



## Post COVID-19 cascade causing Pulmonary Artery Aneurysm

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### ABSTRACT -

Pulmonary artery aneurysms are fatal and rare which requires early diagnosis and treatment. pulmonary aneurysms can cause massive hemoptysis which can lead to death in one third of the patients if not treated early. Pulmonary artery aneurysms can be congenital or acquired and the clinical symptoms can be variable. We are reporting a case of Bronchopulmonary artery aneurysm post covid infection who died despite of all efforts. To our knowledge there are only few cases reported of post covid aneurysms reported.

### I. CASE PRESENTATION

A 52-year-old male presented with post-covid pneumonia, hematemesis and bleeding per rectum, became positive with COVID-19 about a month ago. On examination he was tachypneic and his blood pressure was 150/80mmHg. His respiratory rate was 36 per minute with O<sub>2</sub> saturation 94% on 2 liters of O<sub>2</sub> via Nasal Prongs. Chest auscultation reveals b/l crepts. Abdomen was soft, nontender. Neurologically no focal deficits. Rest all examinations were normal.

Blood investigations revealed hemoglobin of 8.8, and a TLC count of 23.5 and platelet count of 456, his creatine was 0.41, rest all investigation reports were normal. COVID-19 test was negative on admission. Urine cultures were sterile. Chest X-ray showed patchy opacities in right middle and lower zones. CT was done to get a clear view which reveals features suggestive of post covid lung changes and superadded secondary infection. Foci of nodular consolidation with cavitation at places. Upper Gastro-intestinal endoscopy was done to rule out GI source of bleeding, which revealed hemoptysis and gastritis. No GI source of bleeding was found.

As per the reports suggested and progressive decline of the patient with recurrent hemoptysis, we sought referral of an interventional Radiologist who diagnosed Pulmonary Artery Aneurysms by CT angiography and Embolization was suggested which was done on the same date. Bronchial Arteries were normal.

Patient developed respiratory acidosis with unstable hemodynamic parameters, ABG showed respiratory with metabolic acidosis for

which he was intubated and required mechanical ventilator support. Central line was inserted. Patient then started having intermittent fever, a repeat Xray showed increased opacities. ET secretion sample was sent for AFB stain which was negative. At this time labs showed a D-dimer level of 682, IL-6 of >5000, NTproBNP 10500, CK-MB 21.7, TROP I-2.44, Procalcitonin level of 25, Prothrombin level of 21.9, INR of 1.9, Hb was 7.4 this time. Cardiology review was taken who suspected myocardial suppression due to acidosis and sepsis or stress. Next day Prothrombin levels were increased to 52.7. INR increased to 4.58, creatine levels increased to 1.5. Arterial Blood Gas Value showed pH of 7.078. Nephrology consultation suggested renal replacement therapy on account of mixed acidosis and decreased urine output. Patient's condition kept deteriorating and was kept on high vasopressor support along with other palliative treatments. He was pronounced dead after a sudden cardiac arrest 4 days after admission, with refractory shock and Hemoptysis after Bronchial Artery Aneurysm.

### II. DISCUSSION

Pulmonary artery aneurysms are a very rare condition with high mortality rate and there are handful of reported cases. It mainly presents with hemoptysis and strong suspicion and through investigation with prompt action is required for survival of the patient. A reported 89% of the cases of pulmonary artery aneurysms occur in main pulmonary artery and 11 % occur in pulmonary branch artery (3,4). Although they are often solitary (2,5).

The susception of aneurysms through other causes have to be ruled out which can be caused by Tuberculosis, Syphilis, Pulmonary aspergillosis, septic emboli, chest trauma, neoplasms all of which are ruled out by thorough investigation in our case (1,6,7.). The cultures were sterile and the chest imaging showed no neoplastic foci or tuberculosis and aspergillosis related changes in imaging. Although infection such as Tuberculosis and Syphilis had been a significant pathological factor in the past in causing aneurysms, use of antibiotics has reduced such incidences today (6,7).



Studies in COVID-19 has demonstrated a significant increase in mortality due to post covid consequences, specifically due to its multisystem damage. COVID-19 causes severe alveolar damage and immunothrombi in pulmonary vasculature (2). Covid-19 causes a Kawasaki-like phenomenon (8). It is directly linked to vasculitic and inflammatory processes which casues systemic vasculitis like picture. The mechanism is studied to be by increasing pro-inflammatory cytokines and endothelial damage. This is thought to be the mechanism by which it can cause pulmonary aneurysms (2, 9). These aneurysms in vasculitis such as Kawasaki and Bechet's are treated with immunosuppressive therapy, steroids pulse therapy and in severe cases embolization is required, hence by that theory the same treatment modality is also postulated and tried successfully in many cases (9,10).

For diagnosis of pulmonary aneurysm, the gold standard test is Pulmonary angiography but a noninvasive CT angiography is preferred now which is also done in this case (1). The mainstay of treatment is surgical lobectomy or aneurysmectomy or radiologically through embolization as done in our presented case.

Few cases were reported with post COVID-19 intracerebral aneurysms. Covid-19 is also strongly associated with arterial and venous thrombosis, outcomes of which is poor. Some studies hence suggest the use of anticoagulants to counter these situations, but it can be hazardous in cases of pulmonary aneurysms such as in our cases. Hence a strong clinical suspicion and prompt investigation and appropriate treatment is required in such situations.

#### Consent – Taken

Yes

#### Charges taken for the study

Nil

#### Writers

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#### Contribution

Sumeet Swapan Roy- Primary Editor and Case Studied.

Raghav Kapoor, Nikita Goel – Studied case, Editor.

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