

TABLE 1. Baseline Characteristics, Clinical, Lab and Management Details of Cases

Patient Characteristics	Case 1	Case 2	Case 3
Age at presentation (years)	5	12	4
Symptoms (duration in days)			
Fever	Yes (10)	Yes (21)	Yes (10)
Pain abdomen	Yes (8)	Yes (18)	Yes (3)
Vomiting	Yes (8)	No	Yes (3)
Loose stools	Yes (8)	No	No
Per abdomen examination			
Tenderness	Yes	Yes	Yes
Hepatomegaly (liver span)	Yes (11 cm)	Yes (12 cm)	Yes (12 cm)
Splenomegaly	No	Palpable spleen tip	No
Investigations at admission			
Haemoglobin (gm/dL)	9.3	11	11.5
TLC (per mm ³)	7,800	8,260	5800
DLC (N%/ L %/ M %)	74/20/3	76/14/4	56/33/10
Platelet count (per mm ³)	39,000	3,69,000	1,54,00
CRP (mg/dL)	97	36	43
Widal test (titres)	Positive (1:320)	Negative	Positive (1:320)
Antibiotics (days)	Ceftriaxone (14) f/b cefixime (7) Azithromycin (14)	Ceftriaxone (14) f/b cefixime (7)	Ceftriaxone (14) f/b cefixime (7)
Follow up USG	1 × 1.06 × 1 cm abscess, 1-month postdischarge. Resolution of splenic abscess, 2-month postdischarge	Resolution of splenic abscess	Resolution of splenic granuloma
Typhoid vaccine status	Unvaccinated	Unvaccinated	Unvaccinated

CRP, C-reactive protein; DLC, Differential leukocyte count; f/b indicates followed by; TLC, Total leukocyte count; USG, ultrasonography.

and antibiotics continued. She became afebrile over the next few days, was started on oral cefixime and discharged.

Case 2: A 12-year-old male presented with 3 weeks of high-grade fever and left abdominal pain. Examination revealed tenderness and palpable spleen tip. Ceftriaxone was initiated empirically. Widal serology was negative, and the blood culture was sterile. Other investigations to evaluate for the etiology of fever, including tuberculosis, were negative. USG abdomen revealed 3 SA, the largest 2.5 × 2.2 cm in splenic parenchyma. Ultrasound-guided aspiration of the largest abscess was performed. Pus culture grew *Salmonella paratyphi* A. Ceftriaxone was continued as per the sensitivity report. Subsequently, he became afebrile and was started on cefixime and discharged.

Case 3: A 4-year-old female presented with fever for 10 days, pain in the abdomen, and vomiting for 3 days. She was started on intravenous ceftriaxone empirically, keeping a possibility of enteric fever. Due to persistent abdominal pain, USG of the abdomen was performed, which revealed multiple hypo-echoic foci in the spleen suggestive of splenic granuloma. Blood investigations revealed a positive Widal test (1:320 dilution titers for Titre of H antibody and Titre of O antibody) and blood culture grew *Salmonella typhi*. She became afebrile by day 4 of the hospital stay. She was given 7 days of intravenous ceftriaxone, followed by 7 days of cefixime. USG whole abdomen repeated 1-week post-discharge, showed no splenic granuloma.

Salmonella SA is rare but carries a high risk of morbidity and mortality if

unrecognized and untreated.⁵ Diagnosis is often delayed in children due to its rarity and nonspecific symptoms. USG abdomen is usually the first investigation performed in suspected cases, and sensitivity can be as high as 90% in the hands of an experienced operator. Percutaneous needle aspiration and antibiotics for 2–3 weeks may be sufficient in many cases, though the actual duration of antibiotics required is not known. The splenic abscess could be a pointer toward the diagnosis of enteric fever in high-burden settings like India. Though radiologic clearing can require 2–3 months, patients usually become asymptomatic after 2–3 weeks of adequate antibiotics and drainage.

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A Case of Encephalitis Following Rotavirus Vaccine in an Infant

To the Editors:

We read with great interest the article by Slotboom et al¹ regarding neuro-

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logic complications of rotavirus infections in children. The rotavirus vaccine is safe and effective in immunocompetent children, with a low incidence of adverse events. Rotavirus can cause neurologic complications such as encephalopathy, encephalitis, cerebellitis, and seizures in children.¹⁻³ However, it is not fully understood whether the rotavirus vaccine is associated with neurological complications. Fontanel bulging, hypotonic-hyporesponsive episode, infantile spasms, opisthotonos and seizure-like phenomenon have been reported,⁴ but there was no evidence of increased risk of encephalitis or encephalopathy associated with rotavirus vaccine.^{4,5} Herein, we report a case of encephalitis following rotavirus vaccine in an infant.

A 2-month-old male infant was admitted to the emergency department with a 1-day history of fever, vomiting, irritability and mild diarrhea. He had received his first dose of rotavirus vaccine (Rotarix) 3 days before the onset of symptoms. The patient had not received any vaccines except for rotavirus and hepatitis B vaccine (at birth and 1 month of age). On examination, the infant was lethargic and had a temperature of 37.9 °C. Neurological examination revealed generalized hypotonia, poor suckling reflex and diminished responsiveness to stimuli. The patient was hospitalized with suspected meningoencephalitis. Laboratory studies including complete blood count, blood glucose and electrolytes, liver and kidney function tests, lactate and ammonia levels, blood and urine tests for inborn errors of metabolism and toxicology screening were all normal. The stool test for rotavirus antigen was positive. Rotavirus was also detected by multiplex polymerase chain reaction (PCR) test. Cerebrospinal fluid (CSF) examination revealed pleocytosis with normal glucose and protein levels. A brain magnetic resonance imaging (MRI) showed abnormal signal intensity in the white matter of the frontal lobes and a hyperintensity in the splenium of the corpus callosum. An electroencephalogram revealed diffuse slowing consistent with encephalopathy. Empirical therapy with acyclovir and ceftriaxone was initiated. Multiplex PCR respiratory and CSF panels were negative. Blood, CSF, and stool cultures remained sterile. Antimicrobial treatments were discontinued, and the patient's neurological symptoms fully recovered within 5 days. He was discharged from the hospital 1 week after admission. Rotavirus genotyping could not be performed for confirmation of vaccine strain. However, the temporal relationship between the rotavirus vaccination and the onset of symptoms, as well as the absence of other etiologies, strongly

supported a causal association between the rotavirus vaccine and the encephalitis. The case was reported to the vaccine adverse event reporting system of our Ministry of Health. During follow-up, all immunological investigations were found to be normal, including serum immunoglobulin levels, peripheral blood lymphocyte subsets, and in vitro lymphoproliferative response to mitogens. Serological testing for HIV was negative. Repeat MRI at 6 months showed a complete resolution of the previously noted findings.

Our case highlights that not only rotavirus infection, but also the rotavirus vaccine should be considered in the differential diagnosis of a child with encephalopathy or encephalitis. The pathogenesis of vaccine-induced encephalitis is not fully understood but is thought to be immune-mediated. Because live, attenuated virus vaccines can trigger an immune response similar to natural infection, they might also cause neurological side effects by the same pathogenic mechanisms as natural infection.⁶ Future epidemiologic studies are needed to determine whether an association exists between rotavirus vaccination and encephalitis or encephalopathy.

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Nontyphoidal Salmonella Multiple Osteomyelitis in a Child With Sickle Cell Anemia

To the Editors:

Here, we report a case of multiple Nontyphoidal Salmonella (NTS) osteomyelitis with good prognosis.

A 2-year-old black child with a diagnosis of sickle cell anemia at birth was given long-term oral folic acid and penicillin and repeatedly suffered abdominal pain and pneumonia. The child developed a high fever and abdominal pain with a body temperature of 39 °C. No cough, expectoration, diarrhea, convulsions or other associated symptoms were observed. Blood culture, urine culture, cerebrospinal fluid examination and chest radiograph were taken. Neither abscess nor vegetation was observed in the abdominal contrast CT and the cardiac ultrasound, respectively. Ceftriaxone was carried out empirically.

The blood culture showed the growth of Salmonella group C, which produced extended-spectrum β -lactamase (ESBL). The drug susceptibility testing was as follows: ciprofloxacin was intermediate; ceftriaxone, trimethoprim-sulfamethoxazole and ampicillin were all resistant; imipenem-cilastatin and azithromycin were susceptible. Accordingly, ceftriaxone was switched to meropenem combined with azithromycin.

Occasionally, the child was found that his crying behaviors were bound up with the limbs' passive movements. The CT scan of bilateral limbs suggested left humerus pathologic fracture. The contrast magnetic

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