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LETTER TO THE EDITOR

The course of clinical diagnosis and treatment of a case infected with coronavirus disease 2019

To the Editor,

A pneumonia outbreak caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which was first identified in Wuhan, present a major threat to public health since December 2019.[1] There are more than 50 000 confirmed cases and 1300 dead cases worldwide for the past month or more, because of the occurrence of a highly contagious performance.[2] Patients had clinical manifestations of fever, cough, shortness of breath, diarrhea, vomiting, and so on.[3,4] We herein report a case of SARS-CoV-2, describe the epidemic history, clinical diagnosis, and the changes of clinical parameters during the combination therapy.

A 47-year-old man came to the People's Hospital in Wuwei with a 7-day history of unexplained fever, cough and bosom frowsty on 21 January 2020. The patient had a chief complaint that he had a fever (up to a maximum of 39.3°C), cough productive of white phlegm, stuffy and runny noses, vertigo, fatigue, chest tightness, and nausea, while he had no chest pain, sore throat or breathing problems. He disclosed that he had returned to Wuwei city on January 18 from Wuhan city by car. The patient with a history of hypertension grade 2 and type 2 diabetes has been smoking since he was 27 years old and reported no alcohol abuse. Nasopharyngeal swab specimens were collected on January 23, 29, and 30 according to the CDC guidelines.[5] After putting nasopharynx swab into the nasal cavity, twist it on the nasopharynx mucosa, keep it for 10 to 15 seconds, and then remove it, and finally, insert it into a sterile tube containing viral transport medium. The specimens were examined by RT-PCR. Three gene targets including RdRP, E and N genes were detected. The positive expression (CT value ≤ 43) of the three genes, or RdRP and E genes, or RdRP and N genes indicates SARS-CoV-2 is positive.[6] Other examinations were also performed as well. The study was approved by the Ethics Review Committee of the First Affiliated Hospital of Wanan Medical College, and adhered to the tenets of the Declaration of Helsinki. Written informed consent was obtained from the patient for using clinical records in this study.

Based on his primary laboratory report, chest radiograph, clinical and epidemiologic information, the patient received the treatment of interferon-alpha and methylprednisolone. However, he was transferred to the First Affiliated Hospital of Wannan Medical College, Wuhu, China on January 23, because of acute exacerbation of clinical symptoms including expiratory dyspnea, poor diet, and lethargy. The laboratory tests were shown in Table 1 (day 0). The results indicated the patient with stable vital signs, significantly decreased lymphocytes and increased c-reactive protein but slightly elevated fibrinogen, neutrophil, lactic dehydrogenase, and fibrinogen. A computed tomography (CT) lung imaging was reported as showing the multiple patchy high-density shadows scattered mainly in the border regions of lungs which were solid changes in which the air bronchogram sign was seen or ground-glass opacifications changes, as well as slightly thickened pleura (Figure S1a). Combination therapy was initiated with lopinavir and ritonavir tablets (800/200 mg daily), methylprednisolone (40 mg daily), recombinant human interferon alfa-2b (10 million IU daily), ambroxol hydrochloride (60 mg daily) and moxifloxacin hydrochloride (0.4 g daily), to inhibit the virus replication, relieve asthma, resolve phlegm, and implement the empirical antibiotic treatment. In addition, the high flow humidification oxygen inhalation therapy was used for preventing acute hypoxic respiratory failure. The treatment of blood glucose, blood pressure, and rehydration therapy was performed. On the second day of treatment, the patient's temperature had low-grade intermittent fevers (range from 36.0°C to 37.2°C). With the exception of occasional chest tightness and shortness of breath, the other symptoms including cough productive of white phlegm, stuffy and runny noses, vertigo, and fatigue were improved. On day 3 of treatment, methylprednisolone was reduced to 20 mg daily and withdraw on day 5. In addition, the high flow humidification oxygen inhalation therapy was removed until the 8th day of treatment, based on the markedly improved respiratory function. According to the persistent negative results of SARS-CoV-2 on days 6 and 7, as well as the lung lesions partially absorbed (Figure S1b), the patient was discharged on day 10. During treatment, the patient's body temperature, pulse, and respiratory rate had slight fluctuation (Figure S1c), and the laboratory results got better improvement, especially lymphocyte count (Table 1; day 8).

In our patients, laboratory tests are necessary, especially the total lymphocyte count (TLC) which shows a significant decline. After recovery, the TLC reaches the normal level. Chest CT examination combined with the detection of SARS-CoV-2 RNA is helpful for the diagnosis.[7] Moreover, the patient, who failed to respond to methylprednisolone and interferon therapy in other hospitals, received additional lopinavir and ritonavir tablets therapy in our hospital and got a quick improvement of the clinical symptoms.

TABLE 1 Clinical laboratory results on days 0, 4, and 8 of treatment

Items	Day 0	Day 4	Day 8	Reference range
Body temperature (°C)	39.3	36.8	36.1	36.1-37.0
Pulse, beats/min	105	74	69	60-100
Respiratory rate, breaths/min	23	19	18	12-20
Blood pressure, mm Hg	157/96	130/70	125/70	90-140/60-90
White blood cell, 10^9/L	8.7	9.4	9.2	4-10
Neutrophil (%)	89.5	88.1	80.4	50-75
Absolute neutrophil, 10^9/L	7.8	8.3	7.4	2.0-7.5
Lymphocyte (%)	4.1	4.8	11.6	20-40
Absolute lymphocyte, 10^9/L	0.4	0.5	1.1	0.8-4.0
C-reactive protein, mg/L	84	5.4	5.9	0-10
Procalcitonin, ng/mL	0.24	0.1	0.12	0-0.5
PH value	7.441	7.429	7.465	7.350-7.450
Oxygen saturation (%)	91.2	98.0	97.7	93.0-98.0
Aspartate aminotransferase, U/L	19	16	···	15-40
Troponin, ng/mL	0.01	···	···	0-0.03
Lactic dehydrogenase, U/L	230	204	···	135-225
Creatine kinase, U/L	62	54	···	38-174
Fibrinogen, g/L	7.98	5.15	3.04	1.8-4.0
D-dimer, ug/mL	0.19	0.25	0.47	0-0.5
Glucose, mmol/L	16.38	12.5	8.4	3.9-6.1
Anaerobic blood culture	Negative	···	···	···
2019-2019-nCoV	Positive	···	···	···
Influenza A	Negative	···	···	···
Influenza B	Negative	···	···	···
Parainfluenza	Negative	···	···	···
M.pneumoniae	Negative	···	···	···

CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

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