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The clinical characteristics of coronavirus disease 2019 in mild and ordinary female patients

Introduction: The aim of study was to explore the clinical characteristics of coronavirus disease 2019 in mild and ordinary patients, providing guidance for clinical diagnosis and treatment.

Methods: Sixty-four patients with positive results of nucleic acid testing were divided into two groups, called the youth group and the older group, to be compared the differences of clinical characteristics.

Results: Sixty-nine cases showed normal or decrease in white blood cell count (WBC). One case decreased in lymphocyte count (LYMPH). Seven cases decreased in lymphocyte proportion (LYMPH%). Seven cases increased in C-reactive protein (CRP). Sixteen cases increased in alanine transaminase (ALT). Nineteen cases increased in aspartate transaminase (AST). One case increased in lactic dehydrogenase (LDH). Six cases decreased in creatine kinase (CK). Three cases increased in globulin (GLOB). Thirty-eight cases decreased in serum creatinine (CRE). Five cases decreased in blood urea nitrogen (BUN). The lung CT scanning results showed no statistic difference between two groups ($p > 0.05$). The level of WBC, NEUT, LDH, BUN, potassium (K^+) showed statistic difference between two groups ($p < 0.05$).

Conclusions: Age was a risk factor in COVID-19. In the course of future diagnosis and treatment, blood test might play an increasingly important role.

K e y w o r d s : *COVID-19, RT-PCR, Blood routine and biochemistry tests, CT.*

Introduction

Wuhan reported several unknown etiological pneumonia cases in December 2019[1]. It was clear that the pathogen of this disease was coronavirus. The World Health Organization (WHO) officially named the coronavirus SARS-CoV-2 and the resulting disease was called coronavirus disease 2019 (COVID-19) [2]. "COVID-19 treatment plan (trial version 7)" [3], which was issued by National Health Commission of People's Republic of China, defined COVID-19. The diagnosis included three parts: the history of epidemiology,

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clinical manifestations and etiological or serological evidence. Clinical manifestations included symptoms (fever and/or respiratory symptoms) and laboratory examinations (the total number of white blood cells to normal or reduce pneumonia and lymphocyte count was normal or reduce) and imaging characteristics. Etiological or serological evidence was an essential condition. The definite cases conformed etiological or serological evidence with 2 items of clinical manifestations and the history of epidemiology or 3 items of clinical manifestations. The plan defined mild cases with "mild clinical symptoms and no imaging evidence of pneumonia" and ordinary cases with "fever, respiratory tract and other symptoms as well as imaging evidence of pneumonia".

Materials and methods

General Information

The study involved 64 patients with mild symptom. According to the manufacturer's instructions (Daan Gene Co., Ltd., Guangzhou, China), all patients were tested by reverse transcriptase polymerase chain reaction (RT-PCR) analysis of oropharyngeal swab specimens. All patients took isolation, examinations and treatments in Wuhan Huangpi People's hospital from 10 February 2020 to 22 March 2020, excluded those who didn't have detailed testing information. During the period of treatment, some patients took reexamination, finally 71 blood routine reporters, 71 blood biochemistry reporters and 115 computer tomography (CT) reporters were collected from 64 patients. All patients were female, who were 44.86±10.57y, with the minimum age of 27y and the maximum age of 76y.

Methods

All patients ran lung CT scanning and RT-PCR as well as blood tests (blood routine and biochem-

istry tests) after admission. Some patients might had several blood routine or biochemistry test reports and some information missed. We described the CT and blood test results of 64 patients. The blood routine and biochemistry tests performed by BC-6900 automatic hematology analyzer (Mindray Bio-medical Electronics Co., LTD., Shenzhen, China) and VITROS 5600 automatic biochemical analyzer (Johnson & Johnson, the USA). WHO suggested that the young were people between 15 and 45. Previous study said that older age was a risk factor in COVID-19 [4]. Thus, we divided 64 patients into two groups according to patients' age. The patients who were over 45 years old, called the older group. Others were grouped into the youth group. The youth group included 31 patients and the older group included 33 patients. The Ethics Committee of Huangpi People's Hospital of Jianghan University approved this study (NO.2020003). This study obtained written consent from all the patients about clinical data and information.

Analysis

SPSS version 25.0 for Windows (IBM Corporation, Armonk, NY, USA) was used for statistical analyses. The counting data were presented as count (percentage of total). All quantitative data were tested with the Kolmogorov - Smirnov test for normality and Levene test for homogeneity of variance. The normally distributed continuous variables were presented as Mean ± Standard Deviation (SD) and compared by the Student t-test. The skewed distributed variables were presented as Median ± Interquartile range (IQR) and compared by the Mann-Whitney U test. Comparisons of categorical variables between groups were conducted using the Pearson's χ^2 test or Fisher's exact test, as appropriate. A p value <0.05 was considered statistically significant.

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Results

The results of RT-PCR and lung CT scanning reporters

The time of RT-PCR results changed from positive to negative in two groups showed no statistic difference ($p > 0.05$), with the results of Z=1.823 and p=0.068. The average time was 7.00±1.00d in youth group, while 7.00±0.00d in older group.

Totally 115 lung CT scanning reporters were collected, including 64 patients' first CT scanning. From first CT scanning results, 45.3% of patients had ground-glass opacities (GGO) and 65.6% had bronchitis. 21.9% of patients had fibrosis and 14.1% of patients had calcification. 12.5% of patients found pulmonary nodule. Two patients were found pleural thickening and three patients had cavity lesion. Two patients had old pulmonary tuberculosis. The results showed there were no statistic difference between two groups in major lesion ($p > 0.05$). The detailed results of two groups were in **Sheet 1**. The detailed CT images were in **Figure 1** to **Figure 3**.

Figure 1. The ground-glass opacities in inferior lobe of right lung.

Figure 2. Fibrosis and calcification in lung.

S h e e t 1

The characteristic of lung CT scanning in two groups

Lesions	Groups		χ^2 value	*p* value
	The youth group, *n* (%)	The older group, *n* (%)		
Ground-glass opacities	12 (38.7)	17 (51.5)	1.058	0.304
Bronchitis	20 (64.5)	22 (66.7)	0.033	0.856
Fibrosis	8 (25.8)	6 (18.2)	0.544	0.461
Calcification	5 (16.1)	4 (12.1)	0.010	0.919
Pulmonary nodule	4 (12.9)	4 (12.1)	0.000	1.000
Cavity lesion	0 (0)	3 (9.1)	1.272	0.259
Lesion of pleural	1 (3.2)	1 (3.0)	*	1.000
Lymphadenectasis	0 (0)	1 (3.0)	*	1.000

N o t e. * – There were no existance of χ^2 values in lymphadenectasis and lesion of pleural for they took Fisher exact probability test.
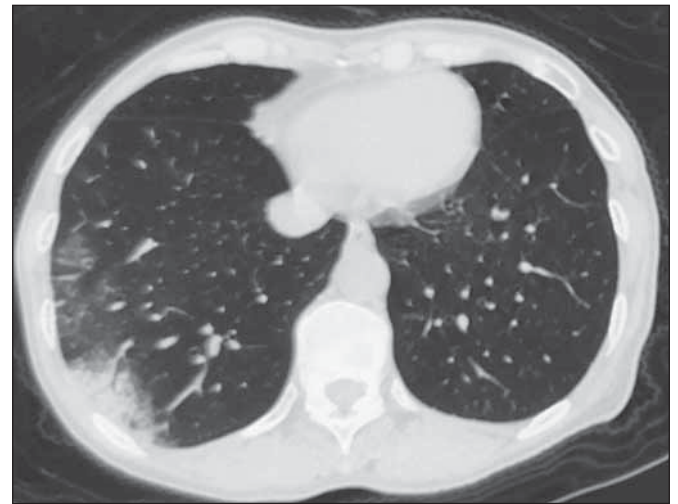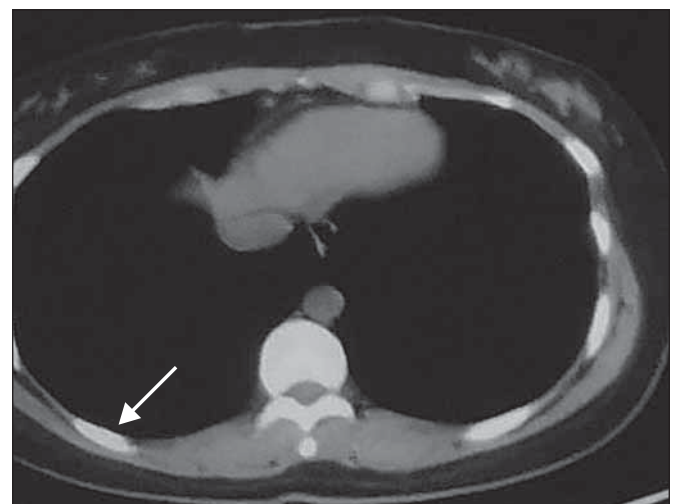

Figure 3. Right pleural thickening in where the arrow pointed.

Forty-six patients had several lung CT scanning reporters. Two patients kept normal all the time. Two patients were found ground-glass opacities lesions at first with no change at the later scanning. One patient had fibrosis lesion all the time. One patient was found a pulmonary nodule at first, but cavity lesion after treatments. Four patients changed from bronchitis to normal after they took cure. Six patients changed from bronchitis and GGO lesions to normal after treatments. Two patients changed from bronchitis to fibrosis. One patient changed from bronchitis to pulmonary nodule. Fifteen patients were found the extent of GGO became smaller after treatments and four of them had fibrosis or calcification lesions later. Several patients were found fibrosis and calcification lesions disappeared. Two patients changed from atypical lung infectious imaging to normal after treatments. Seven patients were found the extent of GGO became wilder and with fibrosis lesions or not after treatments. Three patients showed normal at first, but pulmonary nodule, cavity and fibrosis lesions appeared after treatments.

The results of blood routine test

General Information. Analyzed with 71 blood routine tests, 69 cases (97.1%) showed normal or decrease in white blood cell (WBC) count. One case (1.4%) decreased in lymphocytes (LYMPH) count. Seven cases (9.9%) decreased in lymphocyte proportion (LYMPH%). Seven cases (9.9%) increased in C-reactive protein (CRP). The detailed results were in **Sheet 2**. The range of normal value in blood routine tests are as follow: $3.69 \leq$ WBC $\leq 9.16 \times 10^9$/L, $0 \leq$ CRP ≤ 5 mg/L, $50 \leq$ Neutrophil proportion (NEUT%) $\leq 70\%$, $2.04 \leq$ Neutrophil count (NEUT) $\leq 7.5 \times 10^9$/L, $20 \leq$ LYMPH% $\leq 40\%$, $0.8 \leq$ LYMPH $\leq 4.0 \times 10^9$/L, $3 \leq$ Monocyte proportion (MONO%) $\leq 10\%$, $0.12 \leq$ Monocyte count

Sheet 2

71 blood routine reporters of COVID-19 patients

Observed index	Results	Number	Frequency (%)
WBC	↑	2	2.8
	N	65	91.5
	↓	4	5.6
CRP	↑	7	9.9
	N	64	90.1
NEUT	↑	2	2.8
	N	65	91.5
	↓	4	5.6
LYMPH	↑	0	0
	N	70	98.6
	↓	1	1.4
MONO	↑	0	0
	N	71	100.0
	↓	0	0
NEUT%	↑	10	14.1
	N	56	78.9
	↓	5	7.0
LYMPH%	↑	4	5.6
	N	60	84.5
	↓	7	9.9
MONO%	↑	1	1.4
	N	68	95.8
	↓	1	1.4
Hb	↑	0	0
	N	60	84.5
	↓	10	14.1
PLT	↑	5	7.0
	N	66	93.0
	↓	0	0

(MONO) $\leq 1.00 \times 10^9$/L, $110 \leq$ Hemoglobin (Hb) ≤ 150 g/L, $101 \leq$ Platelets (PLT) $\leq 320 \times 10^9$/L.

The results of blood routine test in two groups. The results showed that WBC, NEUT%, LYMPH%, LYMPH, Hb in two groups were alone to normal distribution. Others took non-parametric test for they were skewed distribution. The

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results of blood routine test, except WBC and NEUT, showed no statistical difference between two groups ($p > 0.05$). The detailed results were in **Sheet 3**.

The results of blood biochemistry test

General Information. Analyzed with 71 blood biochemistry reporters, sixteen cases (22.5%) increased in alanine transaminase (ALT) and nineteen cases (26.8%) increased in aspartate transaminase (AST). Thirty-eight cases (53.5%) decreased and one case (1.4%) increased in serum creatinine (CRE). One case (1.4%) increased in level of lactic dehydrogenase (LDH) and six cases (8.5%) decreased in creatine kinase (CK). Three cases (4.2%) increased and six cases (8.5%) de-

S h e e t 3

The characteristic of blood routine test in two groups

| Observed index | Groups | | *p* value |
	The youth group	The older group	
WBC ($\times 10^9$/L)	6,08 ± 1,47	5,38 ± 1,45	t = 2,021 p = 0,047
NEUT% (%)	63,28 ± 7,43	61,54 ± 8,91	t = 0,889 p = 0,377
NEUT ($\times 10^9$/L)	3,64 ± 1,25	3,28 ± 1,41	Z = 2,049 p = 0,040
LYMPH% (%)	28,76 ± 6,80	30,22 ± 7,96	t = 0,829 p = 0,410
LYMPH ($\times 10^9$/L)	1,72 ± 0,51	1,57 ± 0,43	t = 1,394 p = 0,168
MONO% (%)	5,35 ± 1,55	5,80 ± 1,78	Z = 0,129 p = 0,897
MONO ($\times 10^9$/L)	0,34 ± 0,12	0,27 ± 0,10	Z = 1,470 p = 0,142
Hb (g/L)	117,12 ± 9,25	117,94 ± 10,09	t = 0,357 p = 0,722
PLT ($\times 10^9$/L)	256,26 ± 48,76	240,00 ± 53,00	Z = 1,416 p = 0,157
CRP (mg/L)	0,75 ± 1,28	0,90 ± 0,75	Z = 0,698 p = 0,485

S h e e t 4

71 blood biochemistry reporters of COVID-19 patients

Observed index	Results	Number	Frequency (%)
ALT	↑	16	22.5
	N	55	77.5
AST	↑	19	26.8
	N	52	73.2
TBIL	↑	0	0
	N	71	100.0
	↓	0	0
CRE	↑	1	1.4
	N	32	45.1
	↓	38	53.5
LDH	↑	1	1.4
	N	67	94.4
	↓	0	0
CK	↑	1	1.4
	N	61	85.9
	↓	6	8.5
ALB	↑	0	0
	N	71	100.0
	↓	0	0
GLOB	↑	3	4.2
	N	62	87.3
	↓	6	8.5
BUN	↑	1	1.4
	N	62	87.3
	↓	5	7.0
K^+	↑	0	0
	N	41	97.6*
	↓	1	2.4*

N o t e.* – The index K^+ in 71 reporters of blood biochemistry test missed so many that we employed valid percent.

creased in GLOB. Five cases decreased in blood urea nitrogen (BUN). The detailed results were in **Sheet 4**. The range of normal value in blood biochemistry test were as follow: $0 \leq$ ALT ≤ 32 U/L, $0 \leq$ AST ≤ 31 U/L, $3.0 \leq$ Total bilirubin (TBIL) ≤ 20.0 μmol/L, $50 \leq$ CRE ≤ 110 μmol/L, 109

S h e e t 5

The characteristic of blood biochemistry test in two groups

Observed index	Groups		p value
	The youth group	The older group	
ALT (U/L)	23,50 ± 20,00	15,00 ± 11,00	Z = 1,787 p = 0,074
AST (U/L)	24,00 ± 20,00	23,00 ± 9,00	Z = 0,311 p = 0,756
TBIL (μmol/L)	9,89 ± 4,19	9,24 ± 2,54	Z = 1,761 p = 0,078
CRE (μmol/L)	48,00 ± 7,00	50,00 ± 10,00	Z = 0,438 p = 0,661
LDH (U/L)	150,00 ± 30,50	177,43 ± 31,08	Z = 3,185 p = 0,001
CK (U/L)	66,70 ± 30,20	71,40 ± 30,13	t = 0,643 p = 0,523
ALB (g/L)	42,91 ± 2,35	43,00 ± 4,00	Z = 0,573 p = 0,567
GLOB (g/L)	24,44 ± 4,49	23,00 ± 5,00	Z = 0,723 p = 0,469
BUN (mmol/L)	3,36 ± 1,60	4,34 ± 1,19	Z = 2,673 p = 0,008
K⁺ (mmol/L)	4,53 ± 0,33	4,26 ± 0,44	t = 2,241 p = 0,031

$\leq$ LDH $\leq$ 245 U/L, 38 $\leq$ CK $\leq$ 174 U/L, 32 $\leq$ Albumin (ALB) $\leq$ 48 g/L, 20 $\leq$ GLOB $\leq$ 30 g/L, 2.9 $\leq$ BUN $\leq$ 8.2 mmol/L, 3.5 $\leq$ K$^+$ $\leq$ 5.2 mmol/L.

The results of blood biochemistry test in two groups

The results showed that CK, K$^+$ in two groups were alone to normal distribution after normality test. Others took non-parametric test for they were skewed distribution. The index of LDH, BUN and K$^+$ showed statistical difference between two groups (p <0.05). Others showed no statistical difference between two groups (p >0.05). The detailed results were in **Sheet 5**.

Discussion

COVID-19, as an acute respiratory infectious disease, had been included in the "law on the pre-

vention and treatment of infectious diseases of the People's Republic of China" as B class infectious diseases and it was controlled as A class infectious diseases. This study observed 64 patients with positive results of nucleic acid testing, whose symptoms were mild, to explore the clinical characteristics of COVID-19 in mild and ordinary female patients and find if age would influence the condition of COVID-19 patients. All conclusions were based on their CT results and blood test results.

Tong et al. [5] found the typical imaging in COVID-19 was ground-glass opacity (GGO) and lung consolidation in critical patients. Pleural effusion, bilateral hilar lesions and mediastinal lymphadenopathy were rare, which kept correspondence with our study. A large number of patients were found fibrosis and calcification lesions, which indicted chronic course of disease. More follow-up studies were needed to observe the prognosis. From the CT results, seven patients (15.2%) were found the extent of GGO became wilder after treatments, which was similar with the point of Xing Chen et al. They believed that the patients' conditions deteriorated after the initial treatment and dynamic evaluation of chest CT scan showed enlarged lesion compared to the initial CT scan [6]. Pan [7] et al. believed that negative findings on CT scan at early stage (0-4 days after onset of the initial symptom) but repeated lung CT scanning found abnormalities in the pulmonary and 21.2% of the patients with negetive lung CT results during the early stage in previous research [8]. However, as "COVID-19 treatment plan (trial version 7)" defined the mild patients as "mild clinical symptoms and no imaging evidence of pneumonia". It seemed incompatible. We believed that this pointed the importance of repeat lung CT scanning. In our study, we also found that

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2 patients kept normal all the time. The period between these two CT reporters was both nine days. Thus, when CT scanning showed negative results, we needed to combine other tests, such as blood test, to know the severity of the illness.

In our study, WBC and LYMPH were basically normal and only a few patients showed decrease. At the same time, 9.9% of the patients showed an increase in CRP, indicating an inflammatory response. However, Li Long-quan et al. [9] found that the lymphocytopenia (64.5%), increase of CRP (44.3%), increase of LDH (28.3%) and leukocytopenia (29.4%) were more common, which were consistent with the respiratory virus infection. Zhou [10] et al. found that the levels of WBC, LYMPH, NEUT and LYMPH% of COVID-19 patients were lower and the levels of CRP was higher than those patients infected by influenza A, common cold and so on. The study of Li was a meta-analysis, which involved a large number of severe COVID-19 patients. This contradiction indicted that severe C0VID-19 may course remarkable change in blood routine test. From Sheet 3, we found that WBC and NEUT had statistic difference between two groups. The level of WBC and NEUT in the older group were lower than in youth group, though they were all in normal range. From above data, we concluded that older people might more susceptible to COVID-19, consistented with previous studies.

In blood biochemical results, the level of ALT and AST were elevated in different proportion of patients, which was basically similar to the known situation. Only one patient had LDH elevation, which did not exclude errors due to small sample size. In addition, a large number of patients (53.5%) were found decreased CRE. High levels of CRE and LDH were associated with severe diseases [11], but others have suggested that critically ill patients were prone to CRE reduction [12]. However, reduction of CRE can also occur when malnutrition and excessive consumption existed. According to the existing study, C0VID-19 patients had a long time from onset to diagnosis [13]. Otherwise, 14.1% of the patients had a decrease in hemoglobin. The suspicion was that due to the long period of disease, the patient's body was in a state of negative nitrogen balance for a long time, which gave rise to decrease in CRE. Butler MJ believed that the intake of a large amount of fiber, whole grains, unsaturated fats and antioxidants was beneficial to the recovery and improvement of prognosis of COVID-19 patients [14]. The results suggested that 8.5% of the patients had decreased GLOB levels, while ALB levels were basically normal. GLOB was a mixture of a variety of proteins, including immunoglobulin and complement, a variety of glycoproteins, metal-binding proteins, a variety of lipoproteins and enzymes. Globulin was closely related to immune function and plasma viscosity. Long-term use of adrenocorticosteroids or immunosuppressive agents would lead to a decrease in globulin levels. In this study, none of the patients have been on long-term use of such drugs. This situation could be basically excluded. It was speculated that the globulin decrease might be due to the suppression of patients' immune system by SARS-CoV-2 virus. Though almost all indexes were normal, we still found some difference between two groups. The level of LDH and BUN in older group were higher than in youth group. BUN was an indicator of kidney function. A study [15] found that 13.1% COVID-19 patients had elevated BUN and AKI occurred in 5.1% patients. In addition, mean LDH was increased, especially in those with high baseline CRE levels. However, CRE showed no statistic difference between two groups in our study, though the level in older group was a little higher than youth group.

Conclusions

In summary, age was a risk factor in COVID-19. Based on our research, we should do more research to explore whether age is the independent risk factor in COVID-19. The lung CT scanning results showed no statistic difference between two groups. The level of WBC, NEUT, LDH, BUN, K^+ showed statistic difference between two groups. Limitation of the study is that the sample size may not be sufficient, which may lead P value too large, so we need more cases to define the conclusions. In addition, it also shows the value of blood tests. In the future diagnosis and treatment, blood tests may play an increasingly important role.

Additional info

R E F E R E N C E S

1. Lu H, Stratton CW, Tang YW. Outbreak of pneumonia of unknown etiology in Wuhan, China: the mystery and the miracle. *J Med Virol*. 2020;92(4):401-402. doi: 10.1002/jmv.25678.

2. Hong KH, Lee SW, Kim TS. Guidelines for laboratory diagnosis of Coronavirus Disease 2019 (COVID-19) in Korea. *Ann Lab Med*. 2020;40(5):351-360. doi: 10.3343/alm.2020.40.5.351.

3. National Health Commission of the People's Republic of China. Diagnosis and treatment plan for Coronavirus Disease 2019 (COVID-19). Seventh edition. Beijing, China; 2020.

4. Zhou F, Yu T, Du R. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *Lancet*. 2020;395(10229):1054-1062. doi: 10.1016/S0140-6736(20)30566-3.

5. Tong H, Xu YY, Yang B. The diagnostic value of HRCT imaging for Coronavirus Disease 2019 (COVID-19). *Int J Med Radiol*. 2020;43(2):135-139. doi: 10.19300/j.2020.L18014.

6. Chen X, Liu S, Zhang C. Dynamic chest CT evaluation in three cases of 2019 novel coronavirus pneumonia. *Arch Iran Med*. 2020;23(4):277-280. doi: 10.34172/aim.2020.11.

7. Pan F, Ye T, Sun P. Time course of lung changes on chest CT during recovery from 2019 novel coronavirus (COVID-19) pneumonia. *Radiology*. 2020;295(3):715-721. doi: 10.1148/radiol.2020200370.

8. Ding X, Xu J, Zhou J, Long Q. Chest CT findings of COVID-19 pneumonia by duration of symptoms. *Eur J Radiol*. 2020;127:109009. doi: 10.1016/j.ejrad.2020.109009.

9. Li LQ, Huang T, Wang YQ. COVID-19 patients' clinical characteristics, discharge rate, and fatality rate of meta-analysis. *J Med Virol*. 2020;92(6):577-583. doi: 10.1002/jmv.25757.

10. Zhou YP, Zhu CX, Wan XW. Clinical characteristics and laboratory examination results of 3886 patients with fever and cough in Xianning district. *Lab Med Clin*. 2020;17(11):1541-1545.

11. Singhal T. A Review of Coronavirus Disease-2019 (COVID-19). *Indian J Pediatr*. 2020;87(4):281-286. doi: 10.1007/s12098-020-03263-6.

12. Cao J, Shen J, Zhu HC. Clinical significance of low serum creatinine in critically ill patients. *Chin J Clin (Electronic Edition)*. 2011;5(22):6791-6794.

13. Cao PM, Li XX, Yan XF. Retrospective epidemiological analysis of 223 COVID-19 pneumonia cases in the main urban area of Chongqing. *J Southwest University (Natural Science Edition)*. 2020;42(03):10-16. doi: 10.13718/j.cnki.xdzk.2020.03.002.

14. Butler MJ, Barrientos RM. The impact of nutrition on COVID-19 susceptibility and long-term consequences. *Brain Behav Immun*. 2020;87:53-54. doi: 10.1016/j.bbi.2020.04.040.

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15. Cheng Y, Luo R, Wang K. Kidney disease is associated with in-hospital death of patients with COVID-19. *Kidney Int*. 2020;97(5):829-838. doi: 10.1016/j.kint.2020.03.005.

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