

Clinical Characteristics on 25 Discharged Patients with COVID-19 Virus Returning

Jing Yuan*, Shanglong Kou*, Yanhua Liang, JianFeng Zeng, Yanchao Pan[#], Lei Liu[#]

*Jing Yuan and Shanglong Kou contributed equally.

Diagnosis and Treatment of Infectious Diseases Research Laboratory, Shenzhen Third People's Hospital, Shenzhen 518112, China.

Corresponding Authors: Yanchao Pan, PhD (panychao@126.com) and Lei Liu, MD (liulei3322@aliyun.com),

Diagnosis and Treatment of Infectious Diseases Research Laboratory, Shenzhen Third People's Hospital, Shenzhen 518112, China.

Abstract

Here we report the clinical features of 25 discharged patients with COVID-19 recovery. Our analysis indicated that there was a significant inverse correlation existed between serum D-Dimer level and the duration of antiviral treatment, while lymphocyte concentration significantly positively correlated with the duration of virus reversal.

Introduction

Since Dec 8th 2019, many cases has been reported by investigators who described the clinical characteristics of hospitalized patients with COVID-19 infection¹⁻³. We noticed the recent report⁴ from Lan et al. that 4 medical staff were still virus carriers after recovery from COVID-19 infection. Here we gave a report on 25 discharged patients with their medical record review and further analysis.

Methods

All these 25 patients with COVID-19 infection were once hospitalized from Jan 23th 2020 to Feb 21th 2020. They all met the following criteria of hospital discharge in China: (1) more than 3 days of normal; (2) significant reduction of respiratory symptoms; (3) substantial improvement over conventional chest radiography detection; (4) consecutively twice negative results of RT-PCR testing with an interval for at least 1 day. Considering the risk of reinfection, they were all self-segregating at home for further observation. Real-time RT-PCR detection were performed as described previously⁵. Other demographic, clinical, radiologic and laboratory findings were extracted from the electronic medical records of the patients. The study was approved by Shenzhen Third People's Hospital Ethics Committee and the informed consent was waived.

Results

25 discharged patients with COVID-19 infection were back hospitalized because of the virus mRNA recurrence. The median age of these 17 females and 8 males was 28 years (16.25~42), including 6 children under 12 years old. 21 of them had no comorbidity and 22 patients had the history of residing in Hubei province. Besides, 24 of them were once non-severe patient with the common symptoms of fever (17/25) and cough (14/25) at onset. Overall, with 14 (13-18.5) days of the hospital stay, as well as 13 (10.5-16.5) days of antiviral treatment, the patients all discharged in 2 (1-3.8)

days after two consecutive negative results on virus mRNA RT-PCR detection, as well as improvements on chest computed tomography (CT) evidence.

With 14/25 of cloacal swab samples and rest of Nasal Swabs or oropharynx swab samples testing, these patients presented the repeated positive COVID-19 mRNA within 3 (2-7) days after the hospital. Notably, the median time from their last negative result to turning positive was 6 (4-10) days. These patients were then hospitalized again and continued the quarantine protocol. All these patients were asymptomatic and chest CT scanning indicated that 12 of them even showed improvement while rest of them represented with no obvious change compared with previous images. With a few days of prophylactic intervention with Chinese herbal medicine, the RT-PCR results of virus mRNA detection were all turning to negative in both nasopharyngeal swab and cloacal swab samples.

Furthermore, correlation analysis indicated that there was a significant inverse correlation existed between serum D-Dimer level and the duration of antiviral treatment ($r=-0.637$, $p=0.002$), while lymphocyte concentration significantly positively correlated ($r=0.52$, $p=0.008$) with the duration of virus reversal. These implied that the imperfect antiviral therapy probably was responsible for the recurrence of COVID-19 virus.

Discussion

These 25 patients with COVID-19 infection all met the criteria for hospital release from quarantine, while the RT-PCR testing then conversed to positive without symptoms after 2 to 13 days. These asymptomatic carriers brought more challenges to the manager and control of COVID-19 epidemic in China and any other affected countries. We further got a glance at the factors associated with COVID-19 clearance. Due to the lack of antiviral drugs with confirmed efficiency on COVID-19, it is possible that some immunological parameters could be used as additional indicators to properly assess the virus activity and the needs for prolonged quarantine in asymptomatic patients. Further case-control study and cohort study will be needed to pursue the indication role on that.

Author Contributions: Dr. Yanchao Pan and Lei Liu had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. Acquisition, analysis, or interpretation of data: Jing

Yuan, Yanhua Liang, Jianfeng Zeng. Concept and design: Jing Yuan, Lei Liu. Drafting of the manuscript: Yanchao Pan, Shanglong Kou. Statistical analysis: Yanchao Pan, Shanglong Kou.

Conflict of Interest Disclosures: All authors declare that they have no conflict of interest exists.

Funding: This work was supported by Sanming Project of Medicine in Shenzhen (SZSM201512005).

Reference:

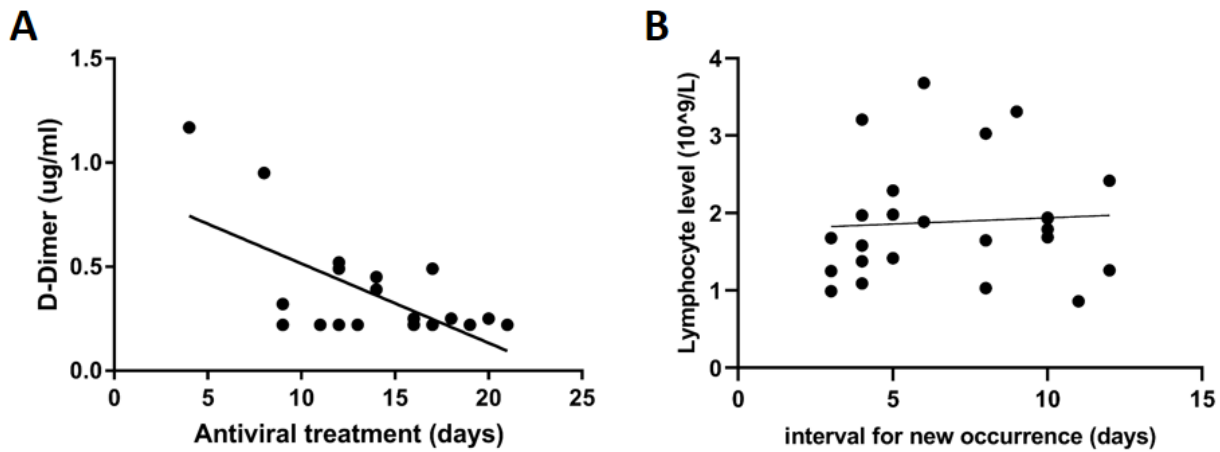
1. Wang D, Hu B, Hu C, et al. Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus-Infected Pneumonia in Wuhan, China. *JAMA* 2020.
2. Li Q, Guan X, Wu P, et al. Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia. *N Engl J Med* 2020.
3. Chan JF, Yuan S, Kok KH, et al. A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. *Lancet* 2020;395:514-23.
4. Lan L, Xu D, Ye G, et al. Positive RT-PCR Test Results in Patients Recovered From COVID-19. *JAMA* 2020.
5. Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet* 2020;395:497-506.

Table 1. Baseline Characteristics of 25 Discharged Patients with COVID-19 return.

Age Range		Last hospital stay	antivirus treatment durations	Time from negative PCR test to discharge	Time from positive again to last negative	Time from positive again to last discharge	Time from positive again to second hospitalization
≤20	Average Days	15	13.33	3.67	8.33	4.67	1.33
	SD	2.828	3.933	2.503	5.61	4.227	1.506
	N	6	6	6	6	6	6
20-40	Average Days	15.23	13.46	2.17	6.77	5.92	1.85
	SD	3.345	4.313	1.528	3.395	4.716	2.115
	N	13	13	12	13	13	13
41-60	Average Days	16	13.5	2.83	7.5	4.67	2.67
	SD	5.831	4.461	1.722	3.209	2.944	2.066
	N	6	6	6	6	6	6
Total	Average Days	15.36	13.44	2.71	7.32	5.32	1.92
	SD	3.807	4.083	1.876	3.859	4.13	1.956
	N	25	25	24	25	25	25

Data are given as mean ± standard deviation (SD).

Figure. Correlation analysis for lymphocyte count and duration of virus reversal, as well as serum D-Dimer level and duration of antiviral treatment.



Correlation analysis on serum D-Dimer level and the duration of antiviral treatment ($r=-0.637$, $p=0.002$) (A), as well as correlation between lymphocyte concentration significantly and the duration of virus reversal ($r=0.52$, $p=0.008$) (B).