

## *Salmonella Typhi* Infection: A Rare Cause of Endocarditis

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### ABSTRACT

A 21 years old male with a history of mitral valve repair for mitral regurgitation is discussed. He was presented with a history of fever and loose motions for one month and shortness of breath for 03 days. Chest radiograph and ECG was within normal limits. Total leukocyte count was elevated and antibodies to *salmonella typhi* were positive. Blood culture revealed *Salmonella typhi* growth. Echocardiography revealed small echogenic masses on mitral valve. He responded to treatment with ceftriaxone given for 4 weeks. This is a rare case where *Somonella typhi* was isolated from blood of a patient with echocardiographic evidence of documented mitral valve disease and endocarditis.

**Key words:** *Salmonella typhi*. Infective endocarditis. Mitral valve.

### INTRODUCTION

Infective endocarditis normally occurs in the setting of existing valvular abnormality, and *Salmonella typhi* accounts for 1.3 - 4.8% of cases.<sup>1</sup> Myocarditis, pericarditis and pulmonary emboli are common cardiopulmonary complications of enteric fever. Echocardiogram is an essential and valuable investigation in enteric fever associated with a heart murmur, as *Salmonella* rarely can cause infective endocarditis. Confirmation of endocarditis is important because these patients need long-term antibiotics for total eradication of the disease. Transthoracic echocardiography is economical, easily available and specific in diagnosing endocarditis.<sup>2</sup>

*Salmonellae* can be isolated in the microbiology laboratory using numerous low-selective media. As facultative anaerobes, they grow well both in the bottles of standard automated systems for blood cultures and on culture media routinely used for urine, tissue, and respiratory cultures.<sup>3</sup>

*Salmonella*-induced endocarditis is a rare manifestation of infection,<sup>4</sup> with 40 cases having been reported in the literature for nearly five decades. Majority of patients are middle aged with pre-existing cardiac conditions, particularly rheumatic heart disease. Frequency of non-cardiac stigmas, such as fever (100%), hepatosplenomegaly (30%), petechia (20%) etc. is similar to bacterial endocarditis from non-*Salmonella* organisms. Given the typical age of onset, clinical comorbidity, and the destructiveness of *Salmonella* endocarditis, survival with medical therapy may only approach 30%.<sup>5</sup>

This report describes *Salmonella typhi*-induced endocarditis in a young patient with history of mitral valve repair.

### CASE REPORT

A 21 years old man with a history of mitral valve repair for mitral regurgitation was presented at the Armed Forces Institute of Cardiology in the year 2000 having history of fever and diarrhea for one month and shortness of breath for three days. At presentation he was febrile with a temperature of 38°C. He had a heart rate of 80 per minute with a regular pulse and a blood pressure of 100/60 mmHg. The first and the second heart sounds were of normal intensity and mild systolic and a diastolic murmur was barely audible. A few scattered rhonchi were heard in the lungs. Examination showed no enlargement of the heart clinically. Rest of the examination was unremarkable.

Chest radiograph was within normal limits and ECG revealed left ventricular hypertrophy and non-specific ST-T changes in lateral chest leads. Total leukocyte count was elevated to 14,000 / microliter. Antibodies to *Salmonella* O and H antigens were positive in a titre of 1: 320. Blood culture revealed *Salmonella typhi* growth which was sensitive to ceftriaxone and cefixime and resistant to ampicillin, chloramphenical, ofloxacin and ciprofloxacin. Echocardiography revealed small echogenic masses on the mitral valve and mild to moderate mitral regurgitation and mild aortic regurgitation. Initially the patient was started on empirical antibiotics including intravenous penicillin G and gentamycin. Later on, when the culture and sensitivity was known, patient was switched to intravenous ceftriaxone 2 gm, 12 hourly and gentamycin 60 mg, 8 hourly for 02 weeks and then ceftriaxone was continued for another 02 weeks. He responded to treatment after shifting to ceftriaxone. The disease course was uneventful.

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## DISCUSSION

Systemic invasion with *Salmonella typhimurium* appears to be comparatively rare. In general, mortality appears very high when *Salmonella* infections become invasive, and the chief help from chemotherapy is likely to be the prevention of systemic invasion by early control of the primary infection. Cardiac involvement associated with *Salmonella* infection has been recognised for several years. Myocarditis occurs in 1-5% of cases and endocarditis is very rare. Approximately 75% of the cases have an underlying cardiac abnormality, such as rheumatic heart disease and congenital heart defects.<sup>6</sup>

Transesophageal echocardiography is helpful in establishing the diagnosis of endocarditis by documenting valvular vegetations with attendant tissue damage extending beyond the valve leaflets (i.e. subvalvular and perivalvular damage). *Salmonella* have a predilection for the valves, and atrial thrombus formation, myocarditis, and pericarditis are the usual complications in cases of *salmonella* endocarditis. However, such complications, which are associated with a bad prognosis,<sup>5</sup> were not seen in this patient.

*Salmonella* (S.) serotypes commonly known to cause endocarditis include; *S. choleraesuis*, *S. typhimurium*, and *S. enteritidis*, and infrequently the *S. thompson* and *S. derby* serotypes. In addition, *S. typhi* has been reported previously as a cause of endocarditis. Infection of the endocardium with multidrug resistant *Salmonella* is associated with a poor prognosis, however, this patient made an uneventful recovery after treatment with

ceftriaxone and amikacin. Ceftriaxone is the drug of choice for Salmonellosis and is given at a dose of 2-6 g/day.<sup>6</sup>

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