

## **A Case of Massive Haemoptysis due to aneurysm of left pulmonary artery in patient of COVID 19 with invasive fungal infection**

**Abstract:** Occurrence of Haemoptysis in patients of COVID 19 with associated fungal infection is not uncommon <sup>[1]</sup>. Patient can have mild to massive haemoptysis depending on the cause of haemoptysis. We present you a case of middle-aged male who had severe respiratory distress syndrome, non-mucor fungal infection and suffered massive haemoptysis secondary to pseudo aneurysm of pulmonary artery. Diagnosis of condition was done by CT pulmonary angiography and coiling of pseudo aneurysm was used as a treatment modality for the patient <sup>[4,5,6]</sup>. Following the treatment, there was excellent outcome.

**Keywords** – COVID19, Haemoptysis, Coiling, Pseudo aneurysm, Pulmonary Artery

### **Introduction**

Haemoptysis in patients of severe bilateral pneumonia secondary to COVID 19 infection is not an uncommon entity. It can range from mild to massive haemoptysis which involves pulmonary or bronchial vasculature <sup>[1]</sup>. Occurrence of superimposed fungal infection can cause increase of probability of haemoptysis in patients of COVID 19 due to increases occurrence of vascular aneurysm. High mortality in such patients is a common occurrence <sup>[1,2]</sup>. CT pulmonary angiography, venography helps to diagnose any vascular aetiology with high accuracy <sup>[3]</sup>. Management can range from supportive treatment with antifibrinolytics to clipping and coiling of vascular aetiology <sup>[5]</sup>.

### **Case report**

A 30 years male was diagnosed to be having Severe COVID 19 pneumonia with CT Severity score of 19/25. Patient was started with Antibiotics, LMWH, Steroids, remdesivir. Patient was ventilated with BIPAP ventilation for 21 days and was slowly weaned to room air by 45<sup>th</sup> days of illness. During treatment patient started complaining of epistaxis. Nasal swab KOH mount was positive for non-mucor like fungal element and was started with amphotericin therapy and was given for 15 days. On 36<sup>th</sup> day of his treatment patient got 2 episodes of massive haemoptysis. Patient went into sudden hypotension and developed severe pallor. Following which patient was given 4 pint of packed cell volume. CT Pulmonary angiography was done and was suggestive of pulmonary artery pseudo aneurysm of sub segmental branch in left upper lobe. DSA with Embolization was advised and was done using multiple coils. Patient was monitored for 2 weeks following the procedure and patient did not have any episodes of haemoptysis.

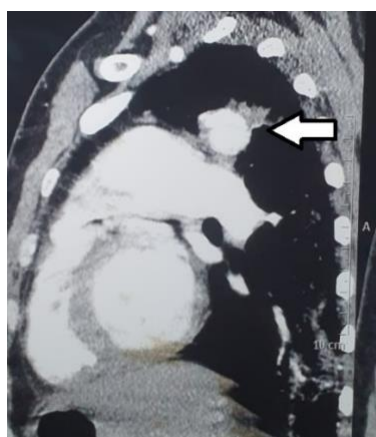


Figure 1 showing lateral aspect of mediastinum with pseudoaneurysm of left pulmonary artery.

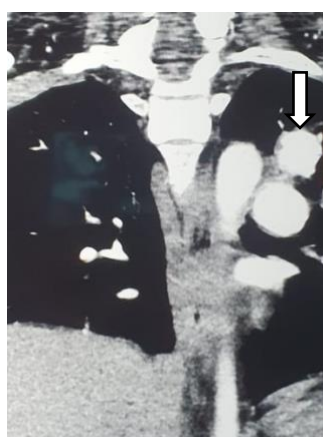


Figure 2 Showing anteroposterior view of mediastinum with pseudoaneurysm

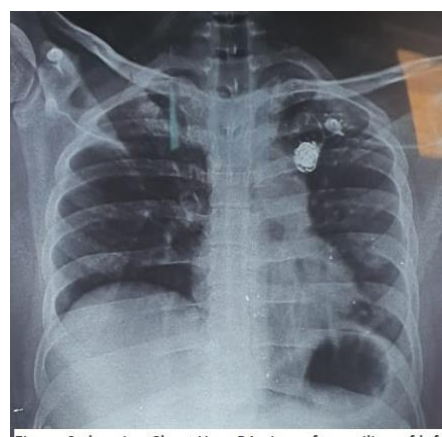


Figure 3 showing Chest Xray PA view after coiling of left pulmonary pseudo aneurysm.

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
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

Patients 2decho was within normal limit. CT PNS and Orbit was suggestive of soft tissue densities collection with mucosal thickening of sphenoid sinus. Patient was followed up for 3 months on weekly basis, didn't have any complaints and was vitally and hemodynamically stable.

## Discussion

COVID 19 is not only related with mild to severe ARDS but is now known to be associated with various disorders like Anxiety, depression, myocarditis, heart failure, arrhythmias, myalgia, arthralgia, diarrhoea, renal failure, venous thromboembolism, diabetes mellitus <sup>[1]</sup>.

Recently there have been various case reports for occurrence of haemoptysis in patients of COVID19 with or without superadded fungal infection. Occurrence of opportunistic fungal infections like Mucormycosis, Non-mucor infections like aspergillosis can aggravate the condition <sup>[2]</sup>. COVID 19 itself can cause haemoptysis due to associated coagulopathy, pulmonary thromboembolism and aneurysm of pulmonary and bronchial vessels. Superimposed fungal infections like mucormycosis or aspergillosis can aggravate the condition and have a fatal outcome <sup>[3,4]</sup>.

CT Pulmonary angiography has emerged as a highly sensitive and specific diagnostic test in patients of suspected pulmonary vasculature disease e.g., pulmonary thromboembolism or aneurysm of pulmonary vasculature <sup>[3]</sup>. Digital subtraction angiography and coiling is highly effective treatment modality in patients of pseudo aneurysm <sup>[5]</sup>. Bronchoscopy with BAL study can also be used in workup of highly suspicious case <sup>[4]</sup>. Early diagnosis of the condition and timely management of the same can decrease occurrence of morbidity and mortality in patients of haemoptysis <sup>[5, 6]</sup>.

## Conclusion

Many patients with severe pneumonia following COVID 19 infection have haemoptysis. It can vary from mild to massive haemoptysis depending upon the severity of illness. Active management of such patients at the initial occurrence of haemoptysis with antifibrinolytics, arterial embolization or coiling of the aneurysmal vessel can help to decrease mortality in such patients and have a better outcome.

## References

- [1] Desai AD, Lavelle M, Boursiquot BC, Wan EY. Long-term complications of COVID-19. *Am J Physiol Cell Physiol.* 2022;322(1):C1-C11. doi:10.1152/ajpcell.00375.2021
- [2] Pasula S, Chandrasekar P. Spontaneous Hemoptysis in a Patient With COVID-19. *Chest.* 2021;160(1):e39-e44. doi:10.1016/j.chest.2021.01.069
- [3] Shin TB, Yoon SK, Lee KN, Choi JS, Kim YH, Sung CG, Kim YJ, Kim CW. The role of pulmonary CT angiography and selective pulmonary angiography in endovascular management of pulmonary artery pseudoaneurysms associated with infectious lung diseases. *J Vasc Interv Radiol.* 2007 Jul;18(7):882-7. doi: 10.1016/j.jvir.2007.04.023. PMID: 17609448.
- [4] Peys E, Stevens D, Weygaerde YV, Malfait T, Hermie L, Rogiers P, Depuydt P, Van Braeckel E. Haemoptysis as the first presentation of COVID-19: a case report. *BMC Pulm Med.* 2020 Oct 22;20(1):275. doi: 10.1186/s12890-020-01312-6. PMID: 33092563; PMCID: PMC7578236.
- [5] Park HS, Chamrathy MR, Lamus D, Saboo SS, Sutphin PD, Kalva SP. Pulmonary artery aneurysms: diagnosis & endovascular therapy. *Cardiovasc Diagn Ther.* 2018;8(3):350-361. doi:10.21037/cdt.2018.04.01
- [6] Theodoropoulos P, Ziganshin BA, Tranquilli M, Elefteriades JA. Pulmonary artery aneurysms: four case reports and literature review. *Int J Angiol.* 2013;22(3):143-148. doi:10.1055/s-0033-1347907