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Initial clinical features of suspected Coronavirus Disease 2019 in two emergency departments outside of Hubei, China

Initial clinical features of suspected Coronavirus Disease 2019

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Abstract

Background: With an increasing number of Coronavirus Disease 2019 (COVID-19) cases outside of Hubei, emergency departments (EDs) and fever clinics are facing challenges posed by the large number of admissions of patients suspected to have COVID-19. Therefore, it is of crucial importance to study the initial clinical features of patients, to better differentiate between infected and uninfected patients outside Hubei.

Methods: A total of 116 patients suspected of having COVID-19 who presented to two emergency departments in Anhui for the first time between 24 January 2020 and 20 February 2020 were enrolled in the study. The initial clinical data of these patients, such as epidemiological features, symptoms, laboratory results, and chest computed tomography findings were collected using a standard case report form on admission.

Results: Thirty-two patients were diagnosed with COVID-19; the remaining 84 patients were referred to as negative cases. The median age of the diagnosed patients was 46 years, but only 35 years for negative cases. History of exposure to Wuhan or COVID-19 patients in the previous 2 weeks was observed in 63% of the diagnosed and 44% of negative cases. Median time from illness onset to ED admission was 5 days for all patients, diagnosed patients, and negative cases, respectively. Fever was observed in 27 (84%) and 57 (68%) diagnosed and negative cases, respectively. Nineteen (59%) diagnosed and 24 (29%) negative cases had lymphopenia on admission in ED. A chest CT scan on admission revealed the presence

of pneumonia in the majority of the diagnosed patients (30 out of 32, 94%) and in 56 (67%) negative cases. Bilateral involvement and ground-glass opacity (GGO) were present in 91% and 47% of the diagnosed patients.

Conclusion: The initial clinical features of patients suspected of having COVID-19 in EDs outside Hubei were relatively mild. Meanwhile, diagnosed patients without definite exposure history tend to show more atypical initial clinical features in ED. No initial clinical feature was found to be specific to diagnosed patients, which could allow for early clinical diagnosis of COVID-19 in EDs. We recommend strict medical observation and quarantine of all patients suspected of having COVID-19, either in the ED itself or in a dedicated quarantine facility, irrespective of initial clinical features, especially in under-resourced regions without access to rapid nucleic acid amplification tests.

Keywords: Coronavirus, Virus classification, Infection, Epidemiology

Introduction

In December 2019, a group of patients with pneumonia of unknown cause were confirmed to be infected with the 2019-novel coronavirus (2019-nCoV) in Hubei, China [1-3]. Initially, it was reported that most patients had visited local seafood markets in Wuhan city, the provincial capital of Hubei, China. Shortly thereafter, there was a large increase in the number of patients who had not been to the seafood market, suggesting human-to-human transmission of 2019-nCoV [4]. The pneumonia caused by this coronavirus was subsequently identified as a novel acute respiratory infectious disease and was named coronavirus disease (COVID-19) by the World Health Organization (WHO) on 11 February 2020.

2019-nCoV shares over 79% of its genome sequence with the coronavirus that causes severe acute respiratory syndrome (SARS-CoV), a member of the subgenus Sarbecovirus (Beta-CoV lineage B); owing to the overall similarity between both viruses, 2019-nCoV was renamed to SARS-CoV-2 [5]. Based on the available evidence, it appears that SARS-CoV-2 can be transmitted by asymptomatic carriers, which contributes to its basic reproduction number (R_0) and pandemic potential [6,7]. In addition to the high R_0 of SARS-CoV-2, the convenience of modern means of transportation further enhance its global spread. COVID-19 is still spreading rapidly in China and globally, with 80,993 confirmed cases and 2,761 deaths as of 26 February 2020. COVID-19 has become a public health emergency of international concern, and several Asian and European countries (such as Japan and Italy) are registering increases in the number of infected patients [8,9].

With the increase in the number of confirmed cases outside of Hubei, emergency departments (EDs) and fever clinics around the world are having to accommodate a large number of patients. Preliminary diagnosis based on initial clinical features may contribute to disease control and prevention of further infection, especially in areas with limited access to rapid nucleic acid amplification tests [10]. However, in a recent report by Li, COVID-19 patients outside Hubei exhibited relatively mild symptoms, indicating that the severity of SARS-CoV-2 infection is variable [11]. Chest computed tomography (CT) has a high diagnostic value in the evaluation of COVID-19 patients. However, severe lung abnormalities are only apparent on chest CT scans approximately 10 days after the onset of symptoms [12]. This poses a challenge for the early diagnosis and intervention in patients with suspected COVID-19 in the ED, until confirmation is obtained through

real-time reverse-transcription polymerase chain reaction (PCR) analysis. Currently, limited data regarding the initial clinical features of COVID-19 from EDs outside of Hubei are available. Here, we describe the initial clinical features (including epidemiological characteristics, symptoms, laboratory results and CT findings) of patients with suspected COVID-19 in an Anhui province ED, to provide insights into the preliminary diagnosis of COVID-19 in ED outside of Hubei, China.

Materials and Methods

Patients

This retrospective study focused on the initial clinical features of patients with suspected COVID-19 who presented to the ED of the First Affiliated Hospital of USTC and the Infectious Hospital of the First Affiliated Hospital of USTC for the first time between 24 January 2020 and 20 February 2020. Patients were considered as suspected to have COVID-19 based on symptoms, exposure history, and guidelines for the diagnosis and treatment of pneumonia caused by novel coronavirus infection (trial version III) published by the National Health Commission of the People's Republic of China[13]. All suspected patients were admitted in quarantined observing rooms in ED. A nucleic acid amplification test was performed on swab specimens from patients with suspected disease at admission. Patients with a positive diagnosis were admitted to the hospital, while patients with a negative initial result were kept in quarantine and underwent a second nucleic acid test after 24 hours; of these, patients with a second negative result on the nucleic acid test were considered to not have infection and were discharged from the hospital once they tested negative for SARS-CoV-2 antigens on two consecutive tests.

The present study sample consisted of 116 patients, 32 of whom were diagnosed with SARS-CoV-2 infection. This study was approved by the ethics committee of the First Affiliated Hospital of USTC and Infectious Hospital of the First Affiliated Hospital of USTC.

The inclusion criteria were: 1) patients defined as suspected SARS-CoV-2 infection based on guidelines for the diagnosis and treatment of pneumonia caused by novel coronavirus infection (trial version III), 2) presentation to, clinical observation and quarantine in our ED and 3) nucleic acid amplification test performed in our ED. The exclusion criteria were: 1) transfer from another hospital or previous visit to our hospital and 2) previous diagnosis of COVID-19.

Data collection

The date of illness onset and duration of observation were collected for each patient. Epidemiological data were collected from brief interviews with the patient. Several investigators interviewed each suspected patient on admission to collect exposure histories during the two weeks before illness onset. All interviews were performed before an ultimate diagnosis was made. Clinical and laboratory data on admission were obtained from detailed medical records, collected in a standardised case report form by two experienced emergency doctors. Clinical data collected included demographic characteristics, symptoms of infection (such as cough, expectoration, chest pain and weakness) and presence of comorbidities. Laboratory tests included a complete blood count, serum biochemistry, interleukin-6 (IL-6) test, creatine kinase test, lactate dehydrogenase test and tests for the identification of other respiratory pathogens. Chest CT examinations were performed upon ED admission in all patients with

suspected disease. Two certified chest radiologists independently reviewed the CT images while blinded to the names and clinical data of the patients. Not all patients presented at the same infection stage and some data were missing; thus, data could not be integrated.

Statistical analysis

SPSS Statistics 20 (IBM Corp, Armonk, New York) was used for statistical analysis. Continuous variables were assessed as either means and standard deviations or medians with interquartile ranges. For categorical variables, the percentages of patients in each category were calculated.

Results

Epidemiological characteristics

In total, 116 patients with suspected disease were included in the study. Thirty-two patients were confirmed to have COVID-19 and referred to as 'diagnosed patients'; the remaining 84 patients were referred to as 'negative cases'. The median age for diagnosed patients was 46 years, and 35 years for negative cases **(Table 1)**. There was a slight female predominance in both groups. There were 6 (19%) smokers among diagnosed patients and 13 (15%) among negative cases. Seven (22%) diagnosed and 15 (18%) negative cases had hypertension. Four (13%) diagnosed and 6 (7%) negative cases had diabetes. There were no other commonly found comorbidities in either group. There was no specific exposure history common to all patients with suspected disease: 8 (25%) diagnosed patients had visited Wuhan in the previous 2 weeks and 12 (38%) had been exposed to patients with infection in the previous 2 weeks. In negative cases, these numbers were 7 (20%) and 8 (24%), respectively.

None of the patients had a history of exposure to the seafood market in Wuhan. Median time from illness onset to ED admission for all patients with suspected disease was 5 (IQR, 2-7), 5 (IQR,4-7) and 4 (IQR,1-9) for all patients, diagnosed patients and negative cases, respectively.

Clinical manifestation

Fever was observed in 27 (84%) and 57 (68%) diagnosed and negative cases, respectively. Cough was the second most commonly observed symptom, found in 21 (66%) diagnosed patients and in 52 (62%) negative cases. Myalgia or fatigue seemed more common in diagnosed patients (16%) than in negative cases (7%). Although the number of negative cases (17) with expectoration was twice as high as that of diagnosed patients (5), the prevalence of expectoration was 20% and 16%, respectively. Chest congestion was noted in 3 (9%) diagnosed patients and 2 (2%) negative cases. Only 1 (1%) undiagnosed patient had haemoptysis. One (3%) of the diagnosed and 2 (2%) of the negative cases had a headache, while 1 (3%) diagnosed and 1 (1%) negative cases had diarrhoea. Among the 32 diagnosed patients, the average highest temperatures on the 1st and 2nd days in the ED were 37.3±0.8°C and 37.7±0.8°C, respectively; the 1st-day values ranged from 36°C to 39.2°C and the 2nd-day values ranged from 36.4°C to 39.4°C. Among the 84 negative cases, the average highest temperatures on the 1st and 2nd days in the ED were 37.1±0.7°C and 37±0.6°C, respectively; the 1st-day values ranged from 36°C to 39.4°C and the 2nd-day values ranged from 36.2°C to 38.9°C.

Laboratory tests

Laboratory tests on admission showed that 7 (22%) diagnosed and 4 (5%) negative cases had leukopenia (white blood cell count <3.5×109/L), 3 (9%) diagnosed and 16 (19%) negative cases had neutrophilia (neutrophil count >6.3×109/L) and 19 (59%) diagnosed and 24 (29%) negative cases had lymphopenia (lymphocyte count <1.1×109/L) **(Table 2)**. Ten (31%) diagnosed and 29 (35%) negative cases had decreased lymphocyte percentages. Increased D-dimer levels were observed in 3 (9%) diagnosed and 9 (11%) negative cases. In terms of sensitive indicators of infection, increased procalcitonin levels were found only in 5 (6%) negative cases. The erythrocyte sedimentation rate (ESR) was elevated in 16 (50%) diagnosed patients and 16 (19%) negative cases. Increased C-reactive protein (CRP) levels were confirmed in 21 (66%) diagnosed and 40 (48%) negative cases, while IL-6 levels were elevated in 7 (22%) diagnosed and 7 (8%) negative cases. The results of these indicators were not integrated, owing to different infection stages and missing data.

Chest CT findings

Chest CT was performed in all patients with suspected disease upon admission to the ED. Most diagnosed patients (30/32, 94%) and 56 (67%) negative cases had pneumonia **(Table 3)**. Bilateral involvement was seen in most diagnosed patients (29 out of 32, 91%) and 34 (40%) negative cases. Ground-glass opacity (GGO) was identified on chest CT in 15 (47%) diagnosed and 10 (12%) negative cases; Only 4 (13%) of the diagnosed patients had a spider web pattern visible on CT images. Only 1 (3%) diagnosed patient showed spider web and crazy-paving patterns on chest CT. No negative cases developed any of these patterns or symptoms upon

admission. Among some patients with suspected disease, similar CT findings were found in both diagnosed and negative cases upon admission **(Figure 1)**.

Discussion

Anhui is adjacent to Hubei and a large population migrates between the two provinces. As in other regions, secondary transmission of imported cases in the population rapid grow after imposed traffic control in Hubei since 23 January 2020. It is unclear whether the clinical characteristics of suspected cases are similar to those of the original cases in Hubei and whether there are differences in the initial clinical features after secondary transmission. In this study, we reported the initial clinical findings of 116 patients with suspected COVID-19 who presented in EDs and fever clinic for the first time. In total, 32 patients were eventually diagnosed with SARS-CoV-2 infection ('diagnosed patients'). Similar to the confirmed cases in Hubei, the patients who were eventually found to be infected were older than the ones who were not infected: most diagnosed patients were middle-aged or older adults and most negative cases were young or middle-aged patients [14]. However, patients of all age groups have been found to be infected with SARS-CoV-2, and the proportion of older adults among diagnosed and negative cases was similar. Smokers were equally distributed in both groups, indicating that smoking is not a specific risk factor for diagnosed patients.

The median time from illness onset to ED admission was 5 (interquartile range ([IQR]: 2-7), 5 (IQR: 4-7) and 4 (IQR: 1-9) days for all patients, diagnosed patients and negative cases, respectively. Fever (84%), cough (66.0%), myalgia and fatigue (16.0%) were the most common symptoms in

diagnosed patients, while fever (68%), cough (62.0%) and expectoration (20%) were the most common in negative cases. More than half of the diagnosed patients showed a decreased lymphocyte count (59%) and increased ESR (50%) and CRP (66%) levels.

Having initial clinical symptoms, fever being the most common, is the main reason for visiting the ED [15]. In our study, fever and cough were the most common symptoms observed in all patients with suspected disease. Due to the high seasonal incidence of respiratory diseases, these were not atypical manifestations. At the same time, not all patients with suspected disease in our study presented with high temperature when they first visited the ED, despite claims of fever symptoms. This may be attributed to the use of over-the-counter antipyretic drugs. On the 2nd day of clinical quarantine and observation in the ED, febrile symptoms were more accentuated among diagnosed patients, likely due to strict control of antipyretic drugs imposed by physicians, but this observation requires further confirmation. It should also be noted that fever and cough are not present in all confirmed cases, especially outside of Hubei. Similar to previous reports, we found that the initial clinical manifestations tended to be mild in Anhui [11]. There were also diagnosed patients who only presented with myalgia or fatigue, headache, and chest tightness who require additional vigilance from emergency physicians.

A history of exposure is often a reason for suspected patients to visit the ED. A large number of patients with suspected disease visited the ED during the current outbreak to seek confirmation or exclusion of COVID-19, due to potential exposure history and exhibiting clinical symptoms associated with SARS-CoV-2 infection. In our study, more than half of the

diagnosed patients (63%) had a specific history of exposure to Hubei or infected patients in the previous 2 weeks. In other words, 37% of the diagnosed patients did not a specific history of exposure to Hubei. About a third (32%) of negative cases also had a history of exposure, such as staying in Wuhan/Hubei. Therefore, a specific history of exposure to Hubei or infected patients no longer seems to be a requisite for patients with suspected disease to be diagnosed with COVID-19, likely due to the increase in secondary infection of imported patients and potential undefined exposure to infected patients. We found objective clinical findings such as laboratory tests and chest CT findings in diagnosed patients with a definite exposure history were relatively specific than those without exposure history (Table 4). This may account for changes in the characteristics of the virus in secondary infections or potential infections. According to recent reports, SARS-CoV-2 has been detected in the tears and conjunctival secretions of diagnosed patients [16]. Since the exact infection route is still not completely understood, even if patients deny a specific exposure history, potential unknown exposure can interfere with the judgement of ED physicians.

Chest CT is considered a more accurate diagnostic tool when early clinical symptoms and exposure history are not specific [17]. A recent analysis reported that chest CT imaging has higher sensitivity for the diagnosis of COVID-19 in epidemic areas than PCR analysis of swab samples [18]. CT findings are invaluable in the clinical diagnosis of infected patients [19]. In our study, pneumonia was the most common symptom found among diagnosed patients, although it was also found in negative cases. Bilateral involvement and GGO may be the initial characteristics found in chest CT scans of diagnosed patients, consistent with a previous study where GGO

was found to be the main radiological finding distributed in the lower lobes (unilaterally or bilaterally) in the initial stage, up to 4 days after onset of symptoms; however, these characteristics were not unique for diagnosed patients [12,19]. In our study, spider web and crazy-paving patterns were exclusively observed among diagnosed patients; these patients were at a later infection stage, with a median number of 8 days since illness onset.

With the number of cases outside Hubei increasing, it is likely that EDs around the world will continue to receive large numbers of patients with suspected disease for a long time, until the outbreak is effectively controlled. Based on our experience, we recommend strict medical quarantine and observation for all patients with suspected disease until the results of nucleic acid amplification tests from throat swabs, sputum, and even lung lavage are obtained [20]. In under-resourced regions, where nucleic acid amplification tests are lacking or delayed, strict medical quarantine and observation in the ED or dedicated quarantine facilities (until typical clinical symptoms and CT characteristics emerge) may contribute to disease control and prevention of further infection. The psychological impact of quarantine should also be taken into account by physicians [21].

Our study has several limitations. First, it is a retrospective descriptive study with a limited number of patients. Although all suspected patients were enrolled according to the guidelines for the diagnosis and treatment of pneumonia caused by novel coronavirus infection (trial version III) published by the National Health Commission of the People's Republic of China. Suspected patients not covered by the guidelines or not typical may not be admitted, resulting in bias. In addition, the patients were only from

the Anhui province; it is possible that other initial clinical features related to COVID-19 are observed outside Anhui and Hubei. Second, due to different times from illness onset to admission, and incomplete collection of data, there was a lack of rigorous grouping and effective statistical analysis. Moreover, the time since illness onset might be shorter than the observation period of 10 days, which could result in biases of clinical observation characteristics.

Conclusion

The initial clinical features of patients suspected of having COVID-19 in EDs outside Hubei were relatively mild. Definite exposure history to Hubei or infected patients may not be a requisite for diagnosis. Meanwhile, diagnosed patients without definite exposure history tend to show more atypical initial clinical features. Although we found differences in the initial clinical features of patients eventually confirmed to be infected, those differences were not specific and it seems far-fetched to use them as a basis of early clinical diagnosis of COVID-19. For emergency physicians, a combination of epidemiological features, laboratory tests, and chest CT findings may be necessary to confirm the presence of infection. Nevertheless, we recommend strict medical quarantine and observation of all patients with suspected COVID-19 in the ED or dedicated quarantine facilities, irrespective of initial clinical features, especially in under-resourced regions where rapid nucleic acid amplification tests are lacking.

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Conflict of Interest

No conflict of interest to declare.

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Author contribution statement

ZW and XK prepared and drafted the manuscript; XL conceived and designed the study; LH collected the data; XL, ZS and FS read, corrected, and approved the final manuscript. All authors read and approved the final manuscript.

Availability of data and materials

Please contact author for data requests.

Ethics approval and consent to participate

This study was approved by the ethics committee of the First Affiliated Hospital of USTC and Infectious Hospital of the First Affiliated Hospital of USTC. As for this research, an optout of the informed consent, the information disclosure, and an undiagnosed opportunity are guaranteed in the Ethical approval.

Consent for publication

All the patients in this study have given their informed consent for the article to be published.

1. WHO. Clinical management of severe acute respiratory infection when Novel coronavirus (nCoV) infection is suspected: interim guidance. *https://wwwwhoint/publications-detail/clinical-management-of-severe-acute-respiratory-infection-whennovel-coronavirus-(ncov)-infection-is-suspected.* 2020.

2. Zhu N, Zhang D, Wang W, et al. A Novel Coronavirus from Patients with Pneumonia in China, 2019. *N Engl J Med.* 2020;382(8):727-733.

3. Wang D, Hu B, Hu C, et al. Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus-Infected Pneumonia in Wuhan, China. *JAMA.* 2020.

4. Li Q, Guan X, Wu P, et al. Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia. *N Engl J Med.* 2020.

5. Lu R, Zhao X, Li J, et al. Genomic characterisation and epidemiology of 2019 novel coronavirus: implications for virus origins and receptor binding. *The Lancet.* 2020;395(10224):565-574.

6. Chan JF-W, Yuan S, Kok K-H, et al. A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. *The Lancet.* 2020;395(10223):514-523.

7. Pan X, Chen D, Xia Y, et al. Asymptomatic cases in a family cluster with SARS-CoV-2 infection. *The Lancet Infectious Diseases.* 2020.

8. Albarello F, Pianura E, Di Stefano F, et al. 2019-novel Coronavirus severe adult respiratory distress syndrome in two cases in Italy: An uncommon radiological presentation. *Int J Infect Dis.* 2020.

9. Zhang S, Diao M, Yu W, Pei L, Lin Z, Chen D. Estimation of the reproductive number of Novel Coronavirus (COVID-19) and the probable outbreak size on the Diamond Princess cruise ship: A data-driven analysis. *Int J Infect Dis.* 2020.

10. Lai CC, Shih TP, Ko WC, Tang HJ, Hsueh PR. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges. *Int J Antimicrob Agents.* 2020:105924.

11. Xu XW, Wu XX, Jiang XG, et al. Clinical findings in a group of patients infected with the 2019 novel coronavirus (SARS-Cov-2) outside of Wuhan, China: retrospective case series. *BMJ.* 2020;368:m606.

12. Pan F, Ye T, Sun P, et al. Time Course of Lung Changes On Chest CT During Recovery From 2019 Novel Coronavirus (COVID-19) Pneumonia. *Radiology.* 2020:200370.

13. China NHCotPsRo. Diagnosis and treatment of pneumonia caused by novel coronavirus infection (trial version III). *http://wwwnhcgovcn/yzygj/s7653p/202001/f492c9153ea9437bb587ce2ffcbee1fas html.* 2020.

14. Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *The Lancet.* 2020;395(10223):497-506.

15. Guan WJ, Ni ZY, Hu Y, et al. Clinical Characteristics of Coronavirus Disease 2019 in China. *N Engl J Med.* 2020.

16. Xia J, Tong J, Liu M, Shen Y, Guo D. Evaluation of coronavirus in tears and conjunctival secretions of patients with SARS-CoV-2 infection. *J Med Virol.* 2020.

17. Wu J, Wu X, Zeng W, et al. Chest CT Findings in Patients with Corona Virus Disease 2019 and its Relationship with Clinical Features. *Invest Radiol.* 2020.

18. Ai T, Yang Z, Hou H, et al. Correlation of Chest CT and RT-PCR Testing in Coronavirus Disease 2019 (COVID-19) in China: A Report of 1014 Cases. *Radiology.* 2020:200642.

19. Shi H, Han X, Jiang N, et al. Radiological findings from 81 patients with COVID-19 pneumonia in Wuhan, China: a descriptive study. *The Lancet Infectious Diseases.* 2020.

20. Wilder-Smith A, Freedman DO. Isolation, quarantine, social distancing and community containment: pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. *J Travel Med.* 2020.

21. Brooks SK WR, Smith LE, Woodland L, Wessely S, Greenberg N, Rubin GJ The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet.* 2020.

Figure

Figure 1 Transverse chest CT from three patients suspected with COVID-19 on admission in ED. A: CT of A 47-year old woman 3 days after illness onset, bilateral ground glass opacity was showed. She was diagnosed with COVID-19; B: CT of A 33-year old woman 7 days after illness onset, no specific CT findings were showed. She was diagnosed with COVID-19; C: CT of A 21 year old woman 3-days after illness onset, showing ground glass opacity lower lobe of left lung. She was undiagnosed with COVID-19.

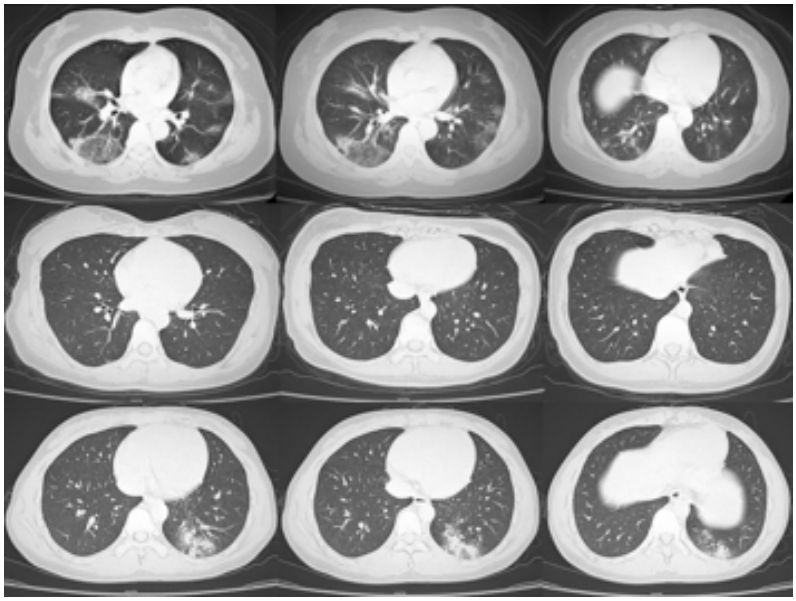

Table 1 Epidemiological characteristics and initial clinical symptoms of 116 patients suspected with COVID-19 in EDs in Anhui.

Characteristics	All suspected patients (n=116)	Diagnosed patients(n=32)	Negative cases(n=84)
Median (interquartile) age (years)	40(27-53)	46(35-52)	35(27-53)
<30	30(26)	5(16)	25(30)
30-49	50(43)	17(53)	33(39)
50-69	26(22)	7(22)	19(23)
≥70	10(9)	3(9)	7(8)
Gender			
Male	56(46)	15(47)	41(46)
Female	65(54)	17(53)	48(54)
BMI	23.4±3.4(15.6-35.4)	24.7±3.2(19.4-30.8)	22.9±3.4(15.6-35.4)
Heart rate	85.7±9.8(66-120)	87.3±9.6(69-112)	85.1±9.9(66-120)
Respiratory rate	19.5±1.6(15-30)	19.7±2.2(15-30)	19.5±1.4(16-25)
Smokers	19(16)	6(19)	13(15)

Comorbidities			
Hypertension	22(19)	7(22)	15(18)
Diabetes	10(9)	4(13)	6(7)
Chronic obstructive pulmonary disease	6(5)	2(6)	4(5)
Cerebrovascular disease	5(4)	1(3)	4(5)
Mental disorder	4(3)	1(3)	3(4)
Coronary heart disease	5(4)	2(6)	3(4)
Tumor	4(3)	2(6)	2(2)
Liver disease	5(4)	2(6)	3(4)
Renal diseases	2(2)	1(3)	1(1)
Exposure history in Wuhan <2 weeks	15(13)	8(25)	7(8)
Exposure history to	32(28)	12(38)	20(24)

infected cases <2 weeks			
Days from illness onset	5(2-7)	5(4-7)	4(1-9)
Initial symptoms			
Fever	84(72)	27(84)	57(68)
Cough	73(63)	21(66)	52(62)
Myalgia or fatigue	11(9)	5(16)	6(7)
Expectoration	22(19)	5(16)	17(20)
Chest stuffiness	5(4)	3(9)	2(2)
Haemoptysis	1(1)	0(0)	1(1)
Headache	3(3)	1(3)	2(2)
Diarrhoea	2(2)	1(3)	1(1)
Highest temperature (°C)			
1st day in ED	37.2±0.7(36.0-39.4)	37.3±0.8(36.0-39.2)	37.1±0.7(36.0-39.4)

2nd day in ED	37.1±0.7(36.2-39.4)	37.7±0.8(36.4-39.4)	37.0±0.6(36.2-38.9)

Note: Data are n(%), n/N (%), mean±SD(minimum-maximum) or and median (IQR), where N is the total number of patients with available data.

Table 2 Laboratory findings in 116 patients suspected with COVID-19 on admission in EDs in Anhui

Laboratory Variables	All suspected patients (n=116)	Diagnosed patients(n=32)	Negative cases(n=84)	Normal range
White blood cell count ($\times10^9$/L)	6.0±2.3(2.1-18.4)	5.3±2.1(2.1-11.1)	6.3±2.3(2.3-18.4)	3.5-9.5
>9.5		1(3)	6(7)	
<3.5		7(22)	4(5)	
Neutrophil count (×109/L)	4.2±2.1(0.8-15.4)	3.7±1.9(1.4-8.7)	4.4±2.2(0.8-15.4)	1.8-6.3
>6.3		3(9)	16(19)	
Lymphocyte count (×109/L)	1.4±0.6(0.2-3.1)	1.1±0.6(0.3-2.8)	1.5±0.6(0.2-3.1)	1.1-3.2
<1.1		19(59)	24(29)	
Lymphocyte percentage	25.9±11.8(3.4-56.8)	24.6±10.8(7.5-51.1)	26.4±12.2(3.4-56.8)	20-50

(%)				
<20		10(31)	29(35)	
Haemoglobin (g/L)	136.3±18.8(62-168)	135.1±23.9(78-168)	136.5±16.7(62-162)	115-150
Platelet count (×109/L):	187.9±64.2(7-383)	157.2±54.5(83-284)	199.6±64.1(7-383)	125-350
D-dimer (mg/L)*	0.3±0.4(0-3.8)	0.2±0.2(0.01-0.9)	0.3±0.5(0.01-3.8)	0.01-0.55
>0.55		3(9)	9(11)	
<0.55		29(91)	62(74)	
Alanine aminotransferase (U/L)	25.2±20.4(6-171)	30.1±31.2(8-171)	23.3±14.0(6-75)	7-40
Aspartate aminotransferase (U/L)	25.7±11.9(11-79)	31.1±15.8(15-79)	23.7±9.5(11-73)	12-40
Potassium (mmol/L)	4.0±0.4 (3.1-5.1)	4.0±0.4(3.2-5.1)	4.0±0.4(3.1-5.1)	3.5-5.3
Sodium (mmol/L)	137.7±3.2(123-153)	136.0±3.7(123-142)	138.4±2.8(129-153)	137-147
Creatine (μmol/L)	67.0±17.8(33-157)	70.7±19.6(33-117)	65.7±17.1(35-157)	41-81
Creatine	132.7±94.2(22	132.6±118.1	132.8±78.3(22	22-26

kinase (U/L)	-570.1)	(30.4-570.1)	-443.1)	9
Lactate dehydrogenase(U/L)	213.0±80.0(125-502)	246.5±82.1(136-468)	193.5±72.2(125-502)	120-250
Procalcitonin (ng/mL)*	0.2±0.2(0.01-1.63)	0.1±0.1(0.01-0.28)	0.2±0.2(0.01-1.63)	0-0.5
>0.5		0(0)	5(6)	
<0.5		31(97)	68(81)	
Erythrocyte sedimentation rate (mm/h)*	30.8±31.8(1-140)	42.4±33.6(6-119)	24±29(1-140)	0-20
>20		16(50)	16(19)	
<20		10(29)	29(35)	
CD4/CD8	1.7±1.3(0.4-11.3)	1.5±0.6(0.4-2.9)	1.8±1.6(0.6-11.3)	1.10-1.72
IL-6 (pg/ml)*				<7
>7		7(22)	7(8)	
<7		19(59)	10(12)	
C-reactive protein (mg/L)*	19.3±27.0 (0.2-125.6)	20.7±24.0(0.5-112)	18.7±28.2(0.2-125.6)	0-8

>8	21(66)	40(48)
<8	11(34)	44(52)

Note: Data are n(%), n/N (%), mean±SD(minimum-maximum) or and median (IQR), where N is the total number of patients with available data. * Percentages do not total 100% owing to missing data.

Table 3 Chest CT findings compare in 117 patients suspected with COVID-19 on admission in EDs in Anhui.

CT Findings	Diagnosed patients(n=32)	Negative cases(n=84)
Pneumonia	30(94)	56(67)
Bilateral involvement	29(91)	34(40)
Ground glass opacity	15(47)	10(12)
Consolidation	4(13)	7(8)
Spider web sign	4(13)	0(0)
Crazy-paving pattern	1(3)	0(0)
Lymph node enlargement	1(3)	4(5)
Pleural effusion	2(6)	2(2)

Note: Data are n(%)

Table 4 Objective clinical features compare in suspected patients with or without exposure history on admission in EDs in Anhui.

Objective features	Diagnosed patients(n=32)		Negative cases(n=84)	
	With exposure history(n=20)	Without exposure history(n=12)	With exposure history(n=27)	Without exposure history(n=57)
White blood cell count ($\times 10^9$/L)				
>9.5	1(3)	0(0)	2(2)	4(5)
<3.5	4(13)	3(25)	2(2)	2(2)
Lymphocyte count (×109/L)				
<1.1	14(44)	5(16)	11(13)	13(15)
Lymphocyte percentage (%)				
<20	7(22)	3(25)	18(21)	11(13)
D-dimer (mg/L)*				
>0.55	1(3)	2(6)	3(4)	3(4)

Procalcitonin (ng/mL)*				
>0.5	0(0)	0(0)	2(2)	2(2)
C-reactive protein (mg/L)*				
>8	14(44)	7(22)	18(21)	22(26)
Pneumonia	19(59)	11(32)	26(31)	30(36)
Bilateral involvement	18(56)	11(32)	21(25)	13(15)
Ground glass opacity	10(31)	5(16)	4(5)	6(7)

Note: Data are n(%)