

Septic Pulmonary Emboli: A Rare Presentation

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Abstract

Septic pulmonary embolism (SPE) is an uncommon disease without a specific clinical presentation and may present with an insidious onset of fever, cough, or hemoptysis combined with characteristic radiographic findings of multiple peripheral lung nodules with or without cavitation. We have presented an unusual case of 59-year-old male patient, ex-smoker, normotensive, non-diabetic patient, who presented with panophthalmitis without any respiratory complaints. Chest radiography and computed tomography examination revealed bilateral multiple cavities with the subpleural nodule. We, ultimately, diagnosed this as a case of SPE caused by *Staphylococcus aureus* without known primary focus. The patient responded both clinically and radiologically with antibiotics treatment.

Key words: Antibiotics, Computed tomography, Panophthalmitis, Radiography, Septic pulmonary emboli

INTRODUCTION

Septic pulmonary embolism (SPE) is an uncommon disease and may present with an insidious onset of fever, cough, or hemoptysis without any specific clinical presentation. Certain risk factors such as tricuspid valve bacterial endocarditis, intravenous (IV) drug use, thrombophlebitis, indwelling catheters or devices, osteomyelitis, or soft tissue infection^{1,2} have more chance to develop SPE. Characteristic radiographic findings are multiple peripheral lung nodules with or without cavitation.¹ The primary foci of infection responsible for SPE differ in the literature. Although the incidence has declined, infective endocarditis is a considerable embolic source of SPE in Western countries.^{3,4} Sakuma *et al.* also reported that infective endocarditis was a common extra pulmonary septic source followed by pneumonia and sepsis of unknown origin.⁵ Septic pulmonary emboli affecting multiple systems are extremely rare without any known primary focus to our knowledge. That's why we present this case.

CASE REPORT

A 59-year-old male patient, ex-smoker, normotensive, non-diabetic, unmarried farmer, was referred from eye department to chest department with for preanesthetic check-up for panophthalmitis with chief complaints of the gradual dimness of vision in left eye for 3 months without any chest complaints.

There was history of fever, running nose, and redness of left eye 3 months back. Fever and running nose subsided after 7 days but eye symptom persisted and finally patient became blind in left eye within 2 months. There was also painful perianal discharge for last 1 month.

He had history of bilateral asymmetrical knee and hip joint pain 20 years back with history of irregular systemic steroid intake for 20 years. On examination, there is pallor, without any icterus, clubbing, cyanosis, edema, and lymphadenopathy. Pulse - 110/min, BP - 90/60 mm Hg, respiratory rate - 30/min, SPO₂ - 98% in room air.

Examination of the left eye shows lid edema, conjunctival, and circumciliary congestion, exudates in anterior chamber and globe hypopyon. Visual acuity in the right eye - 6/9 and left eye - PL⁺. The systemic examination does not reveal any abnormality except perianal discharging ulcer.

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Laboratory reports available at admission show Hb - 10.2 g/dl, total leucocyte count (TLC) - 9,600/cmm with neutrophil - 70%, erythrocyte sedimentation rate - 120 mm, Na⁺ - 139 mmol/l, K⁺ - 3.8 mmol/l, Urea - 42 mg/dl, creatinine - 2.4 mg/dl. Liver function test, blood sugar, and electrocardiography are normal. Anti-nuclear antibody - negative in 1:80 dilution and RA factor - negative.

Investigation after admission shows Hb - 9.8 g/dl. TLC - 9,100/cmm with neutrophil - 66%. Liver function, blood sugar, and ultrasonography whole abdomen are normal. Echocardiography did not reveal any valvular heart disease or suggestive of infective endocarditis. C-reactive protein - 5.6 mg/dl, urea - 40 mg/dl, creatinine - 1.1 mg/dl. Urine routine and microscopic examination - no albumin, 2-3 pus cell, no RBC, no cast found. Blood and urine for culture and sensitivity show no growth. Induced sputum for acid-fast bacillus (AFB) and Gram stain was negative, mantoux test-6 mm, circulating antineutrophil cytoplasmic autoantibody- negative. Gram stain and culture-sensitivity of pus from perianal abscess show *S. aureus*.

Fibreoptic bronchoscopy shows inflamed mucosa. Bronchoalveolar lavage fluid shows neutrophilic predominance and Gram-positive cocci on Gram stain. Culture report revealed the presence of *S. aureus* sensitive to vancomycin, linezolid, amikacin, and gentamicin. AFB and fungal stain are negative.

On computed tomography (CT) guided, fine needle aspiration cytology pus was aspirated from left lung nodule. Gram stain of the sample shows Gram-positive cocci. AFB stain and *Mycobacterium* culture are negative. On cytology, no malignant cell was found.

The patient is diagnosed as septic emboli causing panophthalmitis of left eye with bilateral multiple lung abscesses with perianal abscess, caused by *S. aureus*.

The patient was treated with IV antibiotic (amikacin and linezolid for 4 weeks) and after 2 weeks patient improved clinically (Figures 1-3).

DISCUSSION

SPE is very rare without any common risk factor-like bacterial endocarditis, indwelling catheter *in situ* and IV drug abuser. In our case, the patient presented panophthalmitis, perianal abscess, lung and pleural nodule with cavitation without any significant respiratory complaints. The patient responded with IV antibiotic. In our case, SPE occurs with multiple system involvements where we could not localize



Figure 1: Chest X-ray showing cavitory lung lesion left mid zone (At the time of admission)

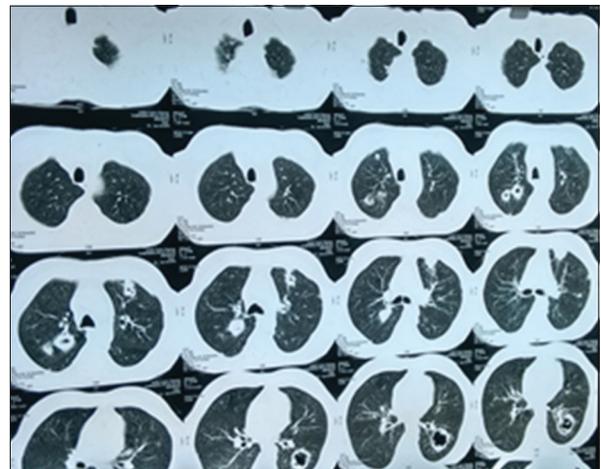


Figure 2: High-resolution computed tomography thorax showing multiple bilateral cavitory lung lesions with subpleural pulmonary nodule in left lung (at the time of admission)



Figure 3: Chest X-ray showing complete remission

the primary source. Here, the cause may be due to the immunocompromised state for prolonged use of steroids.

A study conducted by Keswani showed that endogenous endophthalmitis occurs in approximately 5 in 1,00,000 hospitalized patients secondary to an immunocompromised state with systemic fungemia or bacteremia.⁶ Methicillin-sensitive *S. aureus* causing metastatic endophthalmitis that developed from a bacteremia.⁷ *S. aureus* causing SPE from perianal abscess diagnosed by image study and bacterial culture correlation, in a patient lacked evidence of right sided endocarditis or thrombophlebitis.^{1,8} *Klebsiella pneumoniae* renal abscess producing septic emboli further complicated the condition by creating endophthalmitis, cavitating lung disease, and meningitis.⁹

CT Thorax Findings of Septic Emboli

Peripheral nodules or abscess with clearly identifiable feeding vessels. Subpleural nodular lesions or wedge-shaped densities with or without necrosis caused by septic infarcts (manifest as cavitory pulmonary infarcts). There is lower lobe predominance. Peripheral nodular densities: 5-35 mm and wedge-shaped lesions: 10-20 mm.¹⁰⁻¹²

In our case, CT examination revealed bilateral multiple cavities with the subpleural nodule.

A study conducted on 28 patients by Yang *et al.*¹³ found that the most common septic source was infective endocarditis of the tricuspid valve ($n = 14$), followed by liver abscess ($n = 5$). *S. aureus* was the causative microorganism in 16 patients, followed by *K. pneumoniae* in 9 patients. Bacteremia occurred in 19 patients. All patients were treated with appropriate antibiotics, and 4 had a valve replacement for infective endocarditis, 1 had a fasciotomy for necrotizing fasciitis, and 1 had percutaneous drainage of a liver abscess. Respiratory failure developed in 5 patients and 3 patients died. Tricuspid valve endocarditis and liver abscess were the main contributing risk factors in patients with SPE in northern Taiwan, whereas *S. aureus*

and *K. pneumoniae* were the causative pathogens in these 2 conditions, respectively.

CONCLUSION

Patient with pulmonary nodule with bilateral cavitory lung disease with multiple system involvements and raised creatinine not always due to autoimmune disease, infective etiology should be ruled out.

REFERENCES

1. Cook RJ, Ashton RW, Aughenbaugh GL, Ryu JH. Septic pulmonary embolism: Presenting features and clinical course of 14 patients. *Chest* 2005;128:162-6.
2. Wong KS, Lin TY, Huang YC, Hsia SH, Yang PH, Chu SM. Clinical and radiographic spectrum of septic pulmonary embolism. *Arch Dis Child* 2002;87:312-5.
3. O'Donnell AE, Pappas LS. Pulmonary complications of intravenous drug abuse. Experience at an inner-city hospital. *Chest* 1988;94:251-3.
4. O'Donnell AE, Selig J, Aravamuthan M, Richardson MS. Pulmonary complications associated with illicit drug use. An update. *Chest* 1995;108:460-3.
5. Sakuma M, Sugimura K, Nakamura M, Takahashi T, Kitamukai O, Yazu T, *et al.* Unusual pulmonary embolism: Septic pulmonary embolism and amniotic fluid embolism. *Circ J* 2007;71:772-5.
6. Keswani T, Ahuja V, Changulani M. Evaluation of outcome of various treatment methods for endogenous endophthalmitis. *Indian J Med Sci* 2006;60:454-60.
7. Available from: <http://www.medscape.com/viewarticle/708929>. [Last accessed on 2016 Feb 23].
8. Shiota Y, Arikita H, Horita N, Hiyama J, Ono T, Ohkawa S, *et al.* Septic pulmonary embolism associated with periodontal disease: Reports of two cases and review of the literature. *Chest* 2002;121:652-4.
9. Pedro FL, Franchini FP, Wildner LM. Brucellosis presenting with pericarditis: Case report and literature review. *Case Rep Infect Dis* 2013;2013:3.
10. Iwasaki Y, Nagata K, Nakanishi M, Natuhara A, Harada H, Kubota Y, *et al.* Spiral CT findings in septic pulmonary emboli. *Eur J Radiol* 2001;37:190-4.
11. Kuhlman JE, Fishman EK, Teigen C. Pulmonary septic emboli: Diagnosis with CT. *Radiology* 1990;174:211-3.
12. Khashper A, Discepola F, Kosiuk J, Qanadli SD, Mesurolle B. Nonthrombotic pulmonary embolism. *AJR Am J Roentgenol* 2012;198:W152-9.
13. Available from: <http://www.tsim.org.tw/journal/jour24-1/07.PDF>. [Last accessed on 2016 Feb 23].

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