

LETTER TO THE EDITOR

Laboratory Findings in SARS-CoV-2 Infections in Zigong, China: Key Points for Serum Prealbumin

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In December 2019, a pneumonia caused by novel coronavirus (SARS-CoV-2) appeared in Wuhan, China and rapidly spread from Wuhan to across the world [1]. Human coronavirus is one of the main pathogens of respiratory infection. Two human coronaviruses (SARS-CoV and MERS-CoV) caused severe respiratory syndrome in the two last decades [2]. For SARS-CoV-2, at data cutoff in this study, more than 70,000 people have been infected with a mortality rate of 2.3% in China. WHO named this disease caused by SARS-CoV-2 as Corona Virus Disease (COVID-19) on February 11, 2020. Transmission rates are not clear for SARS-CoV-2. Nevertheless, the rapid human-to-human transmission among close contacts is an important feature in COVID-19. Huang et al. first revealed that common clinical manifestations included fever, dry cough, dyspnea, fatigue, myalgia, normal or decreased leukocyte counts, and radiographic evidence of pneumonia. Organ dysfunction (e.g., shock, acute respiratory distress syndrome [ARDS], acute cardiac injury, and acute kidney injury) and death can occur in severe cases [3]. This study aims to report the key points of laboratory findings for patients with COVID-19. By Feb 16, 2020, 9 patients had been identified as having SARS-CoV-2 infection in Zigong, China. All cases had an epidemiological exposure to high-risk populations who live in or were from Hubei, China. We first reported that serum prealbumin was decreased markedly in most patients

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Table 1. Laboratory findings (PCT) of 9 patients with COVID-2019.

Case No.	1	2	3	4	5	6	7	8	9
Detection order									
1st	0.04	0.17	0.05	0.04	0.06	0.04	0.1	0.04	0.05
2nd	0.04	0.15	0.04	0.07	0.04	0.05	0.09	0.04	0.06
3rd	0.04	0.39	0.06	0.07	0.04	0.05	0.07	0.04	0.06
4th	0.05	0.05	0.4	0.05	0.05	0.04	0.05	0.05	0.05
5th	0.03	0.34	0.09	0.04	0.05	0.05	0.03	0.05	
6th	0.04	0.49	0.46		0.05	0.04		0.05	
7th	0.03	0.48	0.5		0.03	0.05		0.06	
8th	0.03	0.34	0.44		0.03	0.04		0.04	
9th	0.03	0.14	0.37		0.04	0.04			
10th		0.13							
11th		0.12							
12th		0.12							
Mean	0.04	0.24	0.27	0.05	0.04	0.04	0.07	0.05	0.06

Note: PCT Normal Range - (0 - 0.5 ng/mL).

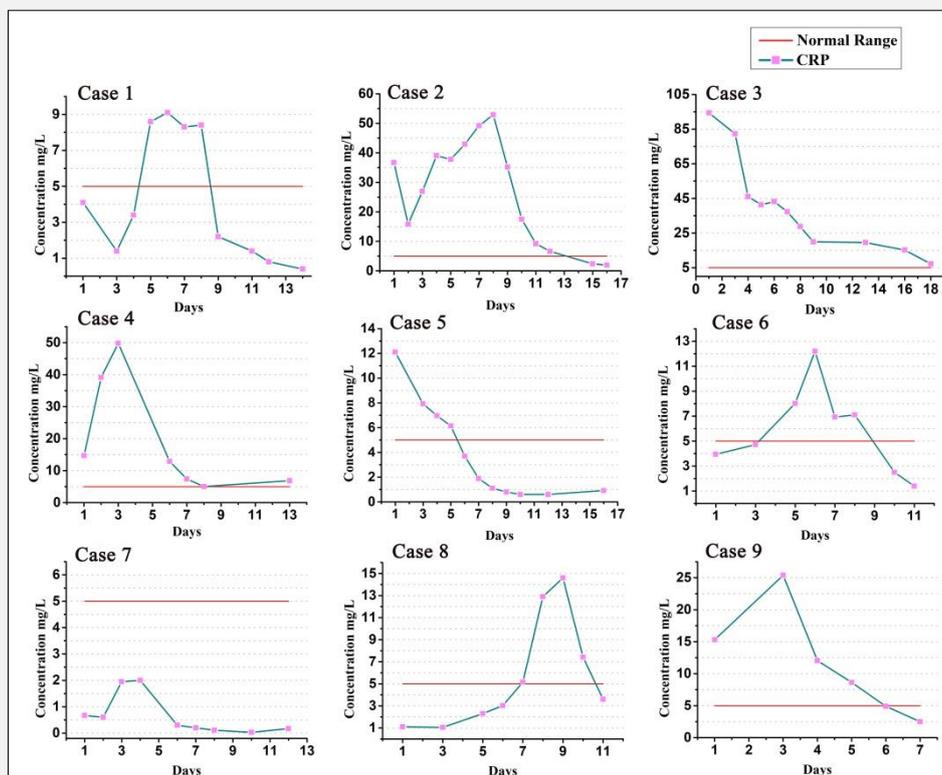


Figure 1. The values of CRP in 9 patients with SARS-CoV-2 infection.

X axis represents the days after admission.

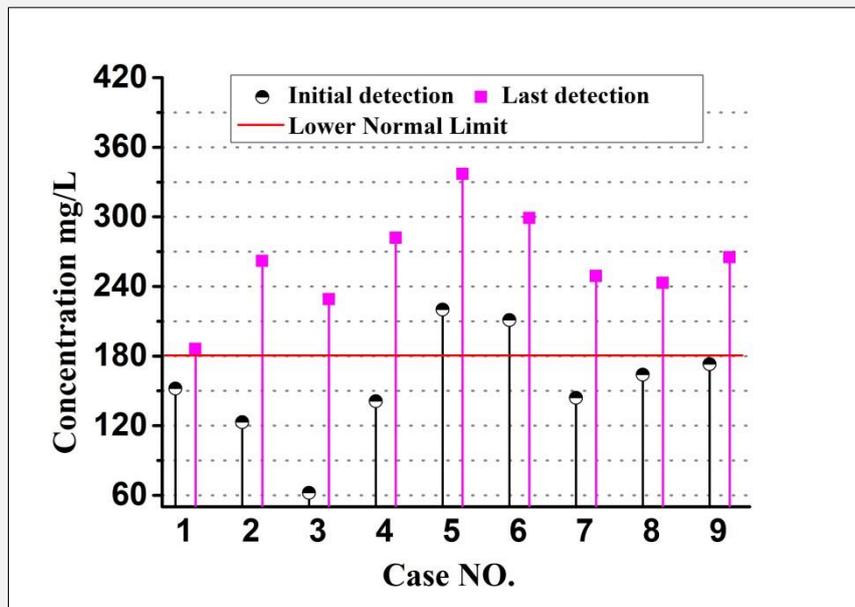


Figure 2. The values of serum prealbumin in 9 patients with SARS-CoV-2 infection.

The initial detection and last detection values of each patient have shown. X axis represents the patient's case number.

and recovered soon after the virus turned negative. Although, numerous laboratory abnormalities can occur in COVID-19, the key points of laboratory findings for COVID-19 have not been fully revealed. In this study, we analyzed the abnormal laboratory findings in patients infected with SARS-CoV-2 in the Zigong area. Regarding the infection index, the values of procalcitonin were all in normal range during hospitalization in our patients (Table 1). This result suggests that normal procalcitonin was a typical hallmark for SARS-CoV-2 infection patients without co-infections. Serum C-reactive protein (CRP) levels clearly above the normal range in most patients during hospitalization and the change of CRP showed a good tendency related to COVID-19 progression (Figure 1). These findings suggest that CRP had a sensitive response to SARS-CoV-2 and may act as a reliable indicator for COVID-19. Prealbumin, a negative acute phase protein, had a significant change in the early stage of infection. We analyzed the prealbumin values in our patients on admission and after the virus turned negative. We found that the prealbumin was clearly decreased in most patients on admission, and all increased markedly after the virus turned negative compared with initial detection (Figure 2).

Notably, although CRP was normal in some patients on admission, the prealbumin was decreased markedly. Prealbumin, also known as transthyretin (TTR), is mainly synthesized by hepatocytes. It is reported that

prealbumin could be consumed as a raw substrate for inflammation repair [4]. Recent studies indicate that COVID-19 was typically characterized by pulmonary infection in the early stage. However, the specific receptor of SARS-CoV-2, ACE2, has been found highly expressed in liver [5]. As a sensitive indicator for hepatic injury, we suspect that prealbumin may be a more specific and sensitive indicator for SARS-CoV-2 infection. For one case (case 7), even without CRP change during hospitalization, the prealbumin was decreased markedly on admission and recovered soon after virus turned negative. These findings suggest that prealbumin has a potential to be a good indicator for the early diagnosis of COVID-19, even with more sensitivity than CRP.

To some extent, combined with common symptoms, prealbumin may act as an assistant indicator for the early diagnosis and prognostic assessment of COVID-19. However, the reliability needs more comprehensive study with more clinical data in larger studies.

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Data Availability:

The data used to support the findings of this study are available from the corresponding author upon request.

Author Contributions:

Xiaolong Guo, Weiping Liu, Jianquan Zhong, Ming-gang Yin collected data and wrote the manuscript. Chengli Zhang contributed to the analysis of data and edited the manuscript. Chengli Zhang had full access to all the data and takes responsibility for the integrity and availability of the data.

Declaration of Interest:

On behalf of all authors, the corresponding author states that there is no conflict of interest.

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