



## Acute Respiratory Distress Revealing Infective Endocarditis : Case report

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### ABSTRACT

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This article presents a complex case of infective endocarditis in a 27-year-old intravenous heroin user with atypical manifestations. Initially presenting with gastrointestinal symptoms, the patient's condition evolved into acute respiratory distress, mimicking SARS-CoV-2 pneumonia. Further diagnostic investigations revealed right-sided heart endocarditis caused by methicillin-resistant *Staphylococcus aureus*, highlighting the challenges in diagnosing this pathology. This case provides valuable insights into understanding infective endocarditis, emphasizing the importance of timely and multidisciplinary interventions in addressing the challenges associated with this condition, particularly in cases with atypical manifestations and comorbidities.

**KEY WORDS:** Infective endocarditis, Intravenous heroin use, Methicillin-resistant *Staphylococcus aureus*, Pneumonia.

### INTRODUCTION

Infective endocarditis (IE) remains a severe pathology with high hospital mortality, ranging from 20% to 30%, exceeding 50% in intensive care settings (1). Due to symptom variability and diagnostic challenges, diagnostic criteria such as the Duke criteria have been established to formalize endocarditis diagnosis. Blood culture tests and echocardiography are the two mainstays of diagnosis (2). In this context, we present a case of a drug user whose acute respiratory distress revealed infective endocarditis.

### OBSERVATION AND RESULTS

We describe the case of a 27-year-old man with a history of intravenous heroin use who sought medical attention in late August 2021 for gastrointestinal symptoms (vomiting and diarrhea) amid generalized weakness. Despite symptomatic treatment, the patient's condition worsened, leading to dyspnea, fever, and predominantly lower limb motor deficit. The patient was admitted to the hospital's emergency department.

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Thoracic computed tomography revealed SARS-CoV-2 pneumonia (25-50% involvement) with associated pleural and pericardial effusion. The patient was admitted to the COVID pneumology unit and received oxygen therapy (5l/min) with a tailored anti-COVID protocol and intravenous antibiotics (third-generation cephalosporin + fluoroquinolones). PCR test results were negative. Due to respiratory deterioration, signs of acute heart failure, and significantly elevated D-dimers (>18 times normal), pulmonary embolism was suspected. Emergency thoracic angiography confirmed ground-glass opacities with predominant bilateral basal consolidations indicative of extensive COVID-19 involvement (25–50%) and the presence of nodular lesions with air bubbles suggesting septic emboli (Figure 1).

On October 4, 2021, the patient was admitted to the intensive care unit after transthoracic echocardiography revealed vegetations on the tricuspid valve (atrial side of the anterior cusp) with grade II tricuspid regurgitation, accompanied by signs of acute cardiac pulmonary involvement (right cavities dilation, paradoxical septum, and highly probable pulmonary hypertension) (Figure 2).

Additional examinations showed diffuse bilateral nodular opacities on chest X-ray (Figure 3), normocytic normochromic anemia (7.7 g/dL), leukocytosis (24,000/mm<sup>3</sup>), urea of 0.70 g/L, creatinine of 9 mg/L, D-

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dimers of 9,380, CRP of 221.6 mg/L, and elevated liver enzymes (AST/ALT = 57/61 IU/L). Blood gas analysis (15l O<sub>2</sub>) revealed a pH of 7.35, HCO<sub>3</sub> of 30.9, PaCO<sub>2</sub> of 57.4 mmHg, and PaO<sub>2</sub> of 76.1. Blood cultures on October 1 and 5 revealed methicillin-resistant *Staphylococcus aureus*. The electrocardiogram showed sinus tachycardia at 116 bpm. [Figure 1: Thoracic CT angiography] [Figure 2: Transthoracic echocardiography.]

### THERAPEUTIC APPROACH

High-flow oxygen therapy followed by mechanical ventilation after sedation. Antibiotics: Vancomycin (4g/day IV) + gentamicin 7mg/kg/day (for 5 days). Correction of hydroelectrolytic imbalances and enteral nutrition. Thromboprophylaxis: Low molecular weight heparin (0.4 ml/day subcutaneously).

### OUTCOME

Favorable evolution with resolution of infectious symptoms by the 8th day. Ventilatory weaning on the 9th day of hospitalization. Regression of vegetation size with complete disappearance of pulmonary opacities and acute respiratory distress signs by the 3rd week of hospitalization. The patient was transferred to cardiology on October 26, 2021, where he remained for three weeks on vancomycin (2g/day IV) before transitioning to outpatient treatment with oral pyostacine.

### DISCUSSION

Despite significant advances in microbiology and echocardiography, the diagnosis of infective endocarditis (IE) can be challenging and delayed (3), particularly due to symptom variability and diagnostic challenges associated with secondary locations. The respiratory manifestations observed in this patient originated from right-sided heart IE with migration of septic emboli to the lungs, initially masked as pneumonia.

Right-sided heart endocarditis is rare except in intravenous drug users, where its frequency remains high (4). These infections are either associated with initial involvement on the left side or exclusively localized to the orifices of the right heart valves (more frequently tricuspid than pulmonary) (5). It often occurs on initially healthy valves, and tricuspid infective grafts are frequently revealed by pulmonary emboli. The prognosis is generally favorable (6).

In the context of the presented case, the integration of point-of-care echocardiography would have significantly expedited the diagnosis, allowing for a presumptive diagnosis in the emergency department rather than a few days later upon patient admission (7) (8). The diagnostic journey of our patient, including blood culture tests, CT scans, additional laboratory examinations, and finally, echocardiography, ultimately identified right-sided infective endocarditis secondary to methicillin-resistant *Staphylococcus aureus* as the causative agent.

The rarity of exclusive right-sided endocarditis, coupled with a deceptive presentation as SARS-CoV-2 pneumonia, underscores the need for a comprehensive and multidisciplinary approach in managing such cases. The therapeutic strategy, including high-flow oxygen therapy, mechanical ventilation, and an appropriate antibiotic regimen, proved effective, leading to a favorable outcome with the resolution of infectious symptoms. This case also emphasizes the importance of addressing underlying substance use disorder, as intravenous drug use remains a significant risk factor for right-sided heart endocarditis.

In conclusion, this study contributes to enriching our understanding of infective endocarditis, highlighting the need for increased clinical awareness, early diagnosis, and prompt, multidisciplinary therapeutic approaches. The successful resolution of the presented case attests to the importance of timely and comprehensive interventions in managing this potentially life-threatening condition.

### Declaration of competing interest

All authors declare no conflict of interest.

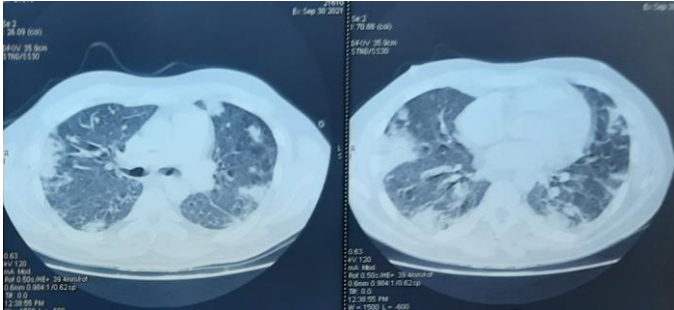
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**FIGURES :**



**Figure 1.**



**Figure 2.**



**Figure 3.**