
Typhoid Fever in Children : Experience in King Chulalongkorn Memorial Hospital

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Abstract

Blood cultures of children treated at King Chulalongkorn Memorial Hospital from 1986 to 2000 were retrospectively reviewed and 19 specimens were positive for *Salmonella typhi*. Of 14 patients whose medical records were available, the age range was between 2 years and 15 years with a male to female ratio of 1.8 : 1. Major presentations were prolonged fever with a mean duration of 7 days and gastrointestinal manifestations including abdominal pain (71%), hepatomegaly (64%), anorexia (57%), vomiting (57%), and diarrhea (50%). Most cases had normal hematocrit values with white blood cell counts of 5,000-9,000 cells/mm³ and the percentage of neutrophils was 60-89. Complications were abnormal urine sediments (3) including a case of typhoid nephritis, severe enteritis (2) and acute hemolysis (1). Most isolates were susceptible to cotrimoxazole, ampicillin and ceftriaxone by the disk diffusion susceptibility test. Defervescence was seen within 3-14 days after antibiotic therapy. There was no mortality.

Key word : Typhoid Fever, Children

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J Med Assoc Thai 2002; 85: 1247-1250

Typhoid fever was once a major public health problem in Thailand. Currently, from the annual epidemiological surveillance report, the incidence of this disease has declined in Thailand⁽¹⁾. This merit might have come from the improvement of community sanitation and hygiene. However, it is still

endemic in many developing countries and drug resistance has become a problem of concern⁽²⁻⁶⁾. This retrospective descriptive study was conducted to determine the natural history of typhoid fever in pediatric patients during the past 15-year period at King Chulalongkorn Memorial Hospital.

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PATIENTS AND METHOD

The medical records of all children who had positive blood culture for *Salmonella typhi* (*S. typhi*) from 1986 to 2000 at the Department of Pediatrics, King Chulalongkorn Memorial Hospital, were reviewed. Of 19 specimens positive for *S. typhi*, 14 medical records were available for analysis. The authors studied the demographic data, clinical manifestations, laboratory findings, treatment and outcome.

RESULTS

There were 1-2 cases of typhoid fever diagnosed annually at the Department of Pediatrics, King Chulalongkorn Memorial Hospital. Of 14 children, there were 9 boys and 5 girls (ratio of 1.8 : 1) with an age range between 2-15 years and an average age of 8.8 years. Seventy-five per cent of the patients were older than 5 years.

Symptoms included prolonged fever (100%) with a mean duration of 7 days, gastrointestinal symptoms comprising of abdominal pain (71%), anorexia (57%), vomiting (57%) and diarrhea (50%). Other symptoms included cough (46%), drowsiness (23%), chill (15%) and sore throat (15%). Signs included hepatomegaly (64%), abdominal distension (46%), toxic appearance (36%), and splenomegaly (30%). One case was misdiagnosed as having acute appendicitis and appendectomy was unnecessarily performed.

Complications were abnormal urine sediments (3 cases, including a case of typhoid nephritis), severe enteritis (2) and acute hemolysis (1). The case with typhoid nephritis presented with fever, abdominal pain, oliguria, mild edema and hypertension and urine examination revealed proteinuria, red blood cell (RBC) 30-50 cells/high power field (hpf), white blood cell (WBC) 2-3 cells/hpf and some granular casts. The patient improved within a few days of supportive treatment and urine examination was normal one week thereafter.

The majority of patients (11 cases) had normal hematocrit values. Only 3 cases (20%) had hematocrit less than 30 per cent with a case of marked anemia from acute hemolysis due to a deficiency of glucose-6-phosphate dehydrogenase. The majority of cases (70%) had a WBC count of 5,000-9,000 cells/mm³ and the percentage of neutrophils was 60-89. According to age-corrected values, 85 per cent of the cases had a normal WBC count, whereas 92 per cent

of the cases had neutrophilia. Fifteen per cent had a low WBC count. None of the patients had leukocytosis.

Most isolates were susceptible to co-trimoxazole (90%), ampicillin (90%) and chloramphenicol (83%), proved by the disk diffusion susceptibility test. All isolates were susceptible to cefotaxime, ceftriaxone, ciprofloxacin and imipenem. Most common antibiotics used were co-trimoxazole, ceftriaxone and ampicillin for a course of 14 days. Defervescence was seen within 3-14 days with a mean duration of 6.8 days for co-trimoxazole, 6 days for ampicillin and 5 days for ceftriaxone. There was no mortality found in the present study.

DISCUSSION

There were few cases of typhoid fever in pediatric patients at the hospital from 1986 to 2000. This finding is in accordance to a decreasing trend of typhoid fever in Thailand. In 1998, the National Thailand report revealed an incidence rate of 20.74 : 100,000 among the population. The number is strikingly lower than neighboring countries such as Indonesia and Vietnam, where typhoid fever is still endemic. Their reported incidences in pediatric patients were 354 : 100,000 population⁽⁷⁾ and 478 : 100,000 population⁽⁸⁾ respectively.

The mean age of the patients in the present study was higher in comparison to a study⁽⁹⁾ during the earlier period in Thailand. In 1987, the study of typhoid in Thai children revealed that 53 per cent of the patients were older than 5 years and the mean age was 4 years⁽⁹⁾, whereas in the present study (1986 to 2000) 75 per cent were older than 5 years with the mean age of 8.8 years. This difference might be explained by the improved sanitation of caregivers in the later years which provided less chance of exposure to the organism in the younger age group who were more dependent on the caregivers' sanitation, whereas the older age group who were independent had a higher chance of exposure to the organism.

There was no difference in clinical manifestations compared to the same study⁽⁹⁾ (Table 1). The major presentations which were the same as a previous report⁽¹⁰⁾ were fever and gastrointestinal symptoms. Cough was also common in both studies. Hepatomegaly and abdominal distension were the major physical findings and hepatomegaly was found twice more frequently than splenomegaly.

Table 1. Symptoms and signs of patients compared to a previous study.

Symptoms and signs	Thisyakorn U, et al (1987) (%)	The present study (%)
Symptoms		
Fever	100	100
Anorexia	47.24	57.14
Vomiting	39.26	57.14
Diarrhea	35.58	50.00
Abdominal pain	25.77	71.43
Cough	33.13	50.00
Signs		
Hepatomegaly	85.89	64.28
Splenomegaly	30.67	28.57
Abdominal distension	59.51	50.00
Toxic appearance	44.17	35.71

Concerning the clinical presentation, there was one misdiagnosed case of acute appendicitis who had persistent fever post-appendectomy and positive hemoculture for *S. typhi*. The pathology of appendix was normal.

Serious complications of the gastrointestinal tract were seen in 2 patients; severe enterocolitis with septic shock. There was no case of intestinal perfora-

tion found in the present study; this complication is rare in children^(11,12). The other complication was abnormal urine sediments (3 cases) with one case presenting with a clinical picture of glomerulonephritis (GN). There have been previous reports about typhoid GN⁽¹³⁻¹⁵⁾. The immune mechanism might play an important role in this entity⁽¹⁴⁾.

According to the drug susceptibility pattern, resistance was still not a problem in Thailand. Almost all isolates were susceptible to the conventional drugs i.e. chloramphenicol, ampicillin and co-trimoxazole. The authors did not find an isolate of multidrug resistance. This is different from several reports from other countries such as India and Bangladesh which found a number of resistant strains to conventional drugs and other drugs such as third cephalosporin and ciprofloxacin⁽²⁻⁶⁾. However, there has been a recent report about the re-emergence of chloramphenicol-sensitive strain from infrequent use of this drug⁽¹⁶⁾.

In Thailand, therefore, conventional drugs are still effective in the cure of typhoid fever. Since there is an increasing use of third generation cephalosporin in Thailand⁽¹⁷⁾, the emergence of resistant strains and the drug susceptibility test should be closely monitored.

(Received for publication on July 26, 2002)

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หัยฟอยดในเด็ก : ประสบการณ์จากโรงพยาบาลจุฬาลงกรณ์

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ปัจจุบัน ไข้หัยฟอยดในเด็กมีแนวโน้มลดลงมากเนื่องจากสุขอนามัยที่ดีขึ้น จากการศึกษาย้อนหลัง 15 ปี ในช่วง พ.ศ. 2529-2544 ในผู้ป่วยเด็กที่มารับการรักษาที่โรงพยาบาลจุฬาลงกรณ์พบผู้ป่วยเด็กที่ผลการเพาะเชื้อในเลือดขึ้นเป็น *Salmonella typhi* จำนวน 19 ราย จากการทบทวนแฟ้มประวัติผู้ป่วยเด็ก 14 ราย พบว่าอยู่ในช่วงอายุระหว่าง 2-15 ปี โดยมีอัตราส่วนเพศชายต่อหญิง 1.8 : 1 อาการนำที่สำคัญคือมีไข้หนาวสั่น โดยเฉลี่ย 7 วัน และอาการทางระบบทางเดินอาหาร ได้แก่ปวดท้อง (71%) คลื่นไส้/อาเจียน (57%) ท้องเสีย (50%) และตับโต (64%) ผู้ป่วยส่วนใหญ่มีความเข้มข้นเลือด อยู่ในเกณฑ์ปกติ ค่าเฉลี่ยเม็ดเลือดขาวอยู่ระหว่าง 5,000-9,000 เซลล์/มม³ และส่วนใหญ่เป็นนิวโทรฟิล (60-89%) ภาวะแทรกซ้อนที่พบได้แก่การตรวจปัสสาวะพบเม็ดปกติ 3 ราย โดย 1 ใน 3 ราย พบมีอาการบวมและความดันโลหิตสูง (Typhoid nephritis) ลำไส้อักเสบรุนแรง 2 ราย และเม็ดเลือดแดงแตก 1 ราย ส่วนใหญ่ของเชื้อที่แยกได้ยังคงไวต่อยาที่ใช้ทั่วไป คือ cotrimoxazole, ampicillin และ ceftriaxone (disk diffusion susceptibility test) ไข้ลงในช่วง 3-14 วัน หลังได้ยาปฏิชีวนะ ผู้ป่วยทุกรายหายเป็นปกติ

คำสำคัญ : ไข้หัยฟอยด, เด็ก

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จดหมายเหตุมหาวิทยาลัย ๒ 2545; 85: 1247-1250

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