

Septic Pulmonary Embolism: Reports of Three Cases

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Abstract: Septic pulmonary embolism (SPE), considered in nonthrombolytic pulmonary emboli, is an infective disease of the lungs due to infarction caused by thrombus containing microorganisms in the pulmonary artery originating any source of infection in the body. Its predisposing factors include oropharyngeal infections, infective endocarditis, central venous catheter insertion, intravenous drug use, infected pacemaker, peritonsillar abscess, pelvic area infections, bone infections, and skin and soft tissue infections. It is characterized by bilateral infiltrates in the lungs and nonspecific symptoms such as fever, cough, and chest pain. Moreover, it has high morbidity and mortality, and consideration of the disease by the physician and early broad-spectrum antibiotic therapy is the most important prognostic factor. When primary infection foci and fever are seen simultaneously with bilateral peripheral multiple nodular, and cavitary infiltrates in the lungs, septic pulmonary embolism should be remembered and not be overlooked. Malignancies, primarily hematogenous metastases, bacterial, fungal, and parasitic infections, vasculitis, and rheumatic diseases, should also be considered in the differential diagnosis(1-3).

This article presents three cases of SPE related to intravenous drug use, insertion of a permanent central venous catheter, and chronic osteomyelitis.

CASE 1

A 26-year-old male patient presented with complaints of fever, cough, shortness of breath, and chest pain was evaluated. Physical examination showed no abnormalities except for the detection of injection marks in the inguinal area. Heroin addiction for four years was present in the patient's clinical history. There was no abnormality other than white blood cell: 28 (N: 4.5-11), CRP: 59.8 (N: 0-5), D-dimer:

1.32 (N: 0-05) in laboratory tests. Blood and sputum cultures revealed no bacterial growth. Sputum tests for acid-fast bacilli, and the other serum collagen tissue markers, along with cANCA, were negative. Real-time PCR based detection of SARS-CoV-2 was negative. Peripherally located cavitation and ground-glass areas in the upper and lower lobes were observed in the thoracic computed tomography (CT) scans (Figure1a-b).

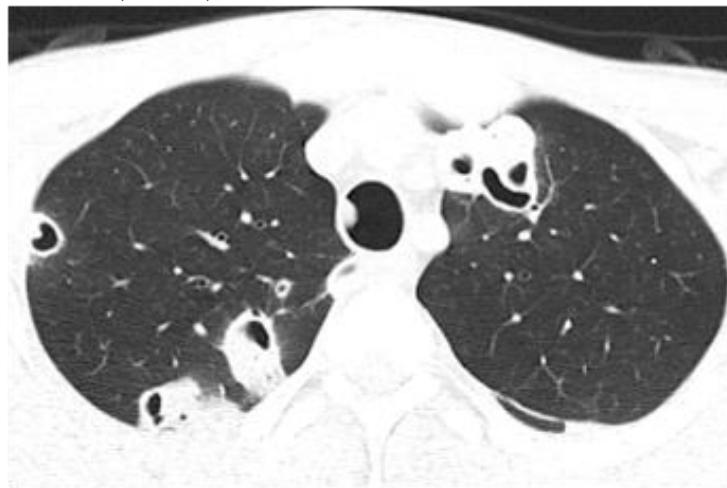


Figure 1a: Thoracic Tomography before Treatment

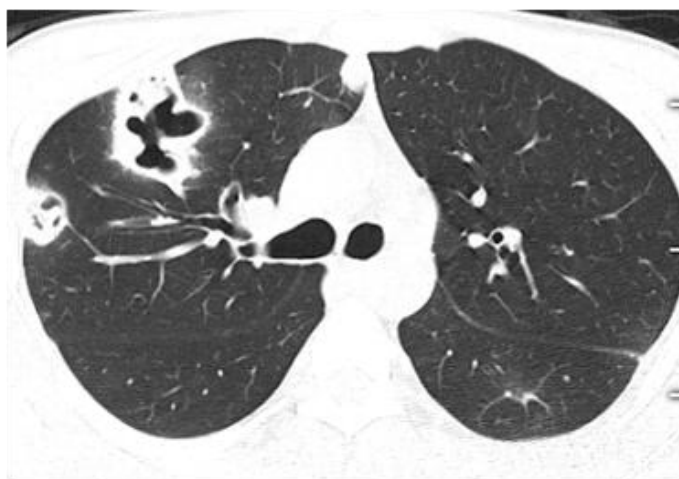


Figure 1b: Thoracic tomography before treatment

Heart valves and cavities were found to be normal on transthoracic echocardiography (TTE). A therapeutic dose of enoxaparin was started on the patient diagnosed with SPE, along with meropenem 3x1 gr, moxifloxacin 1x400

mg, and vancomycin 2x1 gr antibiotic treatments. In the first month of treatment, we found a striking regression in the defined lesions (Figure 2a-b).



Figure 2a: Post-treatment thoracic tomography

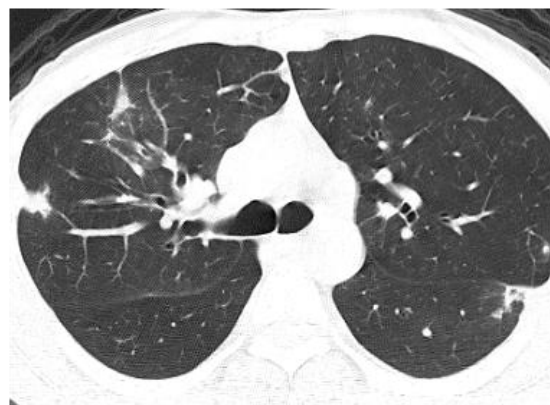


Figure 2b: Post-treatment thoracic tomography

CASE 2

A 59-year-old female was presented to our clinic with fever, right ankle swelling and pain, and chest pain. Physical examination revealed an indwelling dialysis catheter in the right and a right ankle swelling. Other systemic examinations were normal. The patient's medical history was remarkable for the presence of chronic kidney failure (CRF) and prosthesis surgery from the right tibia six months ago. It was also learned that hemodialysis had been applied to her due to CRF. There was no abnormality in the laboratory tests except for white blood cell: 18 (N: 4.5-11, creatinine: 6 (N: 0.7-1.2), CRP: 108 (N: 0-5) and D-dimer: 1,37 (N:0-05). The blood and sputum cultures yielded no bacterial growth. MRSA growth was detected in the aerobic culture of the sample from a right ankle puncture. Shortly after, the prosthesis was removed from the patient due to

a suspected prosthetic infection. Sputum tests for acid-fast bacilli, and the collagen tissue markers, including cANCA, were all negative. Real-time PCR analysis for SARS-CoV-2 was found to be negative too.

In thoracic CT scanning, mostly peripherally located multiple foci with ground glass density and cavitation were observed in all lobes and segments in both lungs (Figure 3a). No vegetative lesion was detected on TTE, and heart chambers were evaluated as normal. The patient was ultimately diagnosed with SPE. Antibiotic (meropenem 3x0.5gr, moxifloxacin 1x400 mgr, teicoplanin 400mgr) and anticoagulant (enoxaparin 2x0,6 ml/day) treatments were started immediately. Regression was found in the lesions identified above in the first month of treatment (Figure 3b).



Figure 3a: Thoracic Tomography before Treatment



Figure 3b: Post-treatment thoracic tomography

CASE 3

A 27-year-old male patient was admitted to our hospital with fever, cough, shortness of breath, sputum. Physical examination revealed no pathological finding except for the subclavian indwelling hemodialysis catheter on the right. In his medical history, we learned that he had been receiving hemodialysis treatment for the past year. No abnormalities were found in the laboratory tests other than white blood cell: 5.4 (N: 4.5-11), hemoglobin: 7.5 (N: 13-17),

platelet: 74 (N: 130-400), creatinine: 8.4 (N: 0.7-1.2), CRP: 56,5 (N:0-5), and D-dimer: 3,25 (N:0-05). MRSA growth was detected in the blood culture. Sputum tests for acid-fast bacilli and biomarkers associated with vasculitis were negative. SARS-CoV-2 was tested negative by Real-time PCR 1 reaction. Multiple cavitations with scattered placements were detected in both lungs' upper and lower lobes in thoracic CT scans (Figure 4a-c).



Figure 4a: Thoracic tomography before treatment



Figure 4b: Thoracic tomography before treatment



Figure 4c: Thoracic tomography before treatment

On TTE, a vegetative lesion was observed at the tip of the catheter in the right atrium. Following that, the patient's indwelling dialysis catheter was removed. Our case 3, diagnosed with SLE, was initiated on antibiotics (meropenem 3x0.5gr, moxifloxacin 1x400 mgr, teicoplanin

400 mgr) together with anticoagulant treatment (enoxaparin in therapeutic dose) without wasting time. In the first month of treatment, we observed a remarkable regression in the lesions mentioned above (Figure 5a-c).



Figure 5a: *Post-treatment thoracic tomography*



Figure 5b: *Post-treatment thoracic tomography*

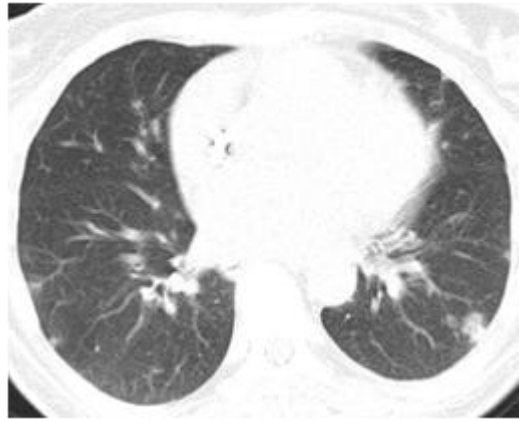


Figure 5c: *Post-treatment thoracic tomography*

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