



Case Report

Rare Case of Culture Negative Native Tricuspid Valve Infective Endocarditis- Serial HRCT Helped the Management Problem

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ABSTRACT

Background: Infective endocarditis (IE) is an acute or subacute endocardial infection caused by bacterial, viral or fungal microorganisms. Right-sided native valve infective endocarditis refers to IE involving the tricuspid or pulmonic valve; isolated right-sided IE accounts for approximately 10 percent of all IE cases, most commonly associated with a history of immunocompromised status and drug abuse; concomitant left-sided IE account for approximately 13 percent of all IE cases. **Case Summary:** A 20-year-old male presented to medicine ward with high-grade fever, chills, and dry cough for 10 days. He had no history of intravenous drug use, previous hospitalizations, cardiac disease, or any history suggestive of immunocompromise status. Upon admission, his vitals showed tachycardia (HR 110/min), mild hypoxia (SpO₂ 92%), and low blood pressure (BP 100/64 mm Hg). Physical examination revealed raised JVP with prominent veins, and decreased breath sounds in the bilateral lower lung fields. (Figure 1,2)

Conclusion- This is a case of fulminant staphylococcus aureus native tricuspid valve endocarditis with pulmonary complication. Previously reported cases of native tricuspid valve endocarditis were with a history of IV drug abuse or prolonged central I.V line or immunocompromised and often culture positive.

Keywords: HRCT, Infective endocarditis, culture negative, Tricuspid valve infection.

SUMMARY

A 20-year-old male with a history of intravenous drug use presented with a rare case of culture-negative native tricuspid valve infective endocarditis (IE). The patient had persistent fever, dyspnea, and weight loss. Clinical evaluation revealed tachycardia, peripheral edema, and a systolic murmur at the left lower sternal border. Transthoracic echocardiography showed a large, mobile vegetation on the tricuspid valve without significant regurgitation. High-resolution computed tomography (HRCT) revealed multiple bilateral septic emboli, prompting early empiric antibiotic therapy. This case is unique as it does not have a history of drug abuse or prolonged central I.V line, and culture is negative. Inappropriate antibiotic use can lead to relapse of symptoms and antibiotic resistance, making it crucial to diagnose and treat the case.

Keywords: HRCT, Infective endocarditis, culture negative, Tricuspid valve infection

BACKGROUND

Infective endocarditis (IE) is an acute or subacute endocardial infection caused by bacterial, viral or fungal microorganisms. Right-sided native valve infective endocarditis refers to IE involving the tricuspid or pulmonic valve; isolated right-sided IE accounts for approximately 10 percent of all IE cases, most commonly associated with a history of immunocompromised status and drug abuse; concomitant left-sided IE account for approximately 13 percent of all IE cases.[1,2] Diagnosis and treatment of IE becomes very difficult with prior inappropriate antibiotics. We report a case of culture-negative and drug-resistant native tricuspid valve endocarditis with pulmonary complications without immunosuppression or history of drug abuse.

CASE SUMMARY

A 20-year-old male presented to medicine ward with high-grade fever, chills, and dry cough for 10 days. He had no history of intravenous drug use, previous hospitalizations, cardiac disease, or any history suggestive of immunocompromise status. Upon admission, his vitals showed tachycardia (HR 110/min), mild hypoxia (SpO₂ 92%), and low blood pressure (BP 100/64 mm Hg). Physical examination revealed raised JVP with prominent veins, and decreased breath sounds in the bilateral lower lung fields. (Figure 1,2)

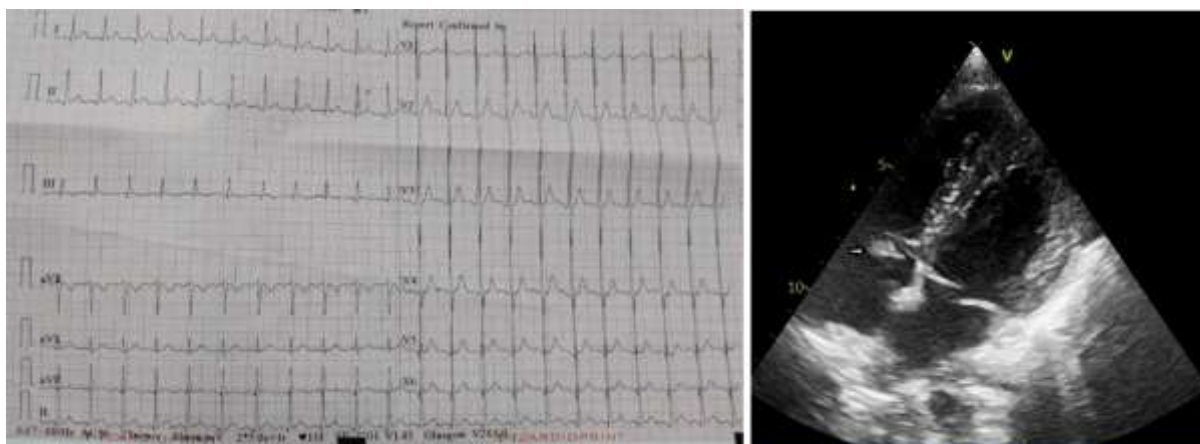


Figure 1 ECG suggestive of sinus tachycardia and 2D echo showing vegetation at Tricuspid valve

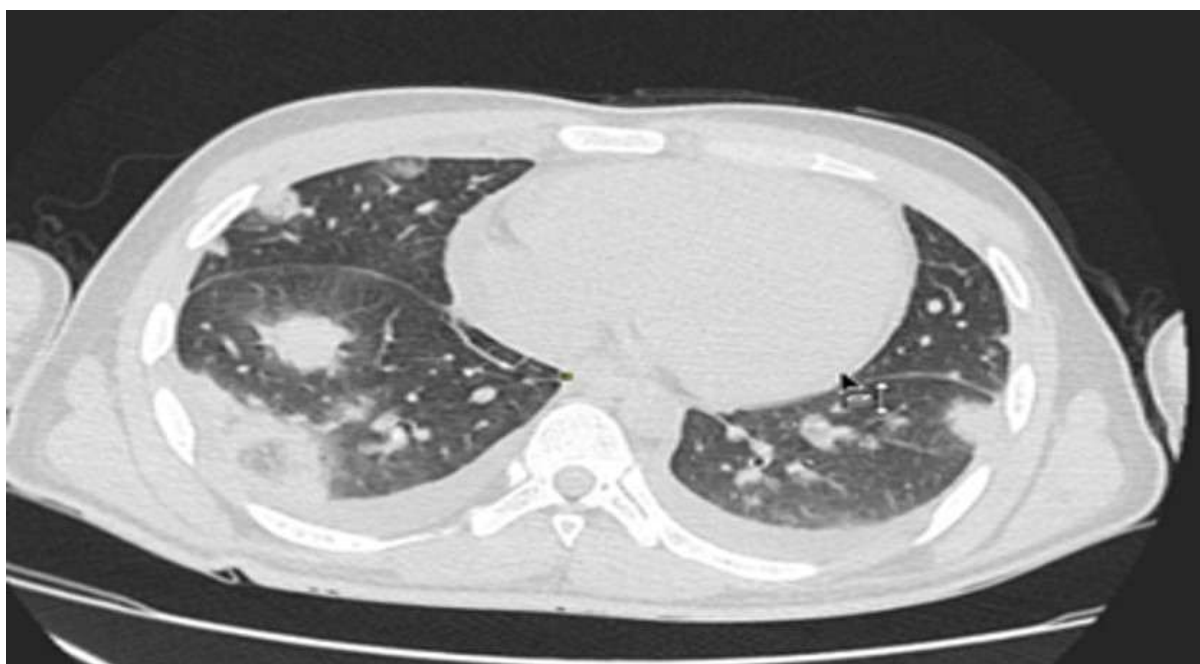


Figure 2 HRCT thorax at first admission suggestive of Bilateral pleural effusion and consolidation

Laboratory findings included Haemoglobin 12.6 gm%, leukocytosis (TLC 13,400/mm³), elevated CRP, and ESR. HRCT thorax showed bilateral pleural-based consolidations with minimal pleural effusion. A 2D echocardiogram revealed a 1.2 cm × 1.2 cm vegetation on the tricuspid valve, suggesting infective endocarditis (IE). Blood cultures were negative. Empiric IV vancomycin and ceftriaxone were started, and the patient became afebrile after 4-5 days, but he discontinued antibiotics 4 days after discharge from department of medicine.

The patient relapsed with fever, dry cough, breathlessness, chest pain and palpitations a few days later. On readmission to cardiology ward, his laboratory findings were anaemia (Hb 6.8 gm%), leukocytosis (TLC 21400), and raised ESR and CRP. Repeat blood cultures were negative, and after 10 days of IV antibiotics, including linezolid (due to elevated creatinine), his symptoms persisted. A repeat HRCT showed bilateral consolidation, bullae, and right-sided pneumothorax, likely from *Staphylococcus aureus*. Antibiotics were switched to cotrimoxazole DS for suspected drug-resistant staphylococcal infection. The patient became afebrile after 4 days, with resolution of respiratory symptoms. A repeat HRCT after 10 days showed resolution of pneumothorax and bullae, and cotrimoxazole was continued for another 3 weeks. The patient was discharged with full recovery. (Figure 3, 4)

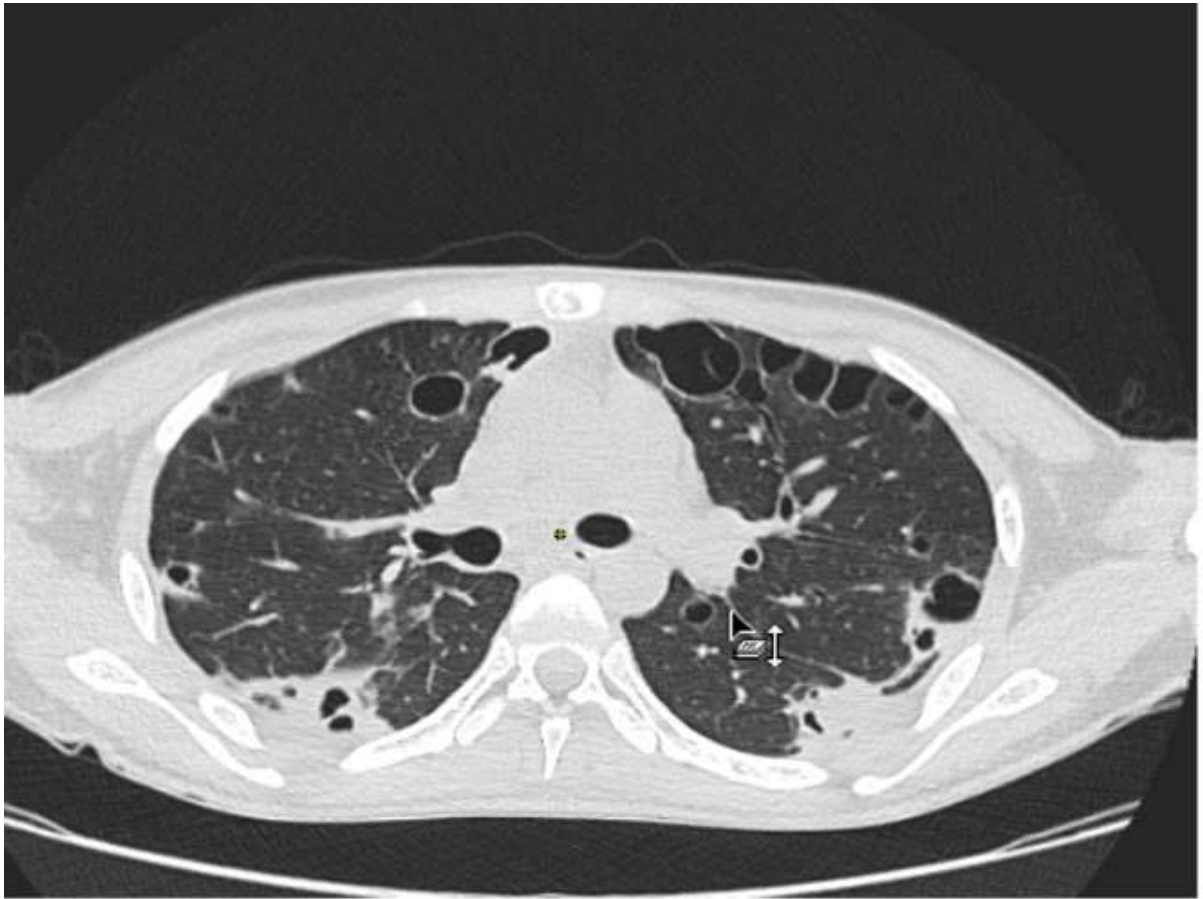


Figure 3 Repeat HRCT suggestive of Bilateral pneumatocele

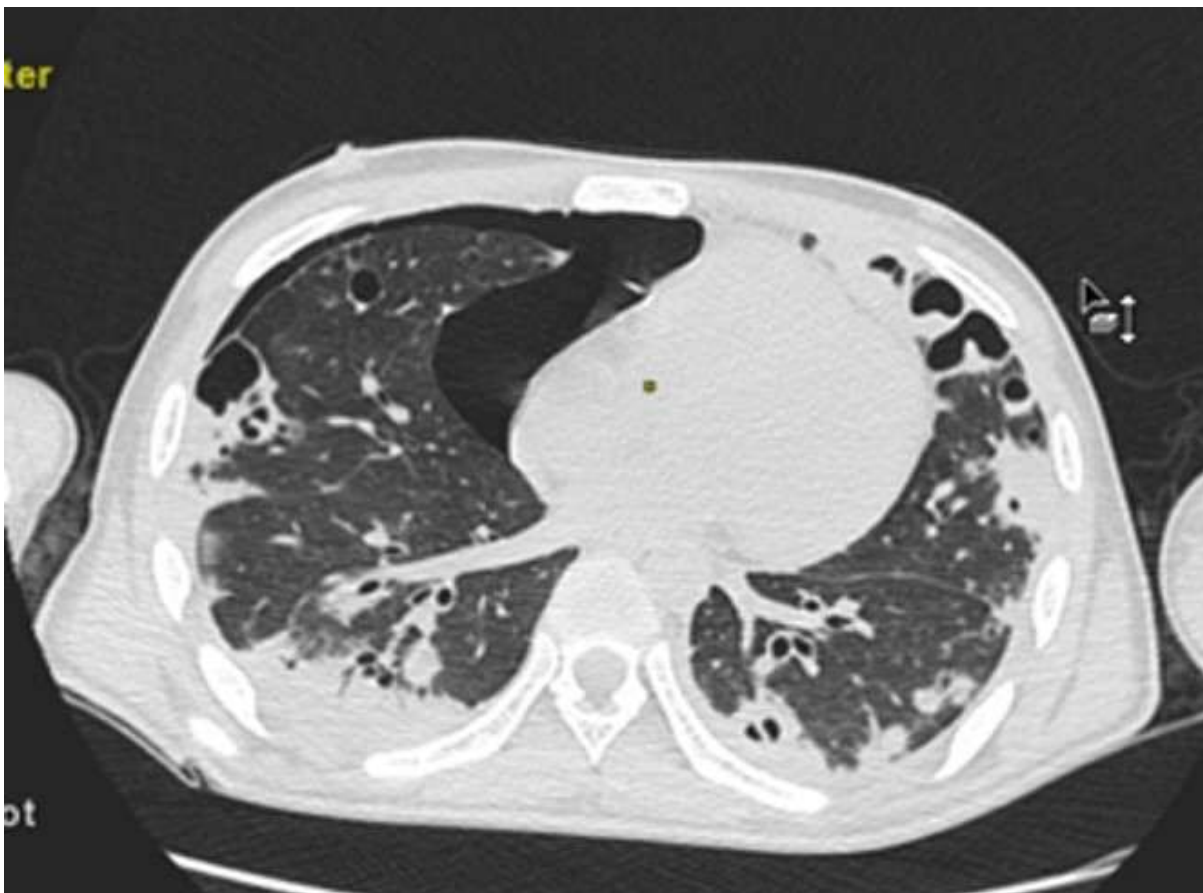


Figure 4 Repeat HRCT suggestive of Bilateral pneumatocele and pneumothorax

DISCUSSION

The patient, who had negative blood cultures due to prior antibiotic use, had bilateral consolidation, bullae, and pneumothorax on serial HRCT. These findings suggested infection by *Staphylococcus aureus*, *Klebsiella*, *Haemophilus*, *Streptococcus pneumoniae*, or *Pneumocystis jirovecii*. *Pneumocystis* was ruled out due to the absence of history suggestive of immunodeficiency and negative HIV serology. Given that *Staphylococcus aureus* is a common cause of right-sided infective endocarditis as well as pneumonia associated with pneumatocele, the case was suspected to be drug-resistant *Staphylococcus aureus* infection, and cotrimoxazole was initiated.[3-5]

CONCLUSION-

This is a case of fulminant *staphylococcus aureus* native tricuspid valve endocarditis with pulmonary complication. Previously reported cases of native tricuspid valve endocarditis were with a history of IV drug abuse or prolonged central I.V line or immunocompromised and often culture positive. This case is unique in the sense that it does not have a history of drug abuse/IV catheterization, or any evidence of immunosuppression and culture is negative. Thus, in conclusion, isolated right sided infective endocarditis may rarely occur in a patient without immunodeficiency or history of drug abuse/prolong IV catheterisation; inappropriate antibiotic use in case of infective endocarditis can lead to relapse of symptoms and antibiotic resistance which may lead to difficulty in further management of patient; suspected case of culture-negative native tricuspid valve infective endocarditis with a pulmonary complication, a serial HRCT thorax finding may be helpful to diagnose possible causative organisms and can be treated accordingly.

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