Rare disease

Suppurative pericarditis complicated by mycotic aneurysm of the pulmonary artery

Rashed Al Banna,¹ Aysha Husain²

¹Medical Department, Salmaniya Medical Complex, Manama, Bahrain;

²Internal Medicine Cardiology Unit, Salmaniya Medical Complex, Manama, Bahrain

Correspondence to Dr Rashed Al Banna, abdullarashed@yahoo.com

Summary

Aneurysms of the pulmonary artery are very rare. Here, the authors report the clinical scenario of a middle aged diabetic who presented with suppurative cardiac tamponade that was complicated by mycotic aneurysm of the pulmonary artery. In addition to the clinical presentation, aetiology, diagnostic modalities and therapeutic options are discussed.

BACKGROUND

This case represents clinical presentation of a pulmonary artery aneurysm. The patient presented with suppurative pericarditis and bilateral pneumonia. His hospital course was complicated, and could not be weaned from artificial ventilation. His diabetes mellitus and the prolonged courses of multiple antibiotics exposed him to the risk of fungal infection. The patient's acute illness and pulmonary artery aneurysm were challenging. The lack of guidelines, and the few reported cases of such aneurysms led us to report it.

CASE PRESENTATION

A 48-year-old Bahraini man came to the emergency department with progressive shortness of breath that had lasted for 5 weeks. This symptom was associated with intermittent fever, productive cough, anorexia and chest pain. He described the onset of his symptoms after his return from pilgrimage (holy trip to Makkah) 2 months prior. He was subjected to multiple courses of antibiotics without improvement. Of particular note, he was diabetic and a heavy smoker.

On admission, his body temperature was 38.8°C, his heart rate was 125 beats/min and his blood pressure was 110/65 mm Hg.

Upon arrival at the emergency room, he was electively intubated due to his severe shortness of breath and marked cyanosis. His jugular venous pressure was elevated, and his face was plethoric. Cardiac sounds were muffled, and fine inspiratory crackles were noted at his lung bases.

INVESTIGATIONS

His complete blood count showed haemoglobin 17.5 g/dl, a platelet count of 178×10^9 and white cell count of 7.5×10^9 , with polymorphs ~81% and lymphocytes at 19%. Room air arterial gas showed PaO₂=60.9 mm Hg, PaCO₂=86.2 mm Hg and pH=7.22.

A chest radiograph revealed a flask-shaped heart with an increased cardiothoracic ratio. His electrocardiogram displayed electrical alternans with peaked P waves. Additionally, echocardiography was performed, which showed features of pericardial tamponade and normal ejection fraction, and his pulmonary artery systolic pressure was calculated to be 27 mm Hg. He underwent emergency pericardiocentesis. The catheter was left in place, and it drained up to 1.5 l of turbid yellowish fluid over 48 h. Analysis of the fluid revealed a white cell count of 80 000 with 91% polymorphs and 9% lymphocytes. The fluid was exudative, with 40 g/l protein and ~2275

Figure 1 (A, B) CT scan of the thorax showing bilateral consolidation with pleural and pericardial effusion.

Figure 2 Digital subtraction pulmonary angiogram showing aneurysm of pulmonary trunk and left pulmonary artery.

u/l lactic dehydrogenase, but culturing failed to grow any organism.

TREATMENT

The initial clinical impression was purulent pericarditis with adult respiratory distress syndrome. The patient was started on parenteral antibiotics after full septic screening.

The patient remained pyrexial with progressive hypoxia and an inability to wean from artificial ventilation. His inspired oxygen remained high, and he required high ventilator pressure support.

He underwent bedside bronchoscopy with biopsy, but the procedure could not be completed because the left bronchus was occluded by an external pulsating mass that was not biopsied.

A CT scan of his chest with contrast revealed aneurysmal dilatation of the pulmonary trunk and its main branches. The bifurcation and left pulmonary artery were approximately 5 cm in diameter, and the right pulmonary artery was 3 cm in diameter (figure 1).

A deep bronchial wash culture grew *Candida albicans*. Antifungal therapy (intravenous fluconazole) was initiated. Pulmonary angiogram findings were identical to those of the CT scan (figure 2).

OUTCOME AND FOLLOW-UP

He became afebrile 48 h after starting antifungal therapy and was extubated after 7 days. He remained in the hospital for 4 weeks and received active rehabilitation in addition to a full course of antifungal therapy. The initial high uptake at the aneurysm site during a gallium scan subsided at the 12-week follow-up study (figures 3 and 4).

His condition has been discussed in the cardiothoracic meeting, and conservative therapy was agreed upon provided close follow-up.

He was discharged to his home in stable clinical condition with a special emphasis on controlling his diabetes and quitting smoking. Upon serial follow-up, he was

Figure 3 Gallium nuclear scan showing the high uptake in left pulmonary artery.

asymptomatic and his pulmonary artery aneurysm has not progressed in size over the last 2 years.

DISCUSSION

Aneurysms of the pulmonary artery are considered to be rare in comparison to those of the aorta or intracranial vessels.¹ The estimated incidence of main pulmonary artery aneurysm is 1 in 14 000 autopsies.²

The causes of pulmonary artery aneurysms vary from congenital heart disease-related (e.g., atrial and ventricular septal defects), infections, trauma, vasculitis and secondary to pulmonary hypertension.^{3 4}

Mycotic pulmonary aneurysms are commonly caused by suppurative bacterial infections, such as staphylococci and streptococci, but treponemal, mycobacterial and rarely fungi (including *Candida* and *Aspergilli*) have been reported.¹

The proposed mechanisms for infection dissemination include direct involvement of pulmonary artery from an adjacent focus, such as tuberculosis of the lungs.³ Infection of the vasa vasorum with subsequent arterial wall ischemia (as in syphilis), direct extension into the vessel wall from an intraluminal septic thromboembolus, or haematogenous spread (as in bacterial endocarditis) are alternative mechanisms of infection dissemination.³

Direct spread of the infection from the adjacent infected pericardium is the most likely scenario in our patient. Imaging is the main diagnostic modality. Although pulmonary angiography was previously the gold standard diagnostic modality, CT and MRI have recently become important alternatives. In our patient, the CT and pulmonary angiograms revealed saccular dilation of his pulmonary trunk along with the bifurcation.⁵ During bronchoscopy, it can mimic endobronchial neoplasm, but being pulsatile precludes its biopsy to avoid catastrophic bleeding.⁶

The initial positive gallium nuclear scan at the site of aneurysm, which subsided at subsequent study after 12

Figure 4 Repeated gallium scan with absence of uptakes in left pulmonary artery after 12 weeks.

weeks, supports the fact that the aneurysm was infective in origin.⁷

The management of pulmonary artery aneurysm is a major challenge that lacks clear guidelines addressing the surgical indications. The proposed surgical interventions include aneurysmectomy, lobectomy, aneurysmorrhaphy and banding.^{8,9}

Low pressure pulmonary artery aneurysms stands against future risk of rupture and dissection. Furthermore, preserved right ventricle systolic function and the absence of pulmonary valve regurgitations justify conservative medical therapy. This includes infection eradication with

subsequent clinically and radiologically guided follow-up.^{10,11}

Learning points

- The low pressure pulmonary artery aneurysms are at lower risk of dissection and rupture than the high pressure ones.
- Prolonged courses of antibiotics and diabetes mellitus are risk factors for fungal infections.
- Pulsating intrabronchial masses should not be biopsied.

Competing interests None.

Patient consent Obtained.

REFERENCES

1. **Kim HS**, Oh YW, Noh HJ, *et al.* Mycotic pulmonary artery aneurysm as an unusual complication of thoracic actinomycosis. *Korean J Radiol* 2004;**5**:68–71.
2. **Dayioglu E**, Sever K, Basaran M, *et al.* Idiopathic pulmonary artery aneurysm. *IJTCVS* 2004;**20**:140–1.
3. **Bartter T**, Irwin RS, Nash G. Aneurysms of the pulmonary arteries. *Chest* 1988;**94**:1065–75.
4. **Agarwal S**, Chowdhury UK, Saxena A, *et al.* Isolated idiopathic pulmonary artery aneurysm. *Asian Cardiovasc Thorac Ann* 2002;**10**:167–9.
5. **Lakhkar BN**, Nagaraj MV, Shenoy DP, *et al.* Bilateral pulmonary aneurysm in Behçet's disease (a case report). *J Postgrad Med* 1992;**38**:47–9, 48A–B.
6. **Dransfield MT**, Johnson JE. A mycotic pulmonary artery aneurysm presenting as an endobronchial mass. *Chest* 2003;**124**:1610–2.
7. **Tie M**, Franzer, Stanson AW. Mycotic aneurysms of the aorta-imaging and clinical findings in 12 cases. *The Journal of Radiology* 2001;**36**:45.
8. **Kuwaki K**, Morishita K, Sato H, *et al.* Surgical repair of the pulmonary trunk aneurysm. *Eur J Cardiothorac Surg* 2000;**18**:535–9.
9. **Chen YF**, Chiu CC, Lee CS. Giant aneurysm of main pulmonary artery. *Ann Thorac Surg* 1996;**62**:272–4.
10. **Smalcelj A**, Brida V, Samarzija M, *et al.* Giant, dissecting, high-pressure pulmonary artery aneurysm. *Tex Heart Inst J* 2005;**32**:589–94.
11. **Serasli E**, Antoniadou M, Steiropoulos P, *et al.* Low-pressure pulmonary artery aneurysm presenting with pulmonary embolism: a case series. *J Med Case Reports* 2011;**5**:163.

This pdf has been created automatically from the final edited text and images.

Copyright 2011 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.

BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Please cite this article as follows (you will need to access the article online to obtain the date of publication).

Al Banna R, Husain A. Suppurative pericarditis complicated by mycotic aneurysm of the pulmonary artery. *BMJ Case Reports* 2011; 10.1136/bcr.07.2011.4544, date of publication

Become a Fellow of BMJ Case Reports today and you can:

- Submit as many cases as you like
- Enjoy fast sympathetic peer review and rapid publication of accepted articles
- Access all the published articles
- Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow