

# A Case Report of Prolonged COVID-19 Positive RT-PCR for five months

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## Case Report

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# Abstract

**Background:** The COVID-19 gold standard assessment tool remained the RT-PCR of upper respiratory tract specimen extracted by the nasopharyngeal swab. A positive result would dwindle through a three-week course and, eventually, would be undetectable. The most prolonged period of detectable viral RNA was 37 days. Besides, COVID-19 RT-PCR remained positive for 74 days in a patient suffering from lymphoma

**Case presentation:** In this study, we have presented a 56-year-old Persian male patient, a known case of lymphoma since 2015, who experiences many episodes of chemotherapy with a five-month positive RT-PCR COVID-19 laboratory test and finally was intubated and then died of opportunistic pulmonary infections.

**Conclusion:** COVID-19 patients who have concurrent lymphoma failed to remove the virus thoroughly, despite providing appropriate treatment regimens.

## Background

Nowadays, the COVID-19 gold standard assessment tool remained the RT-PCR of upper respiratory tract specimens extracted by the nasopharyngeal swab. A positive result would dwindle through a three-week course and, eventually, would be undetectable (1).

In patients with lower cycle threshold and severe pattern of COVID-19, RT-PCR could remain positive for a more extended period. In some patients, a detectable positive RT-PCR for a period of longer than six weeks was reported (1). The most prolonged period of detectable viral RNA was 37 days (2). Besides, COVID-19 RT-PCR was remained positive for 74 days in a patient who has lymphoma (3).

## Case Presentation

The patient is a 56-year-old Persian male, a known case of lymphoma since 2015, who experiences many episodes of chemotherapy. The last episode was on March 18, 2020. On March 23, 2020, he visited the hospital complaining of symptoms, including anorexia, fever, diarrhea, headache, and myalgia; the O<sub>2</sub> saturation was desirable (95%), and no complaining of cough and dyspnea existed. A nasopharyngeal/Oropharyngeal specimen, with the impression of COVID-19 infection, yielded a positive result. The cycle threshold for RT-PCR was 30. At the same time, the CT-scan reported "bilateral multilobular peripherally ground-glass opacities".

A seven-day regimen of hydroxychloroquine was initiated. Two weeks later, on April 5, 2020, to properly decide for chemotherapy reinitiating, a nasopharyngeal specimen was extracted using a swab. With a Cycling threshold of 30, the RT-PCR yielded a positive result once more. Due to great general condition, O<sub>2</sub>

saturation of 94%, and lack of any further progression in CT-findings, no drug regimens were prescribed, and the patient underwent supportive treatment. Meanwhile, the patient did not receive any medication for his underlying disease. The laboratory findings revealed a positive quantitative CRP, Hemoglobin=10.9, platelet=101,000, normal liver, and renal function tests.

On May 4, the patient visited the hospital once more with the complaint of cough, fatigue, and myalgia. A RT-PCR was requested, which yielded a positive result, again. No progressive changes were reported in CT-scan findings compared to the previous one. O2 saturation was 93%. Due to the patient's stability, an outpatient five-day regimen of Interferon-beta was initiated.

A few weeks later, on June 21, the patient visited the hospital complaining of intermittent cough and dyspnea. The CT-scan demonstrated "generalized peripheral and peri-bronchial ground-glass opacities with increased thickness of interlobular septa. Meanwhile, the O2 saturation was 88%, which led to patient hospitalization. A RT-PCR of nasopharyngeal secretions revealed a positive COVID-19 result, using a cyclic threshold of 30. The physician started a combination regimen of Atazanavir/ Ritonavir (300/100) accompanying with a corticosteroid. Further laboratory evaluation was performed, which is depicted in **Table 1.**

<b>Laboratory test</b>	<b>result</b>	<b>Normal range</b>
prolactin	<0.05	<0.05 ng/ml
Ferritin	692	12-300 ng/ml
D-dimer	0.2	<0.4mcg/ml
Alkaline Phosphatase	535	20-140 IU/L
calcium	7.8	8.5-10.5 mg/dl
Phosphate	3.5	3.5-4.5 mg/dl
Sodium	131	135-145 mg/dl
Potassium	4.4	3.5-5.2 mmol/L
Magnesium	1.7	1.7-2.2 mg/dl
INR	0.99	<1.1
CRP	37	<10 mg/L
Creatinine	0.94	0.8-1.2 mg/dl
Cholesterol	119	<120 mg/dl
TAG	124	<150 mg/dl
AST	34	5-40 U/L
ALT	31	5-40 U/L

Despite corticosteroid + Atazanavir treatment regimen, the patient did not reveal any side of remission, and even clinical manifestations were exacerbated, including fatigue and myalgia. O<sub>2</sub> saturation decreased to 85%. RT-PCR showed a positive result even with a higher load (Cyclic threshold=19).

At this time, the management team decided to start the Remdesevir regimen. After seven days of treatment, the patient's general condition was desirable and stable; chest CT revealed no further progression, and the cyclic threshold increased. In this time, the laboratory findings consisted of WBC 6900, Hemoglobin 11.1, Platelet 70,000, FANA 0.11, Ferritine 441.26.

Immunological investigation yielded a negative result for both IgM and IgG. Eventually, due to a lack of clinical improvement, the head of the management team decided to perform plasma therapy. After plasma therapy, not only no clinical improvement was observed, but also the pulmonary involvement was exacerbated.

With the impression of bacterial and opportunistic infections, the anti-bacterial and anti-fungal treatment regimen was initiated. Unfortunately, on August 5, 2020, the patient was expired after a five-month positive RT-PCR. Interestingly, the RT-PCR remained positive until the last moment. The last cycle threshold was 17.

## Discussion And Conclusion

In this study, we have presented a 56-year-old Persian male patient, a known case of lymphoma since 2015, who experiences many episodes of chemotherapy before getting infected to COVID-19, and afterwards, with a five-month positive RT-PCR COVID-19 laboratory test who finally was intubated and then died of opportunistic pulmonary infections. The patient suffered from three episodes of clinical deterioration. In this case report, the patient's clinical deterioration and chest CT involvement were conspicuously associated with high coronal viral load.

Reviewing the literature, it seems some COVID-19 patients who have concurrent lymphoma failed to remove the virus thoroughly, despite providing appropriate treatment regimens (3, 4). Accordingly, in this study, we concluded that due to underlying immunological disorder, the immune system were never able to remove the virus thoroughly, despite proper antiviral prescription; hence, death was an inevitable outcome of multiple viral reactivations.

Moreover, based on the decreased Cyclic Threshold at the times of clinical deterioration, it is believed that viral reactivation was the responsible agent for clinical exacerbation. Eventually, we believe that a disturbance in viral clearance, especially in immunological suppressed conditions such as lymphoma, inevitably leads to viral replication. Further studies are need to investigate the association of the immunological signalling pathway disturbance and COVID-19 clinical manifestation.

## Abbreviations

**COVID-19:** Corona Virus Disease 2019; **WBC:** White Blood Cells; **RT-PCR:** Reverse Transcriptase Polymerase Chain Reaction; **CT:** Cyclic Threshold; **CRP:** C-Reactive Protein;

## Declarations

### **Ethical approval and consent to participate:**

All ethical and moral issues have been considered in this study. Written informed consent was obtained from the patient's next of kin for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

### **Consent for publication:**

Written informed consent for publication was obtained from the patient's next of kin for publication of this case report and any accompanying images. proof of consent to publish from study participants can be requested at any time.

### **Availability of Data and materials:**

All essential data have been included in this manuscript.

### **Competing Interests:**

Authors declare that they have no conflicting interests.

### **Funding:**

None

### **Author contribution:**

Z.S was the head manager of the team. A.S helped in patient management and manuscript drafting. A.Kh contributed in manuscript drafting, reviewing and submitting. all authors have read and approved the manuscript.

### **Acknowledgement:**

We acknowledge all those who were involved in this study.

## References

1. WHO. clinical management od COVID-19 patients: WHO; 2020. Available from: <https://www.who.int/publications/i/item/clinical-management-of-covid-19>.
2. Sethuraman N, Jeremiah SS, Ryo A. Interpreting diagnostic tests for SARS-CoV-2. Jama. 2020.

3. Karataş A, İnkaya AÇ, Demiroğlu H, Aksu S, Haziyev T, Çınar OE, et al. Prolonged viral shedding in a lymphoma patient with COVID-19 infection receiving convalescent plasma. *Transfusion and Apheresis Science*. 2020:102871.
4. Di Ciaccio P, McCaughan G, Trotman J, Ho PJ, Cheah CY, Gangatharan S, et al. Australian and New Zealand consensus statement on the management of lymphoma, chronic lymphocytic leukaemia and myeloma during the COVID-19 pandemic. *Internal Medicine Journal*. 2020.

## Figures

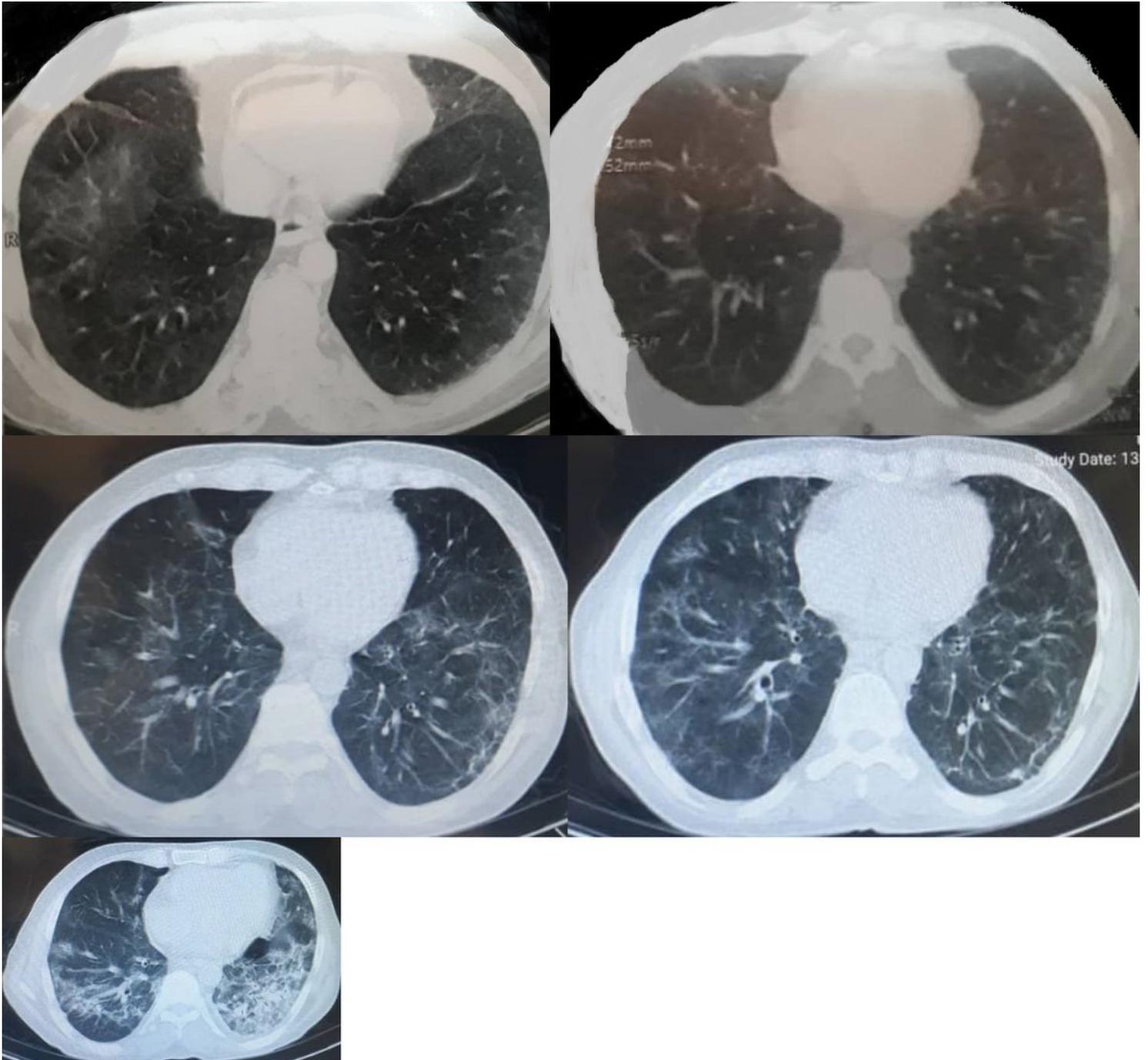


Figure 1

Chronological changes in patient's CT-scan. (Top left: a- 23 March, Top right: b- 5 April, Middle left: c- 4 May, Middle right: d- 21 June, Bottom: 5 August)