

Shigella flexneri Sepsis in an Infant

Ju-Bei Yen, MD; Kuei-Wen Chang, MD; Tsu-Lan Wu¹, MS; An-Jin Kuo¹, MS;
Lin-Hui Su¹, MS

Shigellosis continues to be an important public health problem in developed countries, since communication in the world village has become more frequent. In addition, this disease is difficult to be prevented because only a small number of bacteria are required to cause infection, and it has exhibited steady trends towards multiple drug resistance. This report describes a 7-month-old female infant with *Shigella flexneri* sepsis presenting initially with a high fever, watery diarrhea, and dehydration. She was successfully treated with ceftriaxone for 7 days. This case illustrates that *Shigella* should be included in the differential diagnosis of sepsis associated with diarrhea particularly in young infants traveling to or living in an endemic area. The choice of antimicrobial therapy and the optimal duration for treatment should be carefully evaluated because of the emergence of multidrug-resistant *Shigella*. (*Chang Gung Med J* 2003;26:611-4)

Key words: *Shigella*, sepsis.

Shigellosis, although having become rare in recent years, continues to be an important public health problem in developed countries. Only 1328 patients were reported to have shigellosis in Taiwan in 2001, including 22 cases from other countries and 19 cases (1.4%) in infants (from the Center for Disease Control, Taiwan). Shigellosis is usually a self-limiting disease, involves only the gut, is transmitted by the fecal-oral route, and has an incubation time of from 12 hours to 1 week. Extraintestinal complications including involvement of the central nervous system, joints, the urinary tract, liver, and bloodstream occur rarely, if ever.⁽¹⁾ Resolution of symptoms is expected within 1 week in most cases with *Shigella* dysentery, and usually only supportive care is required.⁽²⁾ Clinical features of this reported case indicate some important points about *Shigella* infections which should be considered when managing pediatric patients with watery diarrhea and sepsis, especially those who have traveled to or have lived in an endemic area.

CASE REPORT

A 7-month-old female infant had a 4-day history of a high fever up to 40 °C taken orally, accompanied by watery diarrhea and vomiting. Her past history was unremarkable. She had been in Vietnam 2 weeks prior to this admission. A physical examination showed an 8-kg ill-looking, well-nourished female infant with cold extremities, hyperactive bowel sound, dry oral mucosa, and a prolonged capillary refilling time (> 3 s). Her heart rate was 150/min, respiratory rate was 32/min, and blood pressure was 110/64 mmHg on examination. She immediately received intravenous fluid challenge, and the peripheral perfusion improved.

Results of the laboratory investigations were as follows: hemoglobin of 11.0 g/dl, white blood cell count of 17.7×10^9 cells/L (21% segmented neutrophils, 41% lymphocytes, 2% band neutrophils, and 34% monocytes), serum sodium concentration of 143 meq/L, and C-reactive protein of 195,000 µg/L.

From the Department of Pediatrics, and ¹Department of Clinical Pathology, Chang Gung Children's Hospital, Taipei.

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Address for reprints: Dr. Kuei-Wen Chang, Department of Pediatrics, Chang Gung Children's Hospital, 5-7, Fushing Street, Gueishan Shiang, Taoyuan, Taiwan 333, R.O.C. Tel.: 886-3-3281200 ext. 8224; Fax: 886-3-3288957; E-mail: changkw@cgmh.org.tw

A stool as well as blood culture, taken on admission, yielded *Shigella flexneri*. The isolate was resistant to ampicillin and trimethoprim-sulphamethoxazole, while it was sensitive to gentamicin and ceftriaxone. She received intravenous fluid rehydration and 75 mg/kg/day intravenous ceftriaxone for a total of 7 days. The fever subsided on day 2. She was discharged in a stable condition 9 days after admission.

DISCUSSION

Infection with *Shigella* is generally considered to be confined to the gastrointestinal tract. Invasion of the bloodstream occurs in only 0.4% to 7.3% of patients and has been thought to be a rare event if there are no coexisting risk factors such as malnutrition or young age.⁽²⁻⁴⁾ *Shigella* bacteremia is mostly caused by *S. flexneri*,^(3,4) which has been reported to be more virulent than other *Shigella* species, and it is the most commonly isolated species in the developing world.^(3,4) Young age and malnutrition are 2 host factors associated with *Shigella* bacteremia. *Shigella* bacteremia might occur more frequently and have a higher case fatality rate in malnourished children.⁽²⁻⁴⁾ The pathophysiology of *Shigella* bacteremia remains unclear. In children with compromised metabolic reserves, *Shigella* enterocolitis may lead to a net exudative loss of immunoglobulins, complement, and other plasma proteins required for lysis and opsonization of invading bacilli, and this may pave the way for overwhelming sepsis to occur.⁽⁵⁾ In our case, the young age appeared to be the only risk factor predisposing her to sepsis.

Because of the higher prevalence of bacteremia among severely ill and malnourished patients with shigellosis, presumptive management should include a blood culture, institution of parenteral antimicrobial agents, and maintenance of the intravascular volume by the administration of fluids or blood as required.^(2,3) Some clinical features appear to be useful in predicting a poor prognosis: afebrility, greater than 10% dehydration, malnutrition, a low serum albumin level, infection with a resistant strain, leukopenia, prolonged and protracted diarrhea, and persistent bloody stools.⁽³⁾ None of these unfavorable factors except dehydration was observed in our patient, and the treatment was successful.

It has been shown that appropriate antimicrobial therapy for shigellosis shortens the duration of the

fever and diarrhea and decreases the shedding of the organism from the stool, but no report has mentioned treatment for shigellosis bacteremia.⁽⁶⁾ However, the choice of antimicrobial therapy is hampered because of the emergence of multidrug-resistant *Shigella* here in Taiwan as well as in many other parts of the world.⁽⁶⁻⁸⁾ The efficacy of various antibiotics as well as the optimal duration of therapy have been carefully evaluated.⁽⁸⁾ Most controlled studies have suggested 5 days of treatment, although shorter courses of therapy have also been explored.⁽⁹⁻¹¹⁾ In areas where drug resistance of *Shigella* has proven to be a problem, administration of ceftriaxone for 5 days should be safe and has been shown to be highly effective in the treatment of severe shigellosis in children.⁽⁹⁾

The present case illustrates that *Shigella* infection should be considered in the differential diagnosis of sepsis associated with a diarrheal disease, especially in very young or malnourished patients who have traveled to or lived in an endemic area. Blood as well as stool cultures should be taken. An early and precise diagnosis is of prime importance because appropriate antibiotics in addition to supportive care can be life saving for such patients.

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嬰兒志賀氏菌菌血症

顏如貝 張魁文 吳竹蘭¹ 郭安靜¹ 蘇玲慧¹

由於公共衛生的進步，志賀氏菌感染近年來雖然少見，但由於世界交通的頻繁，此病仍為重要的公共衛生的課題之一。其重要性在於志賀氏菌感染只需極少菌量就會致病，而且多重抗藥性也愈來愈常見。此菌感染主要以痢疾表現，罕見腸道外感染。在此我們報告一位7個月大嬰兒的志賀氏菌菌血症，臨床上以高燒及腹瀉為主要表現。實驗室檢查於糞便及血液都培養出弗雷克斯志賀氏菌。病患在接受7天的抗生素治療後，痊癒出院。志賀氏菌菌血症應包含在高燒及腹瀉的鑑別診斷中，特別是嬰兒有明顯旅行史而且呈現急性病容者。(長庚醫誌 2003;26:611-4)

關鍵字：志賀氏菌，菌血症。

長庚兒童醫院 台北院區 兒童內科部，¹臨床病理部

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索取抽印本處：張魁文醫師，長庚兒童醫院 兒童內科部。桃園縣333龜山鄉復興街5-7號。Tel.: (03)3281200轉8224; Fax: (03)3288957; E-mail: changkw@cgmh.org.tw