A Case of Fever with Diagnostic Dilemma

Introduction

Infective endocarditis (IE) is a potentially life-threatening microbial infection involving the endocardial surface of the heart, most commonly affecting the cardiac valves, but occasionally involving the mural endocardium or implanted intracardiac devices (1). Despite significant advancesindiagnostictechniques,antimicrobialtherapy,andsurgicalmanagement, IEcontinues to be associated with high morbidity and mortality worldwide, with reported in-hospital mortality ranging from 15–30% (1). The disease represents a complex interaction between host factors, microbial virulence, and hemodynamic conditions within the heart.

The pathogenesis of IE involves transient or sustained bacteremia or fungemia, allowing microorganisms to adhere to damaged endocardial surfaces or prosthetic material (1,2). Endothelial injury leads to deposition of platelets and fibrin, forming sterile thromboticvegetationsthatprovideanidusformicrobialcolonization and needs prolonged duration antibiotic therapy.Subsequentproliferation oforganismswithinthesevegetationsresultsin persistent infection,embolization,andimmune-mediatedphenomena(1).AwidevarietyofmicroorganismscancauseIE,including bacteriaand fungi; however, streptococci, staphylococci, andenterococci remain the most common causative agents (2,3).

Clinically, infective endocarditis exhibits a highly variable spectrum, ranging from an indolent subacute illness characterized by low-grade fever, malaise, and weight loss, to a rapidly progressiveacutediseasewithseveresepsisandcardiovascularcollapse(1,3).Com mon clinical manifestations include fever, cardiac murmurs, signs of heart failure, embolic events, and immunologic phenomena such as glomerulonephritis and vasculitis (1). The diagnosis of IE is often challenging due to its protean manifestations and relies on an integrated approach incorporating clinical findings, blood culture results, and echocardiographic evidence, as outlinedinthemodifiedDuke'scriteria(4).

The epidemiology of infective endocarditis varies significantly between developed and developing countries. In high-income nations, IE is increasingly associated with degenerative valvedisease,prostheticvalves,intracardiacdevices,andhealthcare-

associatedinfections(3,5). In contrast, developing countries like India continue to report a high burden of IE related to rheumatic heart disease (RHD), younger patient populations, delayed presentation, and limited access to advanced healthcare facilities (5,6). Additionally, widespread empirical antibiotic use beforehospitaladmissioncontributestoahighincidenceofculture-negativeendocarditis, complicating diagnosis and management (6).
Given the changing epidemiological patterns, microbiological profile, and persistent high complicationrates,infectiveendocarditisremainsamajorclinicalchallengeintheIndiansetting. Casereportscontinueto playanimportant rolein highlightingunusual presentations,diagnostic difficulties, and management strategies, thereby contributing to improved understanding and outcomes of this complex disease.

CasePresentation

Patient Information

A70 year old female patient presented to ER with complaints of Dyspnea and palpitation associated with generalized weakness for the last 4 days. It was also associated with a historyof one week intermittent high grade fever associated with chills and malaise. The reported dyspnea was progressive on exertion (NYHA II). It was insidious in onset and gradually progressive and had no relieving factor. There was no associated chest pain and any history ofsyncopalattacks. Itwasnotassociatedwithanyseasonalordiurnalvariation. There was no history of chest pain ,palpitations ,PND.

She was a known case of CKD Stage 5D on MHD (3/week), hypertension and hypothyroidism and on regular medication. She underwent a dental extraction four weeks prior to symptoms without antibiotic prophylaxis. There was no history of intravenous drug use.

ClinicalFindingsonExamination:

OnExamination:

Patientwasalert,conscious,co-operative well oriented to time, place and person. Temperature: 102 degree F Pulse:108/min,regular. BP: 106/70 mmHg.

InGeneralSurvey,therewasconjunctivalcongestionpresent without itching or watering of eyes.

Respiratoryexaminationrevealed tachypnoea and

cardiovascular examination revealed a highpitchedpansystolicmurmur bestheard at the apex, radiating to the axilla with bibasal crepitations denoting heart failure.
Therewasnofocalneurologicaldeficit.Examination of other systems were unremarkable.

Later,bytheophthalmoscopicexamination,Roth'sSpotwithconjunctivalhaemorrhageswere confirmed by the Ophthalmologist .

Treatment was started immediately after admission of the patient, initially with moist O_2 and NebulizationwithSalbutamol.Foley'scatheterizationandi.v.cannulation wasdone.InjCeftriaxone - 1 gm in twice daily (APST) was administered with intravenous injection paracetamol, i.v fluid 0.9%, Normal Saline, Injection PPI and ondansetron. ABG was done. Blood Culturesend withthreesetsofsampleand asper IEprotocol.

Otherbloodinvestigationsweresentfor:

CompleteBloodCount,Random Blood Sugar,urea,creatinine,Sodium,Potassium,LFT,CRP, Procalcitonin. Fever profile

was also sent with MP Slide and dual Antigen, NS1 antigen,Typhi Dot M,Urine for RE/CS.

InRadiologicalinvestigation,Chest-x-raydoneinPAview revealing cardiomegaly with hilar congestion,Echocardiogram-2Ddone,ECGwas done.Laboratory Investigation showed:

Haemoglobin

-9.0g/dl TLC

- 18600/mm^3

CRP-Elevatedmarkedly.

Bloodcultureswerenegative.

Patientwaspreviouslyadmittedinanotherhospitalfortwodaysbeforecoming to this hospital.

Inechocardiography,therewas‘Alargemovablemass(26x14mm)attachedtoposterior mitral annulus in LA side’.with moderate MR, mild TR and Pulmonary arterial hypertension with normal ejection fraction.(**Fig 1)**

TransoesophagealEchocardiography(TEE)couldnotbeperformedduetosomelimitedresources and financial issues.

Diagnosticcriteria:

Major criteria: Echo cardiograph’s evidence

of vegetation. Minor criteria: Fever, vascular

and immunological phenomenon.

TherapeuticIntervention:

The patient was diagnosed as IE and started with Injection Ceftriaxone(1g) iv twice daily (APST),Injection Gentamicin(80 mg) once in every 48 hours(APST). She was also given Injection vancomycin (500mg.) post-Haemodialysis.(All antibiotics were given after renal dose adjustment)Supportive care included antipyreticsand close monitoring. A multidisciplinary Endocarditis team, including cardiologist and cardiothoracic surgeon evaluated the patient. Surgical intervention was not indicated due to clinical improvement, ,controlled infection and lack of embolic events.Patient started to respond with diuretics, oxygen and antibiotics with gradual normalization of Total leukocyte count and Procalcitonin. The patient was referred to higher Centre for TEE after three days in a clinically and hemodynamically stable condition.All the reports of fever profile were negative, including blood culture due to prior antibiotics use.USG whole abdomen revealed no abnormality.

Discussion:

The clinical profile of infective endocarditis in India differs significantly from that observed in Western countries. Several Indian studies have demonstrated that native valve endocarditis accounts for the majority of cases, with rheumatic heart disease being the most common underlyingcardiacabnormality(5–7).Themitralvalveismostfrequentlyinvolved,followedby the aortic valve, reflecting the high prevalence of rheumatic valvular lesions (5,7).

Prolongedfeverremainsthemostcommonpresentingsymptom,whileheartfailureis themost frequent and serious complication, often determining prognosis (7,8). Embolic complications involving the central nervous system, spleen, and kidneys are also commonly reported, particularly in patients with large vegetations and delayed diagnosis (6,8). These findings underscore the importance of early recognition and intervention.

Blood culture remains the cornerstone of etiological diagnosis; however, Indian studies report culture positivity rates of only 50–60%, with culture-negative endocarditis occurring in up to 40%of cases(6,8). Prior antibiotic

exposureisthemost important factor contributing to culture negativity. Recent Indian data suggest a shift in microbiological trends, with Staphylococcus aureusemergingasthemostcommoncausativeorganism,replacingviridansgroupstreptococci, and reflecting an increase in healthcare-associated infections (9). Echocardiography is indispensable in the diagnosis and management of IE. While transthoracic echocardiographyiswidelyavailableandservesastheinitialimagingmodality,transesophageal echocardiographyofferssuperior sensitivityfordetecting vegetations,abscesses,and prosthetic valve involvement (10). Management requires prolonged intravenous antimicrobial therapy tailored to microbiological findings whenever possible. Early surgical intervention in patients with heart failure, uncontrolled infection, or high embolic risk has been shown to significantly improve outcomes in Indian studies (7,8).

Conclusion:

Infectiveendocarditisremainsaseriousandpotentiallyfataldisease in India, characterizedby native valve involvement, a high prevalence of rheumatic heart disease, frequent culture-negativecases,andsignificantcomplicationrates.Earlydiagnosisusing modified Duke's criteria, prompt echocardiographic evaluation, appropriate antimicrobial therapy, and timely surgical intervention are crucial in reducing morbidity and mortality. Awareness of evolvingmicrobiologicaltrendsisessentialforguidingempiricaltherapyandimproving patient outcomes.

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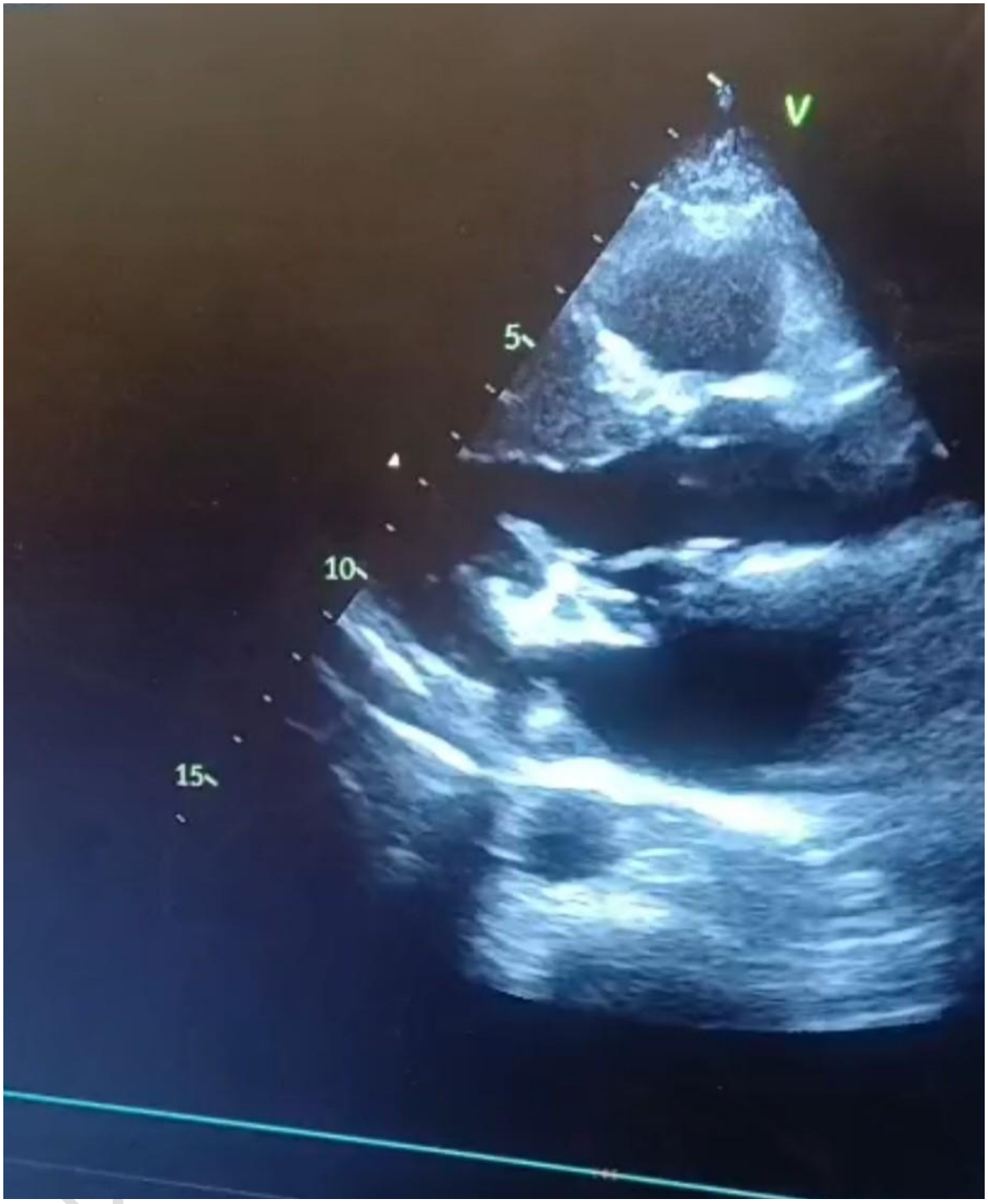

Fig 1: Mitral valve vegetation on Echocardiography

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