varied from mild symptoms to severe respiratory failure and sometimes systemic manifestations such as sepsis and multi-organ dysfunction.[11,12,13] Most of the patients in this series presented with constitutional symptoms (93%) followed by respiratory symptoms (85.5%), cardiovascular symptoms (31%) and gastrointestinal symptoms (7.7%).

According to national guideline on clinical management of COVID-19 in Bangladesh[8], the disease is clinically classified as mild, moderate, severe and critical cases. Here, most of the patients were in severe disease group(57.7%) and 4.5% were critical requiring mechanical ventilation (Table III). Most of the study population belonged to middle and elderly age group and had co-morbidities, which might explain the scenario. These findings are consistent with the findings of Fei Zhou et al.[14] where severe cases were 35% and critical cases were 28%. But study done by Zunyouet al.[15] revealed more mild cases (81%), followed by severe (14%) and critical (5%) cases.

Chronic co-morbidities, including obesity, hypertension, diabetes, cardiovascular disease, cerebro-vascular disease, respiratory disease, kidney disease, and malignancy are clinical risk factors for a severe or fatal outcome associated with COVID-19.[10] Here in this cohort, 83.3% had co-morbidities and many patients had more than one co morbidities. Hypertension (55.5%) was the most common co-morbidity followed by and diabetes mellitus (50%). These findings were similar to findings of Kuiliu et al. and Chaolin Huang et al. in 2020.[5,13] It has been reported that, higher baseline total white blood cell count (WBC), C-reactive protein (CRP), lactate-dehydrogenase (LDH), creatine kinase (CK), D-dimer and lower absolute lymphocyte count (ALC) were associated with higher mortality.[16] Ourpatients had lymphopenia, high ESR, CRP, D-dimer, Ferritin, IL-6, Procalcitonin,Pro-BNP, SGPT,S creatinine and random blood sugar.

These lab findings are reflective of the immune pathogenesis of the disease.[17]

Typical CXR findings of COVID 19 include a reticular pattern, ground-glass opacities and consolidations, with rounded morphology and a confluent or patchy multifocal distribution.[18] Computed tomography (CT) findings include ground glass opacities, consolidation, peripheral reticulation, crazy paving pattern, reversed halo sign, prominent vessels and pleural and sub- pleural abnormalities.[19] Our cohort revealed (Table-V) pulmonary inflammatory lesion in 38.8%, basal pneumonitis in 37.7%, consolidation in 24.45% and pleural effusion in 13.3% in chest x- ray and in HRCT, 83.3% had bilateral ground glass opacities with consolidation, crazy paving in63.3%, pleural effusion in 50% and vascular thickening in 43.3% patients. Similar findings was presented in other studies also.[20-25]

The BSMMU synopsis for COVID 19 patient management[7] was used for managing patients. Therapeutic regimen used in covid-19 management included supplemental O_2, low molecular weight heparin, steroid,antivirals, convalescent plasma and monoclonal antibody (NIH). During my duty period, 86.7% patients were discharged with complete recovery and 11% with some respiratory difficulties. Two patients (2.2 %) having multiple co-morbidities expired. Zunyou et al. 2020-revealed similar outcomes as ours where, 2.3% death occurred and no death in mild cases occurred.[15]

Early detection of SARS-C0V2 is very important for isolation and management. Reverse transcriptase polymerase chain reaction (RT-PCR) is one of the important tool for detection of covid-19. In this cohort,72% patients were RT-PCR positive for COVID - 19 and 28% were RT- PCR negative (figure-1). These findings were consistent with the study by Feldstein et al. 2020.[24] which revealed 70% had RT-PCR or antibody positivity.

CONCLUSION

Working as a front liner strengthened the professional attitude, competency and moral values, though there were much physical pain, mental agony and unfair workload. But as a doctor working in a resource limited country like Bangladesh, we have to accept these challenges and show our highest commitments to our society, our country and thereby mankind. But it is also important to acknowledge this relentless risk taking activities of front liners and pay special attention to their needs like all other countries are doing to boost up our attitude, commitments and to uphold our honour in the society.

REFERENCES

1. Triggle CR, Bansal D, Ding H, Islam MM, Farag EABA, Hadi HA et al. A (Comprehensive Review of Viral Characteristics, Transmission, Pathophysiology, Immune Response, and Management of SARS-CoV-2 and COVID-19 as a Basis for Controlling the Pandemic). Front. Immunol, 2021; 12: 631139. doi: 10.3389/fimmu.2021.631139.
2. Karia R, Gupta I, Khandait H, Yadav A, Yadav A.(COVID-19 and its Modes of Transmission). SN

Compr Clin Med, 2020; 1-4. doi:10.1007/s42399-020-00498-4.

3. COVID-19 pandemic in Bangladesh. In Wikipedia, The Free Encyclopedia. Retrieved 15:18,January 22, 2022, from https://en.wikipedia.org/w/index.php?title=COVID-19_pandemic_in_Bangladesh&oldid=1065732244.
4. Anwar S, Nasrullah M and Hosen MJ. (COVID-19 and Bangladesh: Challenges and How to Address Them). Front. Public Health, 2020; 8: 154. doi: 10.3389/fpubh.2020.00154.
5. Chaolin H, Yeming W, Xingwang L, Lili R, Jianping Z, Yi H et al. (Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China). Lancet, 2020; 395: 497–506.
6. BSMMU runs multiple services to fight Covid-19 pandemic. The Business Standard, may 5, 2021. https://www.tbsnews.net/bangladesh/bsmmu-completes-96027-covid-tests-treats-over- 5000-183007.
7. BSMMU COVID19 Management Synopsis. Available from: https://internalmedicine.bsmmu.edu.bd/public/uploads/files/5e3ca206841865766e5fc6ccfab821f 1.
8. COVID 19 dedicated hospitals in Dhaka, Bangladesh. Available from: http://hospitaldghs.gov.bd/wp-content/uploads/2020/04/Dedicated-COVID-hospital-updated-on- 9th-April-2020.pdf.
9. National Guidelines on Clinical management of COVID 19. DGHS, Ministry of family Welfare, Govt. of Peoples Republic of Bangladesh, Nov 2020. Available from: http://webcache.googleusercontent.com/search?q=cache:iPvOFHrKk8sJ:www.mohfw.gov.bd/index.php%3Foption%3Dcom_docman%26task%3Ddoc_download%26gid%3D22424%26lang%3Den+&cd=1&hl=bn&ct=clnk&gl=bd.
10. Bwire GM. (Coronavirus: Why Men are More Vulnerable to Covid-19 Than Women?) [published online ahead of print, 2020 Jun 4]. SN Compr Clin Med, 2020; 1-3. doi:10.1007/s42399-020-00341.
11. Tommaso L, Silvia S, Simone MP, Giovanni DP, Francesco GDR, Silvia C et al.(2019 novel coronavirus (2019-nCoV) outbreak: A new challenge). Journal of Global Antimicrobial Resistance, 2020; 22–27.
12. Sheleme T, Bekele F, Ayela T.(Clinical Presentation of Patients Infected with Coronavirus Disease 19: A Systematic Review). Infect Dis (Auckl), 2020; 13: 1-8. doi: 10.1177/1178633720952076.
13. Liu K, Fang YY, Deng Y, Liu W, Wang MF, Ma JP et al. (Clinical characteristics of novel coronavirus cases in tertiary hospitals in Hubei Province). Chin Med J (Engl), 2020; 133(9): 1025-1031. doi: 10.1097/CM9.0000000000000744.
14. Fei Z, Ting Y, Ronghui D, Guohui F, Ying L, Zhibo L et al. (Clinical course and risk factorsfor mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study) Lancet, 2020; 395: 1054- 1062.
15. Wu Z, McGoogan JM. (Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72 314 Cases From theChinese Center for Disease Control and Prevention). JAMA, 2020; 323(13): 1239-1242. doi: 10.1001/jama.2020.2648. PMID: 32091533.
16. Kiss, S, Gede N, Hegyi P.(Early changes in laboratory parameters are predictors of mortalityand ICU admission in patients with COVID-19: a systematic review and meta-analysis). Med Microbiol Immunol, 2021; 210: 33–47. https://doi.org/10.1007/s00430-020-00696-w.
17. Cevik M, Kuppalli K, Kindrachuk J, Peiris M. (Virology, transmission, and pathogenesis of SARS-CoV-2). BMJ, 2020; 371: m3862 doi:10.1136/bmj.m3862.
18. Hussain A, Mishra J , LalKarn A , SinghAK , Ansari P, Akhtar MK et al. (Chest X-ray findings in COVID-19 patients: a descriptive study). International Journal of Advances inMedicine, 2021; 8(5): 617.
19. Martínez CE, Díez TA, Ibáñez SL, Ossaba VS, Borruel NS.(Radiologic diagnosis of patients with COVID-19). Radiologia (Engl Ed, 2021; 63(1): 56-73. doi: 10.1016/j.rx.2020.11.001.
20. Wong HYF, Lam HYS, Fong AH, Leung ST, Chin TW, Lo CSY et al. (Frequency and Distribution of Chest Radiographic Findings in Patients Positive for COVID-19). Radiology, 2020; 296(2): 72-78. doi: 10.1148/radiol.2020201160.
21. Rousan LA, Elobeid E, Karrar M, Khader Y. (Chest x-ray findings and temporal lung changesin patients with COVID-19 pneumonia). BMC Pulm Med, 2020; 20(1): 245. doi: 10.1186/s12890-020-01286-5.
22. Xia W, Shao J, Guo Y, Peng X, Li Z, Hu D. (Clinical and CT features in pediatric patients with COVID-19 infection: Different points from adults). Pediatr Pulmonol, 2020; 55(5): 1169- 1174. doi: 10.1002/ppul.24718. Epub 2020 Mar 5.
23. Liu K, Fang YY, Deng Y, Liu W, Wang MF, Ma JP et al.(Clinical characteristics of novel coronavirus cases in tertiary hospitals in Hubei Province). Chin Med J (Engl), 2020; 133(9): 1025-1031. doi: 10.1097/CM9.0000000000000744.
24. Feldstein LR, Tenforde MW, Friedman KG, et. (Characteristics and Outcomes of US Children and Adolescents With Multisystem Inflammatory Syndrome in Children (MIS-C) Compared With Severe Acute COVID-19). JAMA, 2021; 325(11): 1074–1087. doi:10.1001/jama.2021.2091.