

Salmonella Cholecystitis: Atypical Presentation of a Typical Condition

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ABSTRACT

Salmonella cholecystitis is a rare but important complication of *Salmonella typhi* infection. We are reporting an 11 years old female child who presented with complaints of high-grade fever, jaundice and right sided abdominal pain (Charcot's triad). Her examination showed tender hepatomegaly. Initial blood results revealed high white cell counts with left shift, deranged liver function tests. Abdominal ultrasonography revealed distended gallbladder with minimal layer of sludge seen within its lumen along with streak of pericholecystic fluid. Blood culture grew *Salmonella typhi*. She was successfully treated with intravenous ceftriaxone.

Key Words: Typhoid fever. *Salmonella typhi*. Cholecystitis.

INTRODUCTION

Typhoid fever is a systemic infection caused by *Salmonella enterica* serotype *typhi*. It remains an important worldwide endemic cause of morbidity and mortality. The existing estimate of the global burden of typhoid fever is 16 million illnesses and 600,000 deaths annually.¹ The 1997 global survey of *Salmonella* serotyping achieved country response rates by WHO region ranging from 34% to 70% (Table I).² Our region lacked eligible population-based studies of typhoid fever incidence or surveillance systems that might measure typhoid fever burden in children at the population level. The lack of data is most notable for south East Asia and Africa. In contrast, hospital-based studies conducted in south-central and south-east Asia, demonstrates *Salmonella typhi* as a leading cause of bloodstream infection in children.³ The classic findings of typhoid fever include rose spots, relative bradycardia and stepwise fevers but unfortunately these signs are frequently absent. Gastrointestinal manifestations may include diffuse abdominal pain, bleeding, perforation, cholecystitis and cholangitis.³ The diagnosis should be suspected after collection of the appropriate clinical history with confirmation by blood or bone marrow culture.⁴ Multidrug resistance has increased worldwide and decisions on antimicrobial therapy must take such resistance into account. Fluoroquinolone (ciprofloxacin and ofloxacin) have for some years been the drugs of choice for enteric fever, but resistance to these drugs has become very common in South Asia.⁴ Cefixime is an oral third generation cephalosporin

Table I: Crude typhoid fever incidence rates in Asia.³

| Area/region | Typhoid cases | Population | Crude incidence | Incidence classification |
|--------------------|---------------|---------------|-----------------|--------------------------|
| Asia | | | | |
| Eastern Asia | 182 927 | 1 483 111 000 | 12 | Medium |
| South-central Asia | 9 299 064 | 1 495 977 000 | 622 | High |
| South-eastern Asia | 575 407 | 521 983 000 | 110 | High |
| Western Asia | 61 481 | 187 463 000 | 33 | Medium |
| Area total | 10 118 879 | 3 688 534 000 | 274 | High |
| Global | | | | |
| Crude total | 10 825 487 | 6 091 349 000 | 178 | High |
| Adjusted total | 21 650 974 | 6 091 349 000 | 355 | |

Per 100 000 persons per year.

recommended by the WHO for treatment of enteric fever.⁵ Azithromycin appear to be equally effective as oral agent.⁶ Ceftriaxone is useful as a parenteral agent, although *in vitro* resistance has been documented to *S. enterica paratyphi* A.⁷ Preventive strategies include good sanitation and food handling along with vaccination of selected groups.

CASE REPORT

An 11 years old female child presented with 2 weeks history of high-grade fever, abdominal pain, vomiting, and jaundice. On examination, the patient was hemodynamically stable with clinical jaundice, there was significant tender hepatomegaly without ascites. Investigation showed neutrophilia (86%) with left shift. The liver function were deranged with raised total bilirubin 3.8 mg/dl having predominantly direct component (2.6 mg/dl). There was evidence of hepatic outflow obstruction with raised GGT (144 IU/L) and markedly high alkaline phosphatase (850 IU/L). Serum albumin was low (1.4 g/dl) with raised serum transaminase level (385 IU/L). Serum amylases was two-fold of the upper limit i.e. 253 U/L while lipases was three-fold raised i.e. 594 U/L. Hepatitis serology for A, B C and E were all non-reactive. Coagulation profile was

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Received: March 30, 2012; Accepted: January 22, 2013.

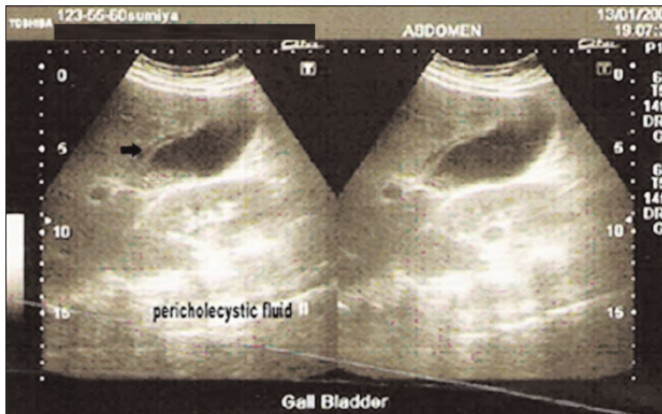


Figure 1: Distended gallbladder with streak of pericholecystic fluid seen along with small amount of sludge.

normal. X-ray abdomen was normal. Ultrasound gallbladder and liver showed mildly enlarged liver with distended gallbladder. There was minimal layer of sludge seen within its lumen with streak of pericholecystic fluid (Figure 1). No extra hepatic biliary channel dilatation was seen. The findings were consistent with *cholecystitis*. Later on, her blood culture grew *Salmonella typhi* sensitive to ciprofloxacin, cefixime and ceftriaxone.

On the basis of above clinical presentation and laboratory findings, she was diagnosed as *Salmonella cholecystitis* and was treated with intravenous ceftriaxone for 14 days. She remained perfectly well thereafter and repeat bilirubin, alkaline phosphatase, amylases and lipases became normal at the completion of treatment.

DISCUSSION

Paediatric acute biliary tract infection is a rare disease, occurring most often in children (less than 15 years old) with specific diseases such as biliary atresia and pancreaticobiliary maljunction, or after liver transplantation. Acute *cholecystitis* occurs very rarely (0.13% – 0.22%) in children as compared with the incident in adults.⁸ According to a review of 693 cases, conducted in 1989 by Friesen and Roberts, when paediatric *cholecystitis* occurs the ages are distributed as follows: 9.8% (1 year old or younger), 4.5% (1 – 5 years old), 14.5% (6 – 10 years old) and 71.5% (age, 11 – 20 years).⁹ Acute *cholecystitis* in children without a history of surgery should be diagnosed comprehensively with ultrasonographic, blood biochemical and pathological findings.¹⁰ Fever, vomiting, right hypochondria tenderness, abdominal pain (spontaneous pain) and jaundice are important findings in the diagnosis of acute *cholecystitis*.⁸ Blood biochemical tests show elevated white blood cell counts, plasma bilirubin, alkaline phosphatase, and aspartate aminotransferase and

alanine aminotransferase.¹¹ Abdominal ultrasonography is useful for diagnosis in children, as well as for adults. Primary care for paediatric acute biliary tract infection consists of fasting, adequate intravenous fluid infusion and intravenous antimicrobial administration.

This patient was a young girl who presented with a classical charcot's triad of fever, abdominal pain and jaundice though there was no previous history of biliary disease. Her inflammatory markers and liver function were suggestive of obstructive hepatopathy with normal hepatitis profile. Abdominal ultrasound picture was suggestive of *cholecystitis* with distended gallbladder with layer of sludge seen within its lumen with streak of pericholecystic fluid.

REFERENCES

1. The world health report. Fighting disease, fostering development. Geneva: World Health Organization; 1996.
2. Crump JA, Luby SP, Mintz ED. The global burden of typhoid fever. *Bull World Health Organ* 2004; **82**:346-53.
3. Parry CM, Hien TT, Dougan G, White NJ, Farrar JJ. Typhoid fever. *N Engl J Med* 2002; **347**:1770-82.
4. Parry CM, Ho VA, Phuong le T, Bay PV, Lanh MN, Tung le T, et al. Randomized controlled comparison of ofloxacin, azithromycin, and an ofloxacin-azithromycin combination for treatment of multidrug-resistant and nalidixic acid-resistant typhoid fever. *Antimicrob Agents Chemother* 2007; **51**:819-25. Epub 2006 Dec 4.
5. WHO. Treatment of typhoid fever.: the diagnosis, prevention and treatment of typhoid fever. Geneva: WHO; 2003. Available at www.int/entity/vaccine_research/documents/typhoid_diagnosis.pdf
6. Siddiqui FJ, Rabbani F, Hasan R, Nizami SQ, Bhutta ZA. Typhoid fever in children: some epidemiological considerations from Karachi, Pakistan. *Int J Infect Dis* 2006; **10**:215-22. Epub 2006 Jan 23.
7. Maskey AP, Day JN, Phung QT, Thwaites GE, Campbell JI, Zimmerman M, et al. *Salmonella enterica* serovar *paratyphi* A and *S. enterica* serovar *typhi* cause indistinguishable clinical syndromes in Kathmandu, Nepal. *Clin Infect Dis* 2006; **42**: 1247-53. Epub 2006 Mar 29.
8. Yulevich A, Cohen Z, Maor E, Bryk T, Mares AJ. Acute acalculous *cholecystitis* caused by *Salmonella typhi* in a 6-year-old child. *Eur J Pediatr Surg* 1992; **2**:301-3.
9. Friesen CA, Roberts CC. Cholelithiasis. Clinical characteristics in children. Case analysis and literature review. *Clin Pediatr (Phila)* 1989; **28**:294-8.
10. Yasuda H, Takada T, Kawarada Y, Nimura Y, Hirata K, Kimura Y, et al. Unusual cases of acute *cholecystitis* and cholangitis: Tokyo Guidelines. *J Hepatobiliary Pancreat Surg* 2007; **14**:98-113.
11. Lai CY, Huang LT, Ko SF, Chuang JH, Lin JW, Tiao MM. *Salmonella gastroenteritis* complicated with bacteremia and ruptured cholangitis in an infant with congenital choledochal cyst. *J Formos Med Assoc* 2007; **106**:S20-3.

