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Research Article

Endocarditis of a Native Cardiac Valve due to *Salmonella typhi* - A Case Report

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Abstract

Infective endocarditis is a rare manifestation of *Salmonella typhi* infection. This paper describes a case of Salmonella typhi native aortic valve endocarditis, treated successfully with antibiotics. Our patient did not have any gastrointestinal symptoms throughout the course of the illness. This case report highlights the importance of suspecting typhoid endocarditis in a patient with pyrexia of unknown origin even in the absence of gastrointestinal symptoms.

Keywords

Typhoid endocarditis; Native aortic valve

Introduction

Cardiac involvement associated with Salmonella infection has been recognized in prior reports [1,2]. Myocarditis occurs in 1-5% of cases and endocarditis is very rare with only 40 cases were reported in the literature during the past five decades [3]. A majority (approximately 75%) of reported cases of salmonella endocarditis is on the background of diseased valves and in patients with underlying congenital heart disease [3]. Endocarditis of native valves as a sequela of Salmonella bacteraemia is exceedingly rare [3]. We report herein, a case of native aortic valve endocarditis in a 55 year old patient without any predisposing structural heart disease.

Case Report

A 55 year old patient with a past history of uncomplicated Type II diabetes mellitus presented with high grade fever, frontal headache, anorexia and nausea for 2 weeks duration. He had no history of alteration of bowel habits. There was no history of cough, dysuria, or altered mental status. He is a driver by occupation with poor food hygiene as evidenced by frequent consumption of restaurant prepared food as a substitute for home cooked meals.

On examination he was febrile (102 F), averagely built. There was no neck stiffness. He did not have splinter hemorrhages, Janeway lesions or Osler's nodes. Examination of the fundus was unremarkable. His blood pressure was 140/90 mmHg and he did not have any cardiac murmurs. He had a soft splenomegaly with spleen palpable 3 cm from the left costal margin. The respiratory system was clinically normal. Neurological examination was unremarkable.

Investigations revealed a Hemoglobin concentration-10.5 g/dL, white cell count of -5600/ mm^3, platelet count 165,000/mm^3. Erythrocyte sedimentation rate was 102 mm in 1st hour. C reactive protein was 65.4 mg/L. Urine full report demonstrated 10-15 red blood cells per high power field with no casts and urine culture was negative. Three consecutive blood cultures obtained using standard criteria revealed the presence of *Salmonella typhi* sensitive to ceftriaxone. First two blood cultures were taken on the day of admission one hour apart and the third blood culture was sent on the next day. The sensitivity was assessed by the Kirby-Bauer method using Mueller-Hinton agar. He underwent a transthoracic 2 D echocardiogram due to continuing high fever for 5 days despite on intravenous ceftriaxone (1 g twice daily) which revealed 5 x 4 mm size vegetation attached to the non-coronary cusp of a tricuspid aortic valve (Figures 1 and 2). These findings were subsequently confirmed with transesophageal echocardiography.

There was a thin rim of pericardial fluid with no evidence of pericariditis or myocarditis. Hence the diagnosis of infective endocarditis was made on the basis of modified Duke Criteria. The patient was treated with a course of intravenous antibiotics comprising ceftriaxone 2g twice daily and gentamicin 60 mg twice daily for two weeks followed by ceftriaxone 2 g twice daily for another two weeks. He showed full clinical recovery during this period. His fever started responding within ten days of antimicrobial treatment and inflammatory markers gradually improved and returned to normal. (ESR at the time of discharge 25 mm in 1st hour and CRP were 6). Repeat transoesophageal echocargiogram at the end of 3 weeks of intravenous antibiotics showed complete resolution of the aortic valve vegetation.

Discussion

This case report describes a patient with *Salmonella typhi* native aortic valve endocarditis with an excellent outcome with antibiotic therapy. Approximately 75% of the reported cases of salmonella endocarditis were in patients who already had underlying cardiac

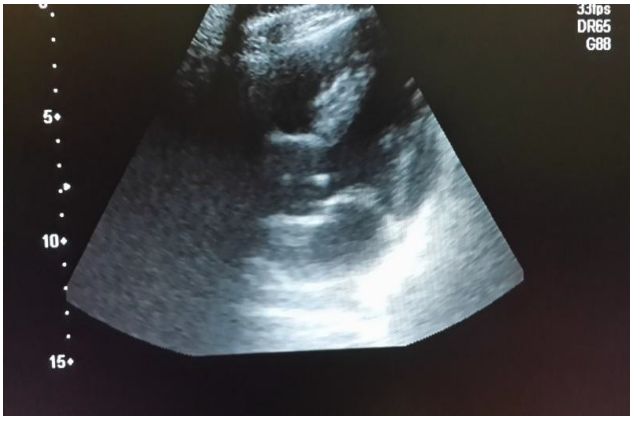

Figure 1: Vegetation in the aortic valve (marked in arrow) seen in the parasternal long axis view of transthoracic 2 D echocardiogram.

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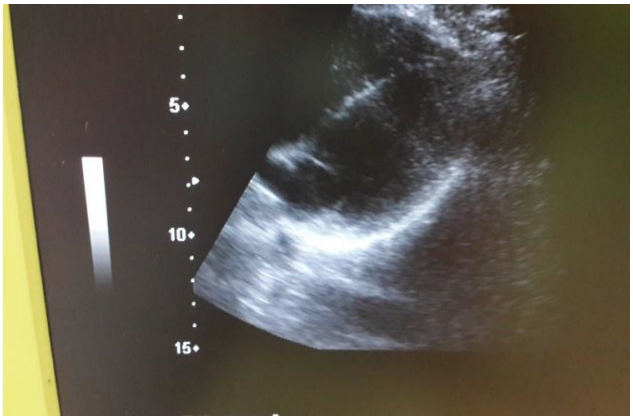

Figure 2: Repeat 2 D echo at the end of 3 weeks show resolution of the aortic valve vegetation.

valve lesions or congenital heart disease. Salmonella serotypes known to cause endocarditis include *S choleraesuis*, *S typhimurium*, and *S enteritidis*, and infrequently the *S thompson* and *S derby*. Serotypes [3,8]. *Salmonella typhi* as the cause of endocarditis is very rare, accounting for 1.3–4.8% of cases [3,5]. Hewage et al. [9] reported the first case from Sri Lanka, and Du Plessis et al. [10] reported a case of right sided endocarditis with tricuspid regurgitation. Tongia and Chowdhury [11] reported a case in a 24 year old Egyptian woman known to have rheumatic heart disease and a further three patients were reported by Mokhobo [12] one of whom developed cardiac rhythm disturbance.

Most published describe the classical gastrointestinal manifestations of typhoid fever in patients with concomitant endocarditis. In contrast our patient did not have gastrointestinal symptoms or other clinical features of enteric fever, indicating isolated cardiac involvement. In the absence of a clinical response to an appropriate antibiotic given in correct dosage in a patient with typhoid fever should always raise suspicion of typhoid endocarditis. It is also notable that the patient described above has affliction of a native-non damaged valve whereas prior reports demonstrate predominant involvement of diseased cardiac valves.

Cardiac valvular involvement, atrial thrombus formation, myocarditis, and pericarditis are known complications in cases of salmonella endocarditis. However, such complications, which are associated with a poor prognosis, were not seen in our patient.

Our patient had uncomplicated recovery from native aortic valve endocarditis without any cardiothoracic interventions with 4 weeks of antimicrobial treatment. The prognosis of Salmonella endocarditis is improving [11]. Cohen reported the mortality of 69% (29/42) in 1987 [13], whereas Guerrero identified the mortality of 20% (6/30) in 1987-2004 [12]. Guerrero concluded that surgery has played an essential role in reducing the mortality of Salmonella endocarditis, and surgical intervention, including valve replacement, increases survival in Salmonella endocarditis and is the treatment of choice for patients with cardiac failure, persisting sepsis and for those who relapse after discontinuation of antimicrobial therapy. Early identification may help the successful recovery with medical treatment alone. Infection of the endocardium with multidrug resistant salmonella is associated with a poor prognosis [14,15]. In our case the isolated salmonella were sensitive to ceftriaxone and is one of the uncommon situations where complete recovery was achieved with medical treatment alone.

Conclusions

This report emphasizes the importance of keeping a high degree of suspicion on typhoid even in the absence of gastrointestinal symptoms in a patient presenting with pyrexia of unknown origin. More importantly endocarditis although rare should be considered and looked in to as one of the complications of the salmonella infection. Early recognition and initiation of treatment without delay will help in reducing the morbidity and mortality associated with the salmonella endocarditis.

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