Tricuspid Valve Endocarditis

M Palaniappan¹, Padmini V Usha², P Balamurugan³, Sree P Sanbaka², B Vetriveeran², Hrudya Venugopal¹, S Rajesh¹, M Gayathri¹, M Raveendran³

Abstract

We report a case of isolated native tricuspid valve infective endocarditis caused by Coagulase Negative Staphylococcus in a non-IV drug abuser without structural heart disease. Early diagnosis and prompt initiation of appropriate treatment saved the patient without surgical intervention. The recent trend of Coagulase Negative Staphylococci (CoNS) causing native valve endocarditis (NVE) is reviewed with literature.

Introduction

Infective endocarditis involving right side valves accounts for only 5-10% of all cases.¹ Staphylococcus aureus (S. aureus) infection in an intravenous (IV) drug abuser without any preexisting structural heart disease leading to tricuspid valve endocarditis is a typical scenario.² Coagulase Negative Staphylococci (CoNS) include a wide variety of normal skin flora that are generally considered as routine contaminants of lab specimens. On the other hand, they give rise to various clinical infections including infective endocarditis especially when the species and strains are unusually virulent.³

Case Report

A 22-year-old male got admitted with complaints of high grade fever and productive cough of one week duration. He had a history of yellowish sputum with occasional streaky hemoptysis and on MMRC grade IV breathlessness. There was no history of exposure to cases of pulmonary tuberculosis or H1N1 infection. Recently, he had been diagnosed with Paranoid Schizophrenia about a month back and his symptoms were controlled on Olanzapine, Trihexyphenidyl and Clonazepam. He was a non-smoker and non-alcoholic. He had snorted marijuana (Ganja) once due to peer pressure in his workplace about nine months back. However, there was no history of IV drug abuse.

On general examination, he was tachypneic, anemic and febrile. His BP was 90/70 mmHg and SpO₂ was 92 % in room air. He had grade I clubbing and no dermatological signs of IV drug abuse. Systemic examination was unremarkable except for tachycardia and crepitations in the lower lobe of right lung. The routine investigations showed hemoglobin of 10.2 g/dl, platelet of 110,000/cumm, ESR of 80 mm/hour and total bilirubin of 1.9 mg/dl. ECG showed sinus tachycardia and chest X-ray (Figure 1) showed active fluffy infiltrates in both lower zones (R > L) along with several cavitatory nodules in the periphery of both lungs. CT chest (Figure 2) revealed multiple nodules in both lungs, largest measuring 1.8 cm, with many of them showing cavitation suggesting a possibility of septic pulmonary emboli. It also showed traces of bilateral pleural effusion.

Transthoracic and transesophageal echocardiogram (Figures 3 and 4) identified small vegetations on the atrial aspect of septal leaflet of native tricuspid valve with trivial regurgitation. Other valves were normal and no structural abnormalities were found. On eliciting an additional focused history, he had no hospitalization, invasive procedures, dental infections or soft tissue infections in the recent past. In view of hemodynamic instability, the patient was immediately started on empirical antibiotics i.e. Vancomycin...
on regular follow-up without any or perforation. The patient is now of complications such as abscess mild to trivial degree and no evidence in vegetation size, improvement of echocardiogram showed a decrease sinus tachycardia to be settling down normal. Serial ECGs showed the subsided and his serial complete his fever and breathlessness gradually sets of blood culture were negative as for six weeks. The second and third oral Q12h) was newly added and given four weeks and Doxycycline (100 mg was replaced with Amikacin (500 mg a duration of four weeks, Gentamycin Linezolid, Amikacin and Doxycycline. Hence Vancomycin was continued for a duration of four weeks, Gentamycin was replaced with Amikacin (500 mg IV BD) which was administered for four weeks and Doxycycline (100 mg oral Q12h) was newly added and given for six weeks. The second and third sets of blood culture were negative as expected.

During the course of antibiotics, his fever and breathlessness gradually subsided and his serial complete hemogram and ESR gradually became normal. Serial ECGs showed the sinus tachycardia to be settling down with no signs of myocarditis. Serial echocardiogram showed a decrease in vegetation size, improvement of tricuspid regurgitation back from mild to trivial degree and no evidence of complications such as abscess or perforation. The patient is now on regular follow-up without any symptoms. We thus finally diagnosed our patient with acute, isolated, native tricuspid valve endocarditis caused by CoNS in a non-IV drug abuser without structural heart disease based on Duke’s criteria.

Discussion

Coagulase negative staphylococci (CoNS) are historically known to cause human infections related to indwelling or implanted artificial plastic bodies such as catheters, CSF shunts, ICDs, prosthetic valves etc. by virtue of their unique ability to form a thick, multilayered biofilm over the polymer surface. Lately, there has been a continued emergence of CoNS group of bacteriae causing NVE, both healthcare associated and community acquired. Around fifty percent of NVE due to CoNS is community acquired. Although the mechanism of community acquisition is incompletely understood, it is proposed that susceptibility of the host and virulence of the organism may play a role. Ours was community acquired with no recent healthcare association.

Among the CoNS group causing NVE, Staphylococcus epidermidis (S. epidermidis) is found to be the most common species in various studies. Another important organism, Staphylococcus lugdunensis (S. lugdunensis) is peculiar for its high virulence and propensity towards the native valves as against the prosthetic ones. It is to be noted that our patient was not immunocompromised or an IV drug abuser nor had structural cardiac lesions. Also there were no predisposing factors for bacteremia in the recent past. Though species was not identified in our case, it could arguably be a S. epidermidis or a S. lugdunensis based on the above literature evidence and our patient’s clinical context.

In a large multicenter study of NVE, it is found that CoNS, as compared to S. aureus, had a longer duration of symptoms before presentation probably due to its indolent nature. and had a lesser incidence of vascular and immunologic events probably due to its aggregation into biofilm. Vascular event in the form of multiple septic pulmonary emboli with cardiorespiratory compromise brought the patient to us within relatively shorter duration of illness. Though it is not common for NVE due to CoNS to present in such a rapidly detrimental manner, infection with a highly virulent CoNS species like S. lugdunensis could again be a possibility in this case.

NVE due to CoNS is associated with higher need for surgical therapy than NVE due to S. aureus. Possible explanation is the higher rate of occurrence of heart failure and other complications like myocardial abscess in association with CoNS which may in turn be related to its indolent but locally invasive nature. Early diagnosis and prompt initiation of appropriate antibiotics might have prevented the development of severe complications in our patient.

References