



# A Case of Massive Haemoptysis due to Aneurysm of Left Pulmonary Artery in Patient of COVID 19 with Invasive Fungal Infection

H.B. Prasad <sup>a+++\*</sup> and Prasad Jain <sup>a#</sup>

<sup>a</sup> Department of Medicine, Dr. VMGMC, Solapur, India.

## Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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Case Report

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## ABSTRACT

The occurrence of hemoptysis in patients with COVID-19 and associated fungal infections is not uncommon. Patients may experience mild to massive hemoptysis depending on the underlying cause. We present a case of a middle-aged male who developed severe respiratory distress syndrome and a non-Mucor fungal infection, resulting in massive hemoptysis secondary to a pseudoaneurysm of the pulmonary artery. The diagnosis was confirmed through CT pulmonary angiography, and coiling of the pseudoaneurysm was employed as a treatment modality. Following the treatment, the patient experienced an excellent outcome.

<sup>++</sup> Professor & Head;

<sup>#</sup> Junior Resident III;

<sup>\*</sup>Corresponding author: E-mail: [drprasadjain@gmail.com](mailto:drprasadjain@gmail.com);

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**Keywords:** COVID19; haemoptysis; coiling; pseudo aneurysm; pulmonary artery.

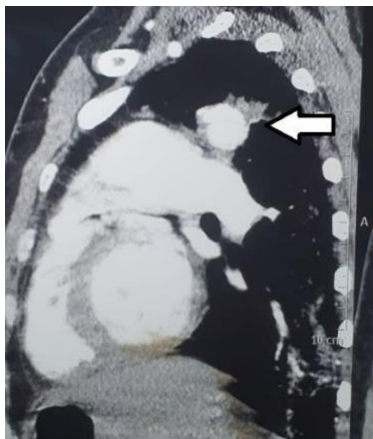
## 1. INTRODUCTION

Hemoptysis in patients with severe bilateral pneumonia secondary to COVID-19 infection is not uncommon. It can range from mild to massive hemoptysis, involving either the pulmonary or bronchial vasculature [1]. The occurrence of superimposed fungal infections increases the likelihood of hemoptysis in COVID-19 patients due to a higher incidence of vascular aneurysms. High mortality rates are commonly observed in such cases [1,2]. CT pulmonary angiography and venography provide high accuracy in diagnosing any vascular etiology [3]. Management options can range from supportive treatment with antifibrinolytics to clipping and coiling of the vascular anomaly [4].

## 2. CASE REPORT

A 30-year-old male was diagnosed with severe COVID-19 pneumonia, with a CT severity score

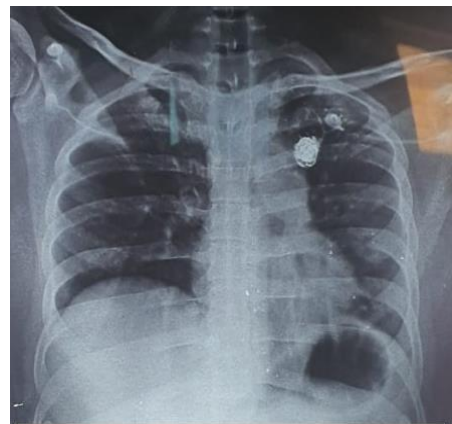
of 19/25. The patient was started on antibiotics, LMWH, steroids, and remdesivir. He required BIPAP ventilation for 21 days and was gradually weaned to room air by the 45th day of illness. During treatment, the patient began to complain of epistaxis. A nasal swab KOH mount was positive for non-Mucor fungal elements, and he was started on amphotericin therapy for 15 days. On the 36th day of treatment, the patient experienced two episodes of massive hemoptysis, leading to sudden hypotension and severe pallor. He received four units of packed red blood cells. A CT pulmonary angiography was performed, which suggested a pulmonary artery pseudoaneurysm in a subsegmental branch of the left upper lobe. Digital subtraction angiography (DSA) with embolization was advised and subsequently performed using multiple coils. The patient was monitored for two weeks following the procedure and did not experience any further episodes of hemoptysis.



**Fig. 1. Showing lateral aspect of mediastenum with pseudoaneurysm of left pulmonary artery.**



**Fig. 2. Showing anteroposterior view of mediastenum with pseudoaneurysm**



**Fig. 3. Showing Chest Xray PA view after coiling of left pulmonary pseudo aneurysm.**

**Table 1. Laboratory parameters**

Parameters	Results	Units	Normal range
Leucocytes	9070	Counts/mm	4.0–10.0
Haemoglobin	103.7	g/L	120–150
MCV	87.4	fL	83–101
Platelets	78000	counts/mm	150–410
Sodium	136	mmol/L	133–146
Potassium	3.9	mmol/L	3.5–5.3
Bilirubin	0.6	µmol/L	0.0–21
ALT	40	U/L	0.0–40

Parameters	Results	Units	Normal range
ALP	68	U/L	30–130
Albumin	23	g/L	35–50
INR	1.24		0.8–1.2
Blood Culture	No growth		
RTPCR for COVID 19	Positive		
Sputum Culture	Klebsiella (Pan Resistant)		
TSH	9.88	uIU/ml	0.4-4
Free T3	3.87	pg/ml	2.3-6.6
Free T4	1.180	ng/dl	0.8-1.8
Serum Prolactin	17.30	ng/ml	5.0-25
ANA	Negative		
ANCA	Negative		
Malaria RDT	Negative		
Leptospira	Negative		
Dengue	Negative		
Gene Xpert	No Mycobacterium detected		
KOH Mount	Non Mucor like fungal element seen		
D Dimer	2.735	g/L	<0.5
CRP	45	mg/dl	6 mg/dl
IL6	24.30	pg/ml	1.9 - 4.0

The patient's 2D echocardiogram was within normal limits. A CT scan of the paranasal sinuses (PNS) and orbit suggested soft tissue density collections with mucosal thickening of the sphenoid sinus. The patient was followed up weekly for three months and did not report any complaints. He remained vitally and hemodynamically stable throughout this period.

### 3. DISCUSSION

COVID-19 is associated not only with mild to severe acute respiratory distress syndrome (ARDS) but also with various other disorders, including anxiety, depression, myocarditis, heart failure, arrhythmias, myalgia, arthralgia, diarrhea, renal failure, and venous thromboembolism [1].

Recently, there have been several case reports of hemoptysis in patients with COVID-19, with or without superadded fungal infections. Opportunistic fungal infections, such as mucormycosis and non-Mucor infections like aspergillosis, can exacerbate the condition [2]. COVID-19 itself can lead to hemoptysis due to associated coagulopathy, pulmonary thromboembolism, and aneurysms of the pulmonary and bronchial vessels. Superimposed fungal infections, such as mucormycosis or aspergillosis, can worsen the situation and may result in fatal outcomes [3,5].

CT pulmonary angiography has emerged as a highly sensitive and specific diagnostic test for patients with suspected pulmonary vascular diseases, such as pulmonary thromboembolism or aneurysms of the pulmonary vasculature [3]. Digital subtraction angiography (DSA) and coiling are highly effective treatment modalities for patients with pseudoaneurysms [4]. Additionally, bronchoscopy with bronchoalveolar lavage (BAL) can be utilized in the workup of highly suspicious cases [5]. Early diagnosis and timely management of hemoptysis can significantly reduce morbidity and mortality in affected patients [4,6].

### 4. CONCLUSION

Many patients with severe pneumonia following COVID-19 infection experience hemoptysis, which can range from mild to massive, depending on the severity of the illness. Active management at the initial onset of hemoptysis— with antifibrinolytics, arterial embolization, or coiling of the aneurysmal vessel—can help reduce mortality and improve outcomes in these patients.

### CONSENT

As per international standards or university standards, patient(s) written consent has been collected and preserved by the author(s).

## ETHICAL APPROVAL

As per international standards or university standards written ethical approval has been collected and preserved by the author(s).

## DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of this manuscript.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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