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Case Report

Infection and Reinfection with Salmonella Typhi- A Case from Hyderabad Outbreak due to Hesitancy of Vaccination

Tazeen Fatima, Imran Haq, Ghazala Shaheen

Department of Pathology, Aga khan University Hospitals, Karachi

Abstract

We report a case of Salmonella typhi reinfection from Hyderabad, the current outbreak area in Pakistan. A 3-year-old boy resident of Hyderabad, Sindh presented with enteric fever with XDR Salmonella typhi resistant to ceftriaxone and treated with azithromycin for total 2 weeks. After 18 days of defervescence, patient again developed fever and a repeat blood culture grew MDR Salmonella typhi sensitive to ceftriaxone. This case emphasizes the importance of availability and provision of clean water, awareness regarding intake of boiled water and hygienic food, and stress on educating and creating public awareness regarding vaccination against Salmonella typhi to avoid infection and reinfection.

Keywords: Salmonella typhi, extensively drug-resistant, multi drug resistant, vaccination

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Corresponding Author: Dr.Tazeen Fatima **Email:** taz.fatima88@gmail.com

Introduction

Typhoid Fever, caused by Salmonella enterica ssp. enterica serovar Typhi is endemic in many Southeast Asian countries. According to the World Health Organization (WHO) estimates of burden of typhoid fever range between 11 and 21 million cases and roughly 128 000 to 161 000 deaths annually.[1] Recently an ongoing outbreak of extensively drug-resistant (XDR) Salmonella Typhi which started in November 2016 from Hyderabad Sindh, identified more than 18,927 blood culture confirmed cases from Sindh alone till January 2021, and majority of the cases were residents of Karachi (71%) and Hyderabad (19.8%).[2] Here we report a case of Salmonella typhi reinfection.

Case: A 3-year-old male child, resident of Hyderabad, Sindh presented to local general physician with 1-week history of high-grade fever reaching up to 103-degree F, body ache, weakness, abdominal pain, and 3 days history of constipation. Keeping in view the clinical presentation, enteric fever was suspected as the patient's family also denied vaccination against Salmonella typhi. Blood culture was advised and sent to Aga Khan University Hospital (AKUH) Laboratory and azithromycin 75mg/kg/day was started empirically. Blood culture showed growth of gram-negative rods identified as Salmonella typhi on biochemical reactions and serology, resistant to chloramphenicol, ampicillin, trimethoprim-sulfamethoxazole, fluoroquinolones, and third-generation cephalosporins, and sensitive to imipenem and azithromycin (XDR). Patient was continued on azithromycin, became afebrile after 7 days of antibiotic therapy and received azithromycin for total 2 weeks. Blood culture for documenting clearance of bacterial infection was not done and patient remained stable for 18 days. After this period patient again developed high grade fever along with nausea, vomiting and was admitted to AKUH Hyderabad center, blood culture was repeated and patient was started on Meropenem 60mg/kg/day empirically. Blood culture identified salmonella typhi but the sensitivities were different from the previous XDR Sal. typhi isolate and this bacterial isolate was sensitive to Cefixime and Ceftriaxone (MDR). Sensitivities were rechecked by disc diffusion and also by vitek 2 (biomerrioux). At this point of time, the previous bacterial isolate identified from the 1st culture which is saved in the laboratory for record purposes, was revived, rechecked for identification and sensitivities which confirmed the previous results and excluded and laboratory error. As for the patient, meropenem was stopped by then and therapy was switched to ceftriaxone 1500mg once daily. Fever continued for 9 days more but spaced out. Blood culture was sent for clearance after total 14 days of antibiotic therapy which

was negative. Verbal consent on telephonic conversation was obtained to publish the case.

Discussion

We report a case of Salmonella typhi reinfection in a 3-year-old child from the current outbreak area within the span of a month's time. Water supply contaminated with human waste remains the major cause of typhoid's persistence in low socioeconomic areas. Intake of unboiled water and unhygienic food, and reluctance to vaccination can predispose to infection and reinfection with Salmonella typhi and various other food borne diseases regardless of proper antibiotic treatment in appropriate dosage and duration. Mass education programs and efforts are required to increase understanding about importance of proper sanitation and establishment of good water supply infrastructure in the community. Knowledge regarding significance of vaccination against Salmonella typhi in these endemic areas cannot be overlooked and requires extreme measures to implement vaccination at all levels and also to overcome all kind of myths associated with vaccination. Vaccination with a tetanus-toxoid conjugated Vi polysaccharide typhoid vaccine is considered a more impactful measure to control the situation immediately.

Conflict of Interest None

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