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Case Report

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A Case of Covid ILD with Significant Response to Systemic Steroids

Mujtaba Azhar Siddiqui[1*], Unsa Khan[1], Talha Ghazi[2] and Asadulla Mohammed[3]

[1]Dow University of Health Sciences, Karachi, Pakistan
[2]Corewell Health, Michigan, USA
[3]Lung Allergy and Sleep Medicine Centre

***Correspondence:** Mujtaba Azhar Siddiqui, Dow University of Health Sciences, Karachi, Pakistan, E-mail: mujtabaazhar051@gmail.com;
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Abstract

The COVID-19 pandemic has resulted in a wide range of clinical presentations, with some patients experiencing persistent symptoms referred to as long haulers. One of the pulmonary complications observed in such patients is Interstitial Lung Disease (ILD). We present the case of a 54-year-old male with a history of childhood asthma who developed ILD following a severe COVID-19 infection. The patient initially required hospitalization, mechanical ventilation and experienced multiple complications including pneumothorax and pneumonia. After discharge, High-Resolution Computed Tomography (HRCT) and Pulmonary Function Tests (PFTs) revealed findings consistent with ILD, specifically a non-UIP pattern on HRCT.

Given the severity of symptoms and lack of definitive treatment guidelines at the time, the patient was started on systemic corticosteroids Prednisone 50 mg daily for two weeks, followed by a taper of 5 mg every five days to a maintenance dose of 10 mg daily. The patient was closely followed in our pulmonary clinic. Notably, systemic steroid therapy led to significant clinical and functional improvement, as evidenced by enhanced lung volumes and gas exchange on PFTs and marked radiographic resolution of interstitial Ground-Glass Opacities (GGOs) and infiltrates on follow-up HRCT.

This case highlights the potential role of systemic corticosteroids in managing post-COVID ILD. Further studies are warranted to establish optimal dosing, frequency and duration of steroid therapy in such patients. This report contributes to the growing body of evidence supporting corticosteroid use in COVID-19-related ILD.

Keywords: COVID-19; Interstitial lung disease; High-resolution computed tomography; Pulmonary function tests

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Introduction

Al-Hodeidah, one of Yemen's coastal governorates, Coronavirus disease 2019 (COVID-19), caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), led to a devastating global pandemic. Since its emergence in late 2019, COVID-19 has exhibited a broad spectrum of clinical manifestations, predominantly affecting the respiratory system [1]. As our understanding of the disease has evolved, it has become evident that COVID-19 is not merely an acute respiratory illness but is also associated with long-term systemic complications, including Interstitial Lung Disease (ILD) [2].

A comprehensive study by Lazar et al. demonstrated persistent interstitial changes suggestive of fibrotic progression in 69% of 100 patients recovering from COVID-19 [3]. Currently, there is no standardized treatment for Post-COVID Interstitial Lung Disease (PC-ILD). Although corticosteroids, immunomodulators and

antifibrotic agents have been suggested as potential therapies, a clear consensus is lacking due to insufficient evidence [4].

This case report presents a patient who developed ILD following COVID-19 and showed a marked clinical and radiological response to systemic corticosteroids. To our knowledge, there are no published case reports describing such a significant response to steroid therapy in PC-ILD. This report aims to contribute valuable clinical insight, which may inform future therapeutic approaches and stimulate further research toward establishing standardized treatment guidelines for PC-ILD.

Case Presentation

A 54-year-old Caucasian male with a past medical history of asthma and Obstructive Sleep Apnea (OSA) was admitted with acute hypoxic respiratory failure secondary to COVID-19 infection. He subsequently developed Acute Respiratory Distress Syndrome (ARDS), requiring intubation and intensive care management. High-Resolution Computed Tomography (HRCT) at the time demonstrated diffuse bilateral Ground-Glass Opacities (GGOs), patchy interstitial and airspace opacities predominantly in the upper lobes and lower lobe-predominant bronchiectasis findings concerning for post-COVID organizing pneumonia or Interstitial Lung Disease (ILD) **(Figure 1 a,b)**.

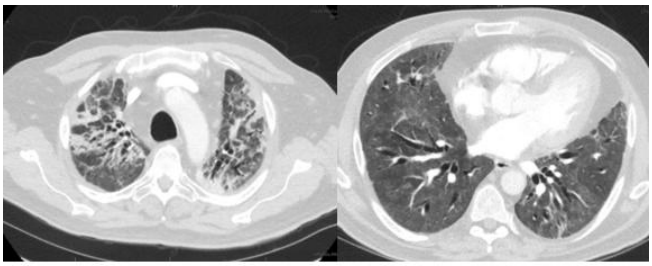

Figure 1: A: HRCT chest of upper lobes showing ground glass opacities (blue arrow) patchy opacities (green arrow); B: HRCT chest of lower lobes showing traction bronchiectasis (red arrow).

During hospitalization, the patient received 10 mg of prednisone, intravenous dexamethasone (Decadron) and tocilizumab. Clinical improvement was observed and he was discharged to a rehabilitation facility on 10 L of supplemental oxygen.

Two weeks post-discharge, he presented to the pulmonary clinic with persistent cough and mild dyspnea. Pulmonary Function Testing (PFT) revealed a severe restrictive pattern with significant reductions in FVC, FEV_1 and DLCO. The recurrence of symptoms and persistent radiographic findings were indicative of progressive post-COVID ILD. Consequently, the patient was initiated on oral prednisone 50 mg daily for two weeks, followed by a taper of 5 mg every five days to a maintenance dose of 10 mg daily.

In addition, he was started on nebulized DuoNeb and budesonide, later transitioned to a Trilogy 200 inhaler for concurrent asthma management. Six months later, the patient reported marked improvement in cough and dyspnea. Repeat HRCT demonstrated substantial radiographic improvement, including a significant reduction in interstitial GGOs and infiltrates, most notably in the upper lobes where the disease burden had been greatest **(Figure 2 a,b)**. Follow-up PFTs showed notable improvement in FVC, FEV_1/FVC ratio, total lung capacity (TLC) and DLCO.

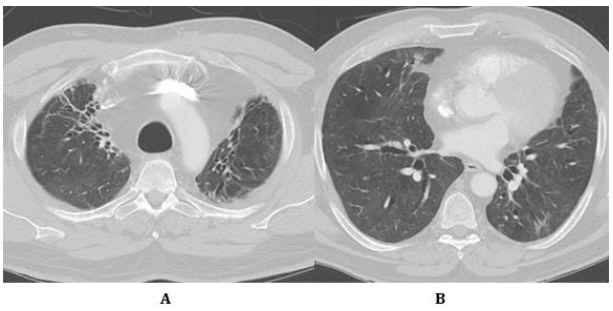

Figure 2: A: HRCT chest of upper lobes showing significant reduction in GGOs and patchy opacities; B: HRCT chest of lower lobes showing reduction in bronchiectasis.

The clinical, radiological and functional improvements collectively suggested significant resolution of ILD. Due to the development of adrenal insufficiency from prolonged corticosteroid use, the patient remains on maintenance prednisone. An endocrinologist is currently guiding a gradual tapering strategy for eventual discontinuation.

Discussion

This case highlights a distinctive clinical presentation of Post-COVID Interstitial Lung Disease (PC-ILD) and its management with systemic corticosteroids an approach that is not yet standardized due to the absence of formal guidelines from major clinical societies.

Following SARS-CoV-2 infection, a subset of patients develops persistent respiratory symptoms, functional impairment and radiographic abnormalities [5]. While diffuse alveolar damage remains the most common pattern of lung injury associated with COVID-19, recent studies have documented the emergence of PC-ILD as a rare and complex sequela [6,7]. A longitudinal study by Han et al. demonstrated persistent interstitial lung abnormalities in 56 out of 144 patients, evident on both chest CT and pulmonary function tests [8]. Similar to these findings, our patient exhibited progressive ILD following acute COVID-19 infection.

Various therapeutic approaches have been proposed for PC-ILD, including corticosteroids, immunomodulatory agents, antifibrotic therapies and in experimental contexts, agents such as diethylcarbamazine [3,4,9,10]. In this case, systemic corticosteroids were selected based on observational data from Myall et al., which reported rapid

and significant clinical and radiological improvement with early corticosteroid intervention in patients with organizing pneumonia following COVID-19 [9]. Given the parallels in presentation, this treatment modality was deemed most appropriate.

The patient demonstrated substantial improvement in respiratory symptoms, pulmonary function and HRCT findings following a structured course of oral prednisone. However, the development of adrenal insufficiency highlights a critical adverse effect of long-term corticosteroid therapy, underscoring the need for careful monitoring and collaboration with endocrinology for appropriate tapering strategies.

This case underscores the potential role of corticosteroids in managing PC-ILD and the urgent need for randomized controlled trials to establish evidence-based guidelines for this emerging clinical entity.

Conclusion

This case underscores the complex clinical trajectory of Post-COVID Interstitial Lung Disease (PC-ILD) and highlights a favorable response to systemic corticosteroid therapy. The observed clinical, functional and radiologic improvements support the potential role of steroids as a therapeutic option in select patients. However, the case also emphasizes the need for further research to establish optimal dosing, duration and long-term safety, particularly in light of adverse effects such as adrenal insufficiency. As PC-ILD continues to pose significant health challenges, ongoing studies are essential to develop evidence-based treatment protocols and improve patient outcomes in the post-COVID era.

References

1. Wu Z, McGoogan JM (2020) Characteristics of and important lessons from the Coronavirus Disease 2019 (COVID-19) outbreak in China: Summary of a report of 72 314 cases from the Chinese center for disease control and prevention. JAMA 323: 1239-1242. [Crossref] [Google Scholar] [Indexed]
2. George PM, Wells AU, Jenkins RG (2020) Pulmonary fibrosis and COVID-19: The potential role for antifibrotic therapy. The Lancet Respiratory Medicine 8: 807-815. [Crossref] [Google Scholar] [Indexed]
3. Lazar M, Barbu EC, Chitu CE, Tiliscan C, Stratan L, et al. (2022) Interstitial lung fibrosis following COVID-19 pneumonia. Diagnostics 12: 2028. [Crossref] [Google Scholar] [Indexed]
4. Johnston J, Dorrian D, Linden D, Stanel SC, Rivera-Ortega P, et al. (2023) Pulmonary sequelae of COVID-19: Focus on interstitial lung disease. Cells 12: 2238. [Crossref] [Google Scholar] [Indexed]
5. Wild JM, Porter JC, Molyneaux PL, George PM, Stewart I, et al. (2021) Understanding the burden of interstitial lung disease post-COVID-19: The UK Interstitial Lung Disease-Long COVID Study (UKILD-Long COVID). BMJ Open Respir Res 8: e001049. [Crossref] [Google Scholar] [Indexed]
6. Carsana L, Sonzogni A, Nasr A, Rossi RS, Pellegrinelli A, et al. Pulmonary post-mortem findings in a series of COVID-19 cases from northern Italy: A two-centre descriptive study. Lancet Infect Dis 20: 1135-1140. [Crossref] [Google Scholar] [Indexed]
7. Kewalramani N, Heenan KM, McKeegan D, Chaudhuri N (2023) Post-COVID interstitial lung disease-the tip of the Iceberg. Immunol Allergy Clin North Am 43: 389-410. [Crossref] [Google Scholar] [Indexed]
8. Han X, Chen L, Fan Y, Alwalid O, Jia X, et al. (2023) Longitudinal assessment of chest CT findings and pulmonary function after COVID-19 infection. Radiology 307: e222888. [Crossref] [Google Scholar] [Indexed]
9. Myall KJ, Mukherjee B, Castanheira AM, Lam JL, Benedetti G, et al. (2021) Persistent post-COVID-19 interstitial lung disease. An observational study of corticosteroid treatment. Ann Am Thorac Soc 18: 799-806. [Crossref] [Google Scholar] [Indexed]
10. Lassan S, Tesar T, Tisonova J, Lassanova M (2023) Pharmacological approaches to pulmonary fibrosis following COVID-19. Front Pharmacol 14: 1143158. [Crossref] [Google Scholar] [Indexed]