CASE REPORT

Salmonella typhi endocarditis: a case report

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J Clin Pathol 2003;56:801–802

Salmonella are a rare cause of infective endocarditis. This report describes a case where *Salmonella typhi* was isolated from the blood and urine of a patient with echocardiographically documented aortic valve disease and endocarditis. The patient was treated with two weeks of ceftriaxone (3 g/day) and amikacin (15 mg/kg/day), followed by a further two weeks of ceftriaxone (3 g/day) alone. He made a complete recovery.

Cardiac involvement associated with salmonella infection has been recognised for several years. Myocarditis occurs in 1–5% of cases and endocarditis is very rare.^{1,2} Approximately 75% of cases have an underlying cardiac abnormality, such as rheumatic heart disease and congenital heart defects.³ We report the case of a 25 year old man with echocardiographic evidence of aortic valve disease and vegetations. Only a few cases have been reported from India,³ and ours is the first case reported from Jammu and Kashmir State.

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A 25 year old man was admitted with a history of high grade fever, palpitations, and generalised aches of one week duration. There was no history of cough, expectoration, dysuria, bleeding, or alteration of higher mental functions. No past history requiring prolonged medication or hospitalisation was present. On examination he was of average built, febrile (102°F), with a bounding pulse (water hammer type) and blood pressure of 160/69 mmHg in the upper limbs and 200/80 mmHg in the lower limbs; carotid pulsations were visible. On cardiovascular examination, there was evidence of early diastolic murmur, which was more prominent in the aortic area, and no other murmur or added sound was heard. There were some peripheral signs of aortic regurgitation. No other abnormalities were noted on systemic examination. Investigations revealed: haemoglobin, 105 g/litre; total leucocyte count, 5600/mm³; normal platelet count (2.5×10^9 /litre); and erythrocyte sedimentation rate, 46 mm/hour (Wintrobe's method). The Widal agglutination test was positive (titre > 1/1280). Serial cultures of blood and urine revealed the presence of *Salmonella typhi* sensitive to ofloxacin, ceftriaxone, amikacin, and sparfloxacin, but resistant to amoxicillin, norfloxacin, cefalexin, and cefixime. The sensitivity was assessed by the Kirby-Bauer method using Mueller-Hinton agar. It is a disc diffusion test and the concentrations of discs were: ofloxacin, 5 µg; ceftriaxone, 30 µg; amikacin, 30 µg; sparfloxacin, 5 µg; amoxicillin, 20 µg; norfloxacin, 10 µg; cefalexin, 30 µg; and cefixime, 5 µg. Echocardiography revealed the presence of bicuspid aortic valves and vegetations attached to both the cusps dangling in the left ventricular outflow tract during diastole. Hence, the diagnosis of infective endocarditis was

made on the basis of Duke's criteria.⁴ The patient was treated with a course of antibiotics comprising ceftriaxone 3 gm/day and amikacin 15 mg/kg body weight for a period of two weeks, followed by ceftriaxone 3 gm/day for the next two weeks. He showed full clinical recovery during this period and was discharged on penicillin prophylaxis for rheumatic fever. The patient was advised prophylaxis for endocarditis in special circumstances, such as dental extraction and surgical procedures, and he made a good recovery. Currently, he is apparently healthy and attends follow up clinic regularly.

DISCUSSION

Infective endocarditis usually occurs in the setting of an existing valvular abnormality and *Salmonella typhi* as the cause of endocarditis is very rare, accounting for 1.3–4.8% of cases.^{3,5–7} *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, were not seen in our patient.

Salmonella serotypes commonly known to cause endocarditis include *S. choleraesuis*, *S. typhimurium*, and *S. enteritidis*, and infrequently the *S. thompson* and *S. derby* serotypes.^{3,8} In addition, *S. typhi* has been reported previously as a cause of endocarditis. Hewage and colleagues⁹ reported the first case from Sri Lanka, and Du Plessis *et al* reported a case of right sided endocarditis with tricuspid regurgitation.¹⁰ Tongia and Chowdhury reported a case in a 24 year old Egyptian woman known to have rheumatic heart disease,¹¹ and a further three patients were reported by Mokhobo,¹² one of whom developed cardiac rhythm disturbance. Infection of the endocardium with multi-drug resistant salmonella is associated with a poor prognosis³; however, our 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.^{10,12}

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Accepted for publication 8 May 2003

Take home messages

- We describe a rare case where *Salmonella typhi* was isolated from the blood and urine of a patient with echocardiographically documented aortic valve disease and endocarditis
- The patient was treated with two weeks of ceftriaxone and amikacin, followed by a further two weeks of ceftriaxone alone, and made a complete recovery

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