ISSN: 2754-4923

Journal of Diagnosis & Case Reports

SCIENTIFIC Research and Community

Case Report

Open Access

Native Tricuspid Valve Endocarditis in A Non-Intravenous Drug User

Fatima Muhammed Bashir[1*], Shehu Abubakar Kana[2], Ruqayya Nasir Sani[2] and Mahmoud Umar Sani[3]

[1]Department of Medicine, Northwest University and Muhammad Abdullahi Wase Teaching Hospital, Kano, Nigeria

[2]Department of Internal medicine, Aminu Kano Teaching Hsopital, Kano, Nigeria

[3]Department of Internal medicine, Bayero University and Aminu Kano Teaching Hospital, Kano, Nigeria

SUMMARY

We report a case of staphylococcal tricuspid valve endocarditis in a young patient with no history of intravenous drug abuse. Echocardiography revealed two large vegetations, one on each of the lateral and septal cusps of the tricuspid valve complicating an asymptomatic peri-membranous ventricular septal defect with a closing pseudomembrane and a left to right shunt. Treatment with intravenous antibiotics resulted in significant improvement in symptoms and patient was discharged home on I.V antibiotics after two weeks of admission.

***Corresponding author**

Fatima Muhammed Bashir, Department of Medicine, Northwest University and Muhammad Abdullahi Wase Teaching Hospital, Kano, Nigeria.

Received: April 28 2026; **Accepted:** May 04, 2026; **Published:** May 12, 2026

Keywords: Tricuspid Valve Endocarditis, Vegetation, Ventricular Septal Defect, Staphylococcus, Non-IV Drug User

Introduction

Right-sided infective endocarditis (RSIE) is less common than left-sided infective endocarditis (LSIE), accounting for only 5% to 10% of cases of IE [1]. The tricuspid valve (TV) is majorly affected, encompassing 90% of cases of RSIE [2]. RSIE and TV infective endocarditis (TVIE) are most common among intravenous drug users although congenital heart defects, pacemaker leads, defibrillator leads and vascular access for dialysis are also major risk factors [3]. Congenital cardiac defects associated with left to right shunt (ventricular septal defect and patent ductus arteriosus) predispose to TVIE [4]. Staphylococcus aureus is the predominant causative organism in TVIE [1,2]. We report a case of staphylococcal TVIE tricuspid valve endocarditis associated with large vegetation in a non-intravenous drug user with incidental finding of a ventricular septal defect (VSD) who had long history of untreated fever and palpitation before presentation.

Case Report

An 18year old boy, with no known history of cardiac disease was admitted to our emergency department in July 2024 with 8 months history of recurrent fever and palpitation. Fever was described as low grade and intermittent. Palpitation was felt as regular beats, aggravated by mild exertion and relieved by rest. No syncopal attacks. Had associated history of cough productive of frothy sputa with no hemoptysis. At admission, he was pale, febrile (axillary temperature 38.60C), had mild bilateral pitting pedal edema but had no splinter hemorrhage, Janeway lesions, Osler' nodes or finger clubbing. His pulse was regular at a rate of 112/min and his blood pressure was 80/60 mmHg. Auscultation revealed a grade 5/6 pan systolic murmur at the left lower sternal border with no radiation to the epigastrium. He had mild tender hepatomegaly, no splenomegaly. Other systemic examinations were unremarkable.

Investigations showed leukocytosis with predominant neutrophilia, microcytic hypochromic anaemia and thrombocytosis. Erythrocyte sedimentation rate was 80mm/hr. Renal function was normal. Electrocardiography showed sinus tachycardia, left axis deviation, left atrial enlargement and intraventricular conduction defects (figure 1). Transthoracic echocardiography (TTE) revealed two highly mobile vegetation one attached each to the septal- and lateral tricuspid valve leaflets which measured 23×8mm and 17×9mm respectively with ball-valve effect between right atrium and ventricle (figure 2). He had severe tricuspid regurgitation with severe pulmonary hypertension. The left sided chambers were normal in size and left ventricular ejection fraction was …. This endocarditis complicated an asymptomatic peri-membranous VSD (12mm) with a closing pseudomembrane and left to right shunt (figures 3 & 4). Moderate pericardial effusion (19mm) lateral to RA and RV with no evidence of tamponade or fibrin strands was noted. The diagnosis of subacute/chronic TVIE complicating a peri-membranous VSD with a pseudomembrane was made. Blood sample was taken for culture after which the patient was commenced on empirical treatment with intravenous ceftriaxone (2g daily), flucloxacillin (500mg 6 hourly) and gentamicin (80mg 12 hourly). He made remarkable improvement and was discharged home on I.V antibiotics after 2 weeks of admission. Blood culture isolated a coagulase negative staphylococcus specie resistant to gentamicin, as such IV gentamicin was changed to I.V chloramphenicol 1.5g daily and to continue with I.V ceftriaxone for another three weeks after review by the infectious disease

unit. Repeat TTE (3 weeks later) showed no vegetation on the septal cusp and reduced size of the lateral TV leaflet vegetation (15.4×8.2mm). He was changed to oral cefpodoxime (200mg 12 hourly) for extended two weeks. On subsequent review, patient was clinically stable, no heart failure symptoms, afebrile and all vitals were stable. Repeat TTE showed residual small vegetation on the lateral TV leaflet (10.0×7.0mm) (figure 5). The patient was counselled on the need for repair of the VSD to prevent recurrence of the TVE as long-term plan and continue follow up in cardiology clinic.

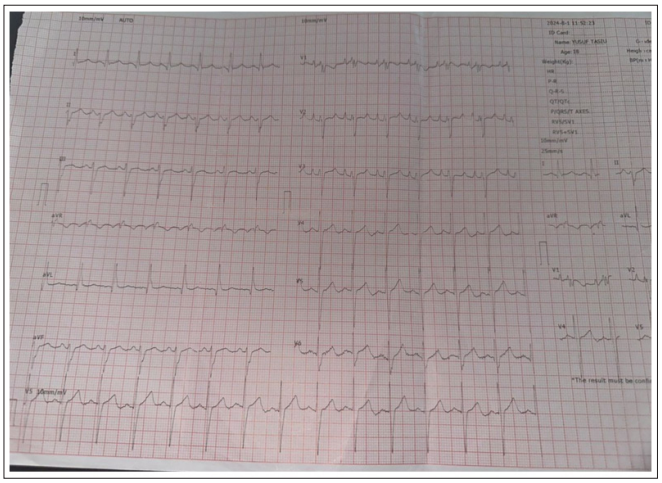

Figure 1: EKG

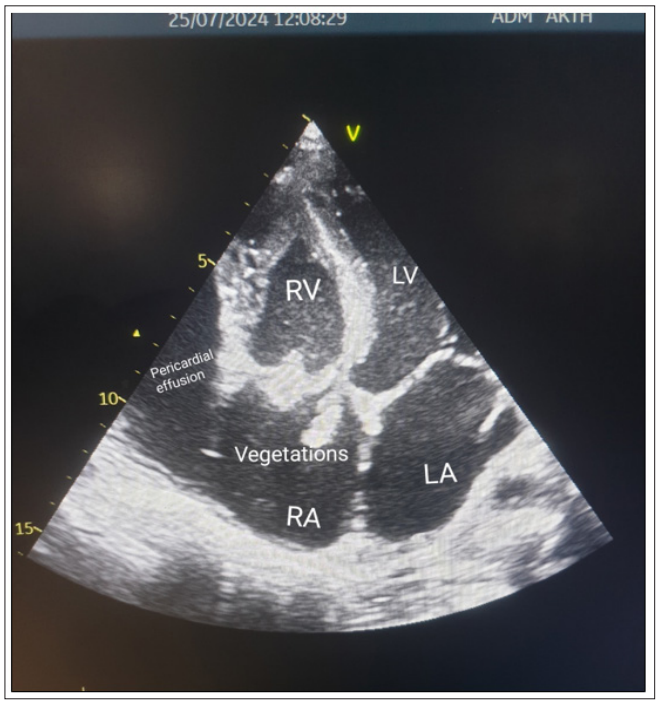

Figure 2: Vegetations attached to the Septal and Lateral Cusps of the Tricuspid Valve

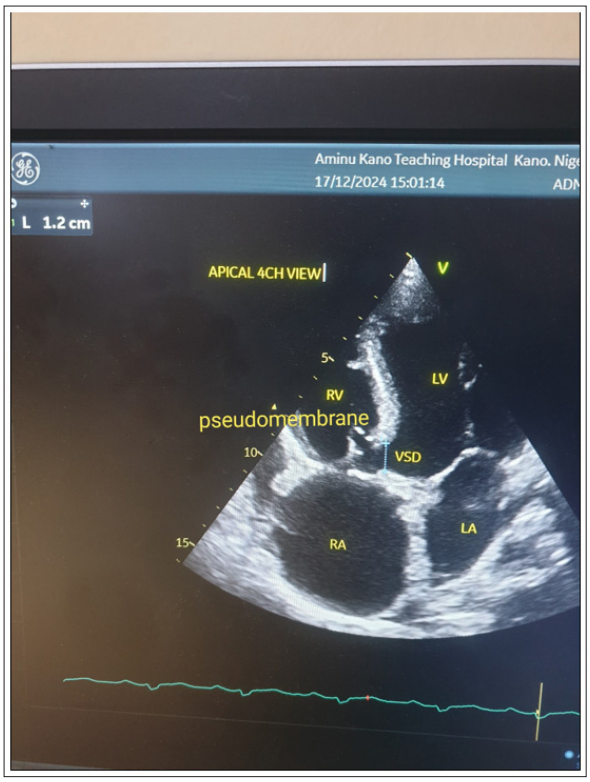

Figure 3: Perimembranous VSD with a Pseudoaneurysm

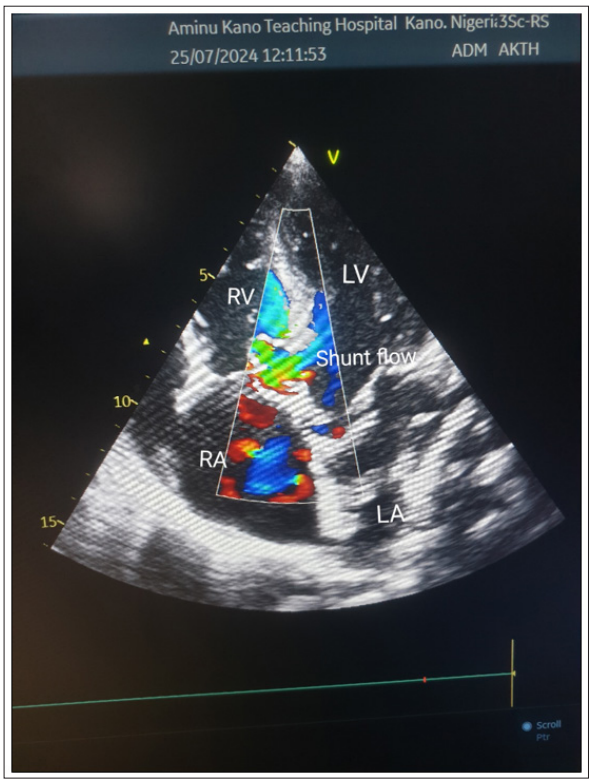

Figure 4: Left to Right Shunt across the VSD

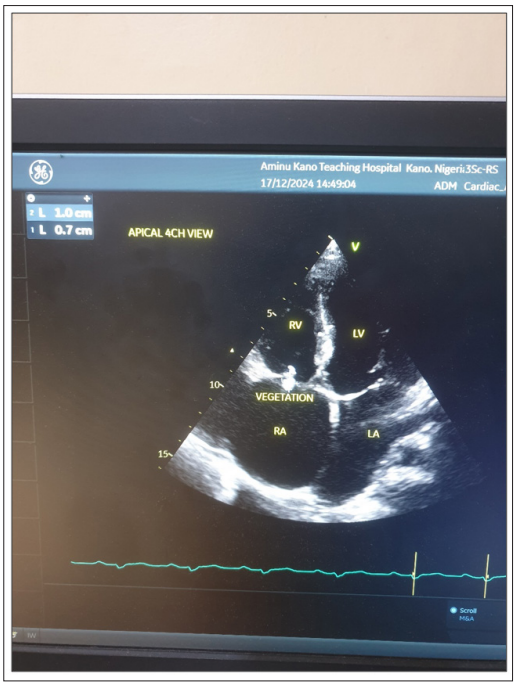

Figure 5: Residual Vegetation at 6 Months of Follow Up

Discussion

Tricuspid valve endocarditis is rare and mainly reported in intravenous drug abusers in the western literature [5]. TVE is considerably less common than LSIE and accounts for 5% to 10% of all cases of IE [3]. Although RSIE is strongly associated with IVDU, other major risk factors for TVE include uncorrected congenital heart diseases (associated with left to right shunt) like ventricular septal defect (VSD) and patent ductus arteriosus (PDA), implantable cardiac devices like defibrillators and pacemakers and vascular access for dialysis [3,6]. VSD is one of the most common congenital heart diseases in childhood and accounts for up to 40% of all congenital cardiac malformations [7]. Increasing prevalence of VSD is seen in adult population with medical advancements [7]. Patients with VSD are often asymptomatic, however one of its main concerns is the long-term risk of IE with incidence rate of 14.5/10000 person-years [8]. In general, TV is mostly involved in patients with VSD, as seen in the present case [9]. According to Dukes' criteria for IE diagnosis, two major and two minor criteria were detected in our patient. The major criteria were a typical micro-organism for IE from two separate blood cultures (Streptococci viridans, Streptococcus bovis, HACEK -Haemophilus spp., Actinobacillus actinomycetemcomitans, Cardiobacterium hominis, Eikenella corrodens, Kingella kingae- group, or community-acquired Staphylococcus aureus or enterococci in the absence of a primary focus) and echocardiographic finding of large vegetation attached to TV leaflets. Staphylococcus aureus is the most common microorganism isolated in TVE occurring in 60-90% of cases in some studies irrespective of associated risk factor and commonly present with vegetation of 1cm or greater. It is associated with highest morbidity and mortality and the proportion of S. aureus cases with methicillin resistance is increasing [1-3,10]. Coagulase negative staphylococci was cultured from the blood in our case. Our patient's minor criteria were VSD (predisposing cardiac condition) and fever (temperature ≥38°C).

Patients with TVE usually present with pleuropneumonic symptoms rather than congestive cardiac failure [6]. Pneumonia or septic pulmonary emboli resulting from dislodgement of vegetative material is common [6]. Cardiac manifestations are less prominent in TVE than in LSIE [6]. However, the present case was different from unusual symptoms of congestive cardiac failure.

Most patients with TVE are successfully treated with antibiotics [3,6]. Our patient made remarkable improvement with antibiotic therapy. Michael et al showed that medical therapy successfully eradicated the infection in all the patients with vegetation of less than 1cm. Although medical therapy was effective in 60% of patients with vegetation of 1cm or greater, it was significantly less than the medical cure rate for patients with smaller vegetation [10]. Antibiotic treatment alone clears bacteremia in 70-85% of cases of TVE and is associated with 7-11% in-hospital mortality. Between 5-16% of RSIE cases eventually require surgical intervention with reported surgical mortality between 0-15% for patients with isolated TVE [1,3,11-13]. The choice of initial empiric antimicrobial depends on the suspected organism. There must be an initial intent to use empiric antibiotic with activity for S. aureus in RSIE or TVIE particularly when vegetations are large, IVDUs, and catheter related infections. Therapy should always be reviewed once the causative organism has been identified and its sensitivity determined [3]. The appropriate choice and duration of antibiotic therapy should be guided by an infectious disease expert [1,3].

Surgery is considered only in patients with; 1) very large vegetations, >20mm and recurrent septic pulmonary emboli with concomitant right heart failure, 2) IE caused by microorganisms that are difficult to eradicate (e.g., fungi) or bacteremia for at least 7 days (e.g., S. aureus, P. aeruginosa) despite adequate antimicrobial therapy, and 3) right heart failure secondary to severe tricuspid regurgitation with poor response to diuretic therapy [3,6]. Death of patients with TVE frequently results from pulmonary regurgitation and respiratory distress syndrome caused by recurrent septic pulmonary emboli [6]. Although the present case had two large vegetations on the TV leaflets that might have required surgical intervention, he made remarkable improvement with medical therapy. The patient was counseled on the need for repair of the VSD to prevent recurrence of the TVE as a long-term plan.

Conclusion

TVE is rare among non-IV drug users and occurs in a wide range of underlying conditions like congenital heart diseases, implantable cardiac devices and indwelling catheters. This is an intriguing case of native tricuspid valve endocarditis with two large vegetations complicating an asymptomatic congenital peri membranous VSD with a closing pseudomembrane in a young boy with no history of IVDU with unusual left heart failure symptoms at presentation, who showed response to medical therapy.

Conflict of Interest Statement

There is no potential conflict of interest.

References

1. Habib G, Lancellotti P, Antunes MJ, Bongiorni MG, Casalta J, et al. (2015) ESC Guidelines for the management of infective endocarditis The Task Force for the Management of Infective Endocarditis of the European Society of Cardiology (ESC) Endorsed by : European Association for Cardio-Thoracic Surgery. Eur Heart J 3075-3123.
2. Murdoch DR, Corey GR, Hoen B, Mir´o JM, Fowler VG, et al. (2009) Clinical presentation, etiology, and outcome of infective endocarditis in the 21st century: the International Collaboration on Endocarditis-Prospective Cohort Study. Arch Intern Med 5: 463-473.

3. Hussain ST, Witten J, Shrestha NK, Blackstone EH, Pettersson GB (2017) Tricuspid valve endocarditis. Ann Cardiothorac Surg 6: 255-261.
4. Abid L, Laroussi L, Chtourou S, Hamza CH, Krichène S, et al. (2010) Tricuspid valve endocarditis with large vegetation in a non drug addict patient. J I M Sfax 58-61.
5. Raut N, Potdar A, Sharma S (2018) Tricuspid valve endocarditis in non-drug abusers : A case series from India. Indian Heart J 70: 476-481.
6. Chan P, Ogilby JD, Segal B (1988) Tricuspid valve endocarditis. Am Heart J 117: 1140-1146.
7. Lee PT, Maverick F, Foo JS, Tan J Le (2018) Increased incidence of infective endocarditis in patients with ventricular septal defect. Congenit Heart Dis 13: 1005-1011.
8. Gersony WM, Hayes CJ, Driscoll DJ, Keane JF, Kidd L, et al. (1993) Bacterial endocarditis in patients with aortic stenosis, pulmonary stenosis, or ventricular septal defect. Circulation 87: 1121-1126.
9. Turhan Ö, Saba R, Belgi A, Inan D, Karaoglan H, et al. (2005) A case of right-side infective endocarditis with ventricular septal defect. Infez Med 13: 39-41.
10. Robbins MJ, Frater RWM, Soeiro R, Frishman WH, Strom JA (1986) Influence of vegetation size on clinical outcome of right-sided infective endocarditis. Am J Med 80: 165-171.
11. Gaca JG, Sheng S, Daneshmand M, Rankin JS, Williams ML, et al. (2013) Current Outcomes for Tricuspid Valve Infective Endocarditis Surgery in North America. Ann Thorac Surg 96: 1374-1381.
12. Musci M, Siniawski H, Pasic M, Grauhan O, Weng Y, et al. (2007) Surgical treatment of right-sided active infective endocarditis with or without involvement of the left heart: 20-year single center experience. Eur J cardio-thoracic Surg 32: 118-125.
13. Dawood MY, Cheema FH, Ghoreishi M, Foster NW, Villanueva RM, et al. (2015) Contemporary Outcomes of Operations for Tricuspid Valve Infective Endocarditis. Ann Thorac Surg 99: 539-546.