Pseudomonas-associated mycotic pulmonary artery aneurysm with endovascular management

Sir,

We report case of a 60-year-old male, diabetic, who presented to the outpatient department with complains of cough with purulent expectoration, fever, and right-sided pleuritic chest pain for 2 weeks. His symptoms were progressive. There was no history of significant weight loss or hemoptysis. On examination, he was febrile (100.4° Fahrenheit), had tachycardia (pulse rate of 120/min) and was tachypneic (respiratory rate of 28/min). On auscultation, bronchial breath sounds were noted over the right infrascapular and infraaxillary areas. The other systems examination was unremarkable. On the basis of clinical examination, a provisional diagnosis of the right lung pneumonia was suspected and the patient underwent a chest radiography, hemogram, and serum biochemistry for liver and renal functions. Chest X-ray documented a non-homogeneous opacity with an air bronchogram in the right lower zone. His total leukocyte count was raised (15,000 cells/mm^3). Serum biochemistry for liver and renal functions was normal. His arterial blood gas was suggestive of a Type I respiratory failure with mild hypoxemia (PaO_2/FiO_2 = 290). Blood sugar was deranged (HbA1c of 8.2 gm/dl). Serum procalcitonin was raised. His blood and sputum investigations were sent for bacterial cultures. Sputum was also tested for mycobacterial infections with a cartridge-based nucleic acid amplification test (CBNAAT) and liquid culture with mycobacterial growth indicator tube. The patient was managed with empirical broad-spectrum antibiotics and an atypical microorganism cover (injection ceftazidime 1 gm intravenous (IV) 8 hourly + injection azithromycin 500 mg IV 24 hourly) while the microbiological investigations were awaited. Insulin regimen was optimized to control his blood sugar. Over the next 48 h, his symptoms continued to progress and he started developing hemoptysis (30–50 ml/day). Sputum bacterial culture grew pseudomonas aeruginosa which was resistant to ceftazidime but sensitive to carbapenems. Sputum CBNAAT and acid-fast bacilli smear was negative. Blood culture had no growth. His antibiotics were modified as per sensitivity (injection Meropenem 1 gm IV 8 hourly). In view of new onset of hemoptysis patient underwent contrast-enhanced computed tomography (CECT) of chest to localize the site of bleeding and plan an intervention if symptoms continued to progress. CECT chest revealed consolidation with a cavitary lesion in the right lower lobe surrounding a large fusiform aneurysm of the descending branch of right pulmonary artery [Figure 1a and b]. The patient had no clinical features of connective tissue disorder in the form of joint pain, rash, photosensitivity, dryness of eyes or mouth, and nasal septal deformity. Anti-nuclear antibodies (ANAs) and anti-neutrophil cytoplasmic antibodies (ANCA) were negative. Urine examination did not have proteinuria or red blood cells. The patient underwent a bronchoscopy to confirm microbiological diagnosis and rule out coexisting tuberculosis which is endemic in the country. Broncho alveolar lavage from right lower lobe grew pseudomonas aeruginosa on bacterial culture while mycobacterial culture and CBNAAT were negative. Over the next 4 days, his fever subsided and total leukocyte count was within normal limits. Serum procalcitonin was on a declining trend. However, have 30–50 ml hemoptysis per day. There

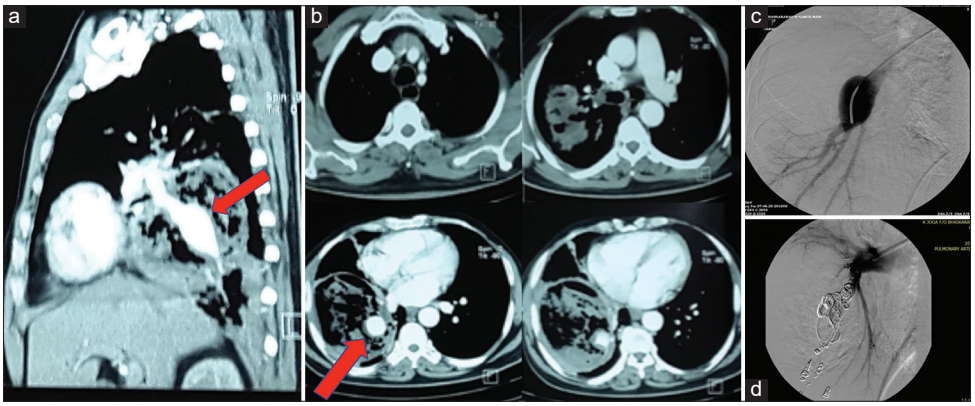

Figure 1: (a) Sagittal reconstruction of CECT chest showing right lower lobe consolidation with a cavity surrounding an aneurysm (arrow) of the descending pulmonary artery. (b) CECT chest showing right lower lobe consolidation with a cavity surrounding an aneurysm (arrow) of the descending pulmonary artery. (c) Right lower lobe segmental angiogram shows aneurysmally dilated artery. (d) Post coiling angiogram shows exclusion of the aneurysmal segment of the pulmonary artery from circulation. CECT: Contrast-enhanced computed tomography

was no hemodynamic instability. In view of pulmonary artery aneurysm and persistent hemoptysis, the patient underwent endovascular management. A 6 French (F) right common femoral vein access was taken and pulmonary angiogram performed using a 5 F pigtail catheter. Angiogram revealed a large fusiform aneurysm involving the descending branch of the right pulmonary artery [Figure 1c] with the involvement of multiple segmental arteries. 5 F catheters (C1, Slip Cath, Cook) was navigated over an 0.035" hydrophilic wire (Terumo) into the main pulmonary artery. Multiple pushable coils were used to occlude 03 aneurysmally dilated segmental arteries. Thereafter, a 2.1 F microcatheter was passed into the descending aneurysm and multiple guglielmi detachable coils placed in the aneurysm till proximal artery. Subsequent runs showed occlusion of aneurysm [Figure 1d]. Post procedure, patient's hemoptysis had subsided. He was managed with sensitive antibiotics for 14 days while he became asymptomatic and had shown significant clinicoradiological improvement. Sputum bacterial culture had no growth at the time of discharge. The patient has been asymptomatic for 3 months and he continues to have a regular outpatient department follow-up.

Mycotic aneurysms are commonly reported in intracranial arteries, followed by visceral and upper or lower extremity arteries.[1] Pseudomonas has been implicated in two cases of abdominal aortic mycotic aneurysm.[2,3] This is the first reported case of pseudomonas causing Mycotic Pulmonary Artery Aneurysm (MPAA) and has been successfully managed with sensitive antibiotics and endovascular coiling. Thus, highlighting the importance timely diagnosis and appropriate therapeutic intervention in the management of mycotic pulmonary artery aneurysm.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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