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Left-Sided Native Valve Infectious Endocarditis in Intravenous Drug Abusers

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Abstract

Background: Left-sided infectious endocarditis (IE) is a rare entity, more aggressive and with different pathophysiology as compared to the right-sided disease. Left-sided disease is more severe and has more extra cardiac manifestations and prolonged course of disease.

Case Description: Middle age male I/V drug abuser and alcoholic, was admitted with complaint of fever with rigors and chills, drowsiness and aphasia. Investigations showed a vegetation on the left-side of the heart and an embolic infarct of the brain. He was managed conservatively.

Conclusion: Left-sided IE requires prompt treatment and a high index of suspicion during the diagnostic workup. Six weeks of antibiotic therapy is usually required, despite this, the disease has high morbidity and mortality.

Case Presentation

40 years old male known case asthma, I/V drug abuser and alcoholic, without any previous cardiac history, admitted through the emergency department with complaint of fever and chills for the last one week, drowsiness and aphasia for the last two days. Presenting GCS was 8/15, pulse 120 beats/min, blood pressures 116/75mmHg, respiratory rate 20 breaths/min and oxygen saturation was 97% on 3 litres of oxygen. He has splinter hemorrhages on nails and Janeway lesions as shown in Figure 1. A Left-sided pansystolic murmur radiating towards axilla was appreciated. The patient was electively intubated and workup was done. A transthoracic echocardiogram showed vegetation in the left atrium measuring approximately 37*27mm, as shown in Figure 2 and moderate mitral regurgitation with peak pressure gradient 64mmHg. Right side of heart was normal on echocardiogram. CT scan brain was done which showed an ill-defined hypodense area at left frontoparietal region adjacent to lateral horn of left lateral ventricle. It showed mild perifocal edema without mass effect on frontal horn. This likely represents a focal infarct. Another hyperdense area was seen in left ambient cistern causing its distension. This could represent a focal bleed as shown in Figure 3. No other systemic scanning done to look for other areas of embolization. His controlled blood cultures were positive for Staphylococcus aureus (MSSA) and E coli in tracheal secretions. His hepatitis B and C profiles and HIV serology were negative. He was admitted in intensive care and started on antibiotics and supportive treatment. Gradually he started responding to the therapy and started gaining consciousness. Gradually he weaned off from ventilator and shifted to the ward. His repeat echocardiogram was done which showed resolution of vegetations, measuring approximately 10.4* 5.9mm, as shown in Figure 4. After 2 weeks he discharged home on intravenous antibiotics including Benzyl penicillin, meropenem and vancomycin for duration of 6 weeks.

Discussion

Infectious Endocarditis (IE) is defined as "an endovascular microbial infection of cardiovascular structures including endarteritis of the large intrathoracic vessels or of intracardiac foreign facing the bloodstream."[1]. Native valve IE is mainly caused by Staphylococcus aureus, streptococci, enterococci, and the HACEK organisms (Hemophilus aphrophilus, Actinobacillus actinomycetemcomitans, Cardiobacterium hominis, Eikenella corrodens, and Kingella kingae) [2]. In a recent prospective study of Rostagno et al. staphylococci were the most frequent IE etiological agents, in agreement with previous reports [3]. Staphylococcal native valve IE in I/V drug users is now common in many urban areas with a high incidence of I/V drug use and homelessness [4], reaching an incidence of 10% in surveys. Among injection drug users presenting with fever, 13% will have echocardiographic evidence of IE [5]. The pathogenic mechanisms that explain the increased prevalence of right-sided IE in injection drug users are not fully explained. Damage to the right-sided valves from injected particulate matter in the setting of injected

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Figure 1: Splinter hemorrhages and Janeway lesions

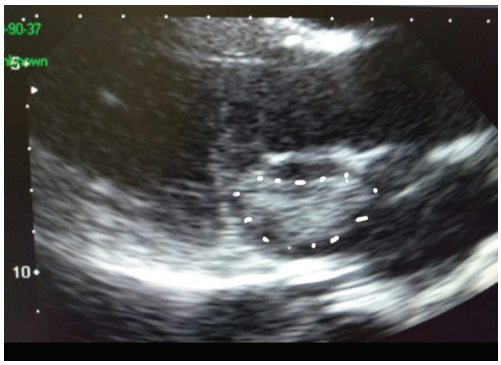

Figure 2: Echocardiogram showing vegetation mx 37*27mm

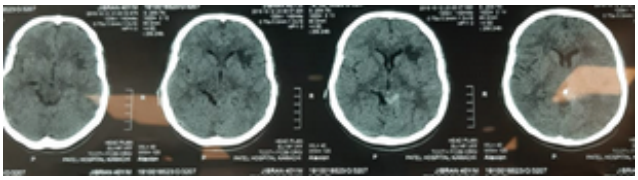

Figure 3: Hypodense area in left front to parietal region representing infarct

Figure 4: Showing resolution of vegetations, size= 10.4*5.9mm

bacterial loads is thought to be important, while subtle abnormalities of immune function may also have a role in pathogenesis. Right-sided endocarditis is in general, a less aggressive infection than the left-sided disease [6].

In our best knowledge, there are very few reported cases of left-sided bacterial endocarditis in I/V drug abusers. There is more hemodynamic involvement and extra cardiac manifestations in this entity. Aortic valve is the most frequently involved valve, followed by mitral valve [7]. For left-sided endocarditis time for antibiotic minimum inhibitory concentration is short [8] Clinical features in left-sided IE of IVDA are similar to the right-sided, which includes fever, murmur, left heart failure, systemic emboli and sepsis [9]. Infective Endocarditis in Intra venous drug abusers usually presents with fever and generalized body signs and symptoms, depending upon the involved site and causative agent [7]. Despite improvements in health care, there is high morbidity and mortality associated with this disease [10]. The choice of empiric antibiotic therapy at admission depends on the suspected microorganism, side of the heart involved, and type of drug injected. Because S. aureus is the most common microorganism on both sides of the heart, it should be covered during empirical antibiotic treatment, until blood cultures results, with anti-staphylococcal antibiotics (nafcillin, cloxacillin, vancomycin or daptomycin, depending on the methicillin-sensitivity profile) [9]. Therapy should be given for at least 4 to 6 weeks. The indication for surgery in people with left-sided IE is the same as for the people with right sided valvular involvement or the ones with prosthetic valve [11]. Although only 5 percent of patients with right-sided native valve IE will require any intervention [12], being conservative management usually enough. Hence surgical management is least likely to be considered in patients with endocarditis secondary to IV drug abuse due to continuous use as compared to once with unrelated cause [9].

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