INFLUENCE OF SEX ON CLINICAL FEATURES, LABORATORY FINDINGS, AND COMPLICATIONS OF TYPHOID FEVER

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Abstract. Clinical features, laboratory findings, and complications of typhoid fever were correlated with sex through a retrospective case note review of 102 hospitalized culture-positive patients in Durban, South Africa. Intestinal perforation (P = 0.04), occult blood losses in stools (P = 0.04), and a mild reticulocytosis in the absence of hemolysis (P = 0.02) occurred more frequently in males than in females. A single pretreatment Widal O antibody titer \( \geq 1:640 \) was also a statistically significant occurrence in males (P = 0.006). Female patients were significantly more severely ill (P = 0.0004) on admission and had chest signs consistent with bronchopneumonia (P = 0.04), transverse myelitis (P = 0.04), abnormal liver function test results (P = 0.0003), and abnormal findings in urinalyses (P = 0.02). Typhoid hepatitis (P = 0.04) and glomerulonephritis (P = 0.02) were present significantly more frequently in females. Whether these differences were due to differences in host’s immune response to acute infection need to be determined in a prospective study.

Even before the introduction of chloramphenicol in clinical practice, typhoid fever was well recognized as being extremely diverse in its clinical presentation.\(^1\) Classic descriptions of typhoid fever in untreated cases have portrayed a multistage disease, with increasing temperature and bacteremia in the first week; rose spots, abdominal pain, and splenomegaly in the second week; abdominal complications of bleeding and perforation in the third week; and resolution or progression to death after the third week.\(^2\) However, the pattern of disease as seen presently in many parts of the world bears little resemblance to the initial classic description.\(^3\) Certain host-related and microbial factors have been proposed to explain this diversity.\(^3\) It has been previously reported that the patient’s age plays an important role in determining the clinical course of typhoid fever.\(^4\) However, the role of the sex of the patient is less emphasized in the literature. On the other hand, we consider it to be an important issue in view of the fact that typhoid fever is increasingly being reported to be more common in women than men in KwaZulu, Natal.\(^5\)\(^7\) Therefore, a retrospective study was undertaken to examine the influence of sex in determining the clinical features, laboratory findings, and complications of typhoid fever.

MATERIALS AND METHODS

A retrospective case note review was undertaken of 102 confirmed cases of typhoid fever treated at King Edward VIII Hospital in Durban, South Africa over a three-year period ending December 31, 1995. The study was reviewed and approved by the Ethics Committee of the University of Natal Medical School. Informed consent of the subjects was not determined retrospectively by the authors. The patient was said to be mildly ill if pyrexial or pyrexial (i.e., axillary temperature \( \geq 38.0^\circ\mathrm{C} \)) with a temperature not \( > 38.5^\circ\mathrm{C} \) without abdominal (other than constipation and splenomegaly) or neurologic symptoms or signs; moderately ill if only hyperpyrexial (i.e., axillary temperature \( \geq 40.0^\circ\mathrm{C} \)) with a temperature not \( > 40.0^\circ\mathrm{C} \) or pyrexial (temperature 39.0–39.5°C) in the absence of neurologic signs; and severely ill if hyperpyrexial (temperature = 40.5–41.0°C) with neurologic signs or septic (temperature > 39.0°C, tachycardia > 110/min and otherwise unexplained systolic hypotension < 90 mm of Hg) with or without rales.

Blood and urine cultures, Widal tests, examination of peripheral blood films for malarial parasites, tests for serum electrolytes, urea, and creatinine, and chest radiographs were routinely done for all patients on admission. Except for a few cases (7 males and 9 females), determination of hematologic indices, urinalyses, and liver function test results including serum bilirubin, aspartate aminotransferase (AST), and gamma-glutamyl transpeptidase (GGT) were also routinely done. Other ancillary investigations where necessary or possible included cerebrospinal fluid examination, plain radiographs of the abdomen in an erect posture, stool examination (microscopy, culture, and guiac test), and arterial blood gas analyses. All tests except the Widal tests were repeated in all patients during the course of illness and additional tests were done as required.

The SAS (Carey, NC) software was used for all statistical analyses. Two-tailed tests were used for all comparisons. Chi-square tests were used to compare all categorical variables. Mann-Whitney U tests were used to compare all continuous (the data were not normally distributed) or ordinal variables. The issues of multiple comparisons were minimized by testing only apparent differences. All multiple comparisons were shown in the results. Statistical significance was defined as \( P < 0.05 \).

RESULTS

During the study period, 240 patients were treated for typhoid fever at King Edward VIII Hospital. Of these, 138 (59 males and 79 females) patients were excluded from further
analysis for the following reasons: 1) medical records missing in nine (4 males and 5 females), 2) a diagnosis based on clinical grounds alone in 18 (11 males and 7 females), and 3) a diagnosis confirmed by the Widal tests alone in 111 patients. This latter group was composed of 59 patients (22 males and 37 females) with a single antibody (both O and H) titer ≥ 1:640; 20 (5 males and 15 females) with seroconversion (i.e., a ≥ four-fold increase in antibody titer between two specimens obtained a week apart) for O antibody; 25 (10 males and 15 females) for H antibody, and seven (all males) for both O and H antibodies. Of the remaining 102 patients with positive blood cultures for S. typhi, there were 46 (45.1%) males and 56 (54.9%) females. They are the subjects of this paper.

Table 1 shows the baseline characteristics of the patients on admission. The mean ± SD age of the subjects was 17.9 ± 12.0 years for males and 22.5 ± 12.5 years for females ($P = 0.02$). The mean ± SD prodromal period (i.e., period elapsed from the onset of symptoms until admission) was significantly prolonged in males compared with females ($10.3 ± 7.3$ versus $6.7 ± 5.9$ days; $P = 0.003$). Compared with males, females were significantly more severely ill ($P = 0.0004$).

Table 1 shows the frequency of various symptoms or signs on admission. Significantly higher proportions of females had moist rales (14.3% versus 2.2%; $P = 0.02$) and transverse myelitis (12.5% versus 0.0%; $P = 0.04$) compared with males. All patients with transverse myelitis had an acutely developed neurologic problem such that the interval between the onset and peak deficit never exceeded a week. This was characterized clinically by complete motor paralysis of both legs that were flaccid and areflexic with absent plantar responses and abdominal reflexes accompanied by spinal segmental sensory disturbances with a definite upper limit and reduced anal sphincteric tone and urinary retention.

Table 3 shows selected abnormal laboratory findings on admission. Of the patients tested, significantly higher proportions of females had abnormal liver function test results (46.3% versus 10.9%; $P = 0.0003$) and abnormal findings in urinalyses (20.4% versus 2.2%; $P = 0.02$) compared with males. Occult blood loss in stool (65.0% versus 6.7%; $P = 0.0004$) and a mild reticulocytosis (reticulocytes = 3–4%) in the absence of hemolysis (22.7% versus 4.2%; $P = 0.02$) were statistically significant occurrences in males. Tests to detect occult blood in stool were not done in any patient who had reticulocytosis.

Chest radiographs showed bibasilar patchy infiltrates in all who presented with moist rales. An elevated erythrocyte sedimentation rate (Westergren) > 30 mm/hr (range = 35–40 mm/hr) was noted in six (13.9%) of 43 males and eight (16.0%) of 50 females tested. Ova ($\geq 2$ high-power field) of Ascaris lumbricoides were seen in the stool of five (25.0%) of 20 males and seven (23.3%) of 30 females tested. An additional ten (6 males and 4 females) patients had similar findings subsequently during the course of illness. Stool smears showed white blood cells (2–3 cells/higher power field with > 80% mononuclear cells) in five (25.0%) males on admission and an additional six (4 males and 2 females) patients subsequently. Stool cultures were negative in 50 (20 males and 30 females) patients tested on admission and all patients subsequently. The Widal tests done on admission showed an elevated O antibody titer ≥ 1:640 in 65.2% (30/46) of the males and 35.7% (20/56) of the females ($P = 0.006$). An elevated H antibody titer ≥ 1:640 was noted in 34.8% (16 of 46) of the males and 37.5% (21 of 56) of the females. Apart from positive blood cultures for S. typhi and those already mentioned, no other abnormality was detected in any laboratory investigation done on admission.

FIGURE 1. Map of Durban, South Africa showing the distributions of patients with typhoid fever by sex in different informal settlements from where they originated.
SEX AND FEATURES OF TYPHOID FEVER

Table 2

Clinical features on admission in typhoid fever patients by sex

<table>
<thead>
<tr>
<th>Symptoms or signs</th>
<th>Males* (n = 46)</th>
<th>Females* (n = 56)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>39 (84.8)</td>
<td>48 (85.7)</td>
<td>0.10</td>
</tr>
<tr>
<td>Headache</td>
<td>3 (6.5)</td>
<td>11 (19.6)</td>
<td></td>
</tr>
<tr>
<td>Anorexia</td>
<td>5 (10.9)</td>
<td>4 (7.1)</td>
<td></td>
</tr>
<tr>
<td>Constipation</td>
<td>0 (0.0)</td>
<td>1 (1.8)</td>
<td></td>
</tr>
<tr>
<td>Diarrhea</td>
<td>10 (21.7)</td>
<td>16 (28.6)</td>
<td></td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>8 (17.4)</td>
<td>12 (21.4)</td>
<td></td>
</tr>
<tr>
<td>Dysuria</td>
<td>3 (6.5)</td>
<td>9 (16.1)</td>
<td></td>
</tr>
<tr>
<td>Pyrexia (axillary temperature ≥ 38.0°C)</td>
<td>40 (86.9)</td>
<td>51 (91.1)</td>
<td></td>
</tr>
<tr>
<td>Conjunctivitis</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td></td>
</tr>
<tr>
<td>Relative bradycardia</td>
<td>21 (45.6)</td>
<td>20 (35.7)</td>
<td></td>
</tr>
<tr>
<td>Hyperpyrexia (axillary temperature ≥40.0°C)</td>
<td>8 (17.4)</td>
<td>13 (23.2)</td>
<td></td>
</tr>
<tr>
<td>Abdominal tenderness</td>
<td>14 (30.4)</td>
<td>20 (35.7)</td>
<td></td>
</tr>
<tr>
<td>Splenomegaly</td>
<td>5 (10.9)</td>
<td>5 (8.9)</td>
<td></td>
</tr>
<tr>
<td>Hepatomegaly</td>
<td>14 (30.4)</td>
<td>14 (25.0)</td>
<td></td>
</tr>
<tr>
<td>Moist rales</td>
<td>1 (2.2)</td>
<td>8 (14.3)</td>
<td>0.04</td>
</tr>
<tr>
<td>Meningism</td>
<td>1 (2.2)</td>
<td>2 (3.5)</td>
<td></td>
</tr>
<tr>
<td>Confusion</td>
<td>1 (2.2)</td>
<td>5 (8.9)</td>
<td>0.04</td>
</tr>
<tr>
<td>Transverse myelitis†</td>
<td>0 (0.0)</td>
<td>7 (12.5)</td>
<td></td>
</tr>
<tr>
<td>Rose spots</td>
<td>0 (0.0)</td>
<td>1 (1.8)</td>
<td></td>
</tr>
</tbody>
</table>

* Values are the number (%) of patients.
† See Results for details.

Table 4 shows the outcome of the patients. Incidences of death and overall complications were similar in two groups. Intestinal perforation was significantly more frequent in males (10.9% versus 0.0%; P = 0.04). Significantly higher proportions of females developed glomerulonephritis (19.6% versus 2.2%; P = 0.02), characterized by proteinuria, elevated serum creatinine levels > 250 µmol/L, and abnormal urinary sedimentation with red blood cells, red blood cell casts, and granular casts and typhoid hepatitis characterized by hepatomegaly, jaundice, elevated AST levels > 160 IU and GGT levels > 80 IU. Proteinuria was not quantitated in any patient who had proteinuria but it never exceeded 2+ by dipstick assay. Viral hepatitis, leptospirosis, and hepatic amebiasis were excluded in all patients who had abnormal liver function test results by serologic means and amebic gel diffusion tests, respectively. Malaria was excluded by repeated examination of peripheral blood films.

Table 5 shows the influence of patient’s age on the frequencies of selected parameters that varied significantly by sex. These are remarkably similar between males and females in children (0–14 years old). In contrast, sex-related differences were remarkably preserved in the adults (> 14 years old). The most marked differences were observed between adult females and children.

DISCUSSION

Men may have greater opportunities of acquiring S. typhi than women because of the extra care taken by the latter in food preparation and indiscriminate eating habits of the former at roadside locations. Repeated exposures to S. typhi may provide men with a strong local mucosal immunity including strong local IgA response associated with the appearance of circulatory IgA and simultaneously a state of systemic immune unresponsiveness affecting all major modalities, including IgM and IgG responses. This may mean less cytokine production from infected macrophages at the sites of localization of S. typhi and greater degree of hyperplasia of the already primed lymphoid tissues of the Peyer’s patches in the event of reexposure. This, in turn, may translate clinically into milder disease and high incidences of intestinal perforation and proven or presumed (reticuloctysis in the absence of hemolysis) occult blood loss in stool and possibly also a strong Widal O antibody response. Of note, the severity of typhoid fever is related to the levels of cytokine released as indicated above, and critical to the pathogenesis of intestinal manifestations as indicated is hyperplasia of Peyer’s patches and antibodies against Salmonella O antigens, which include, among others, antibodies of the IgA type.

Hormonal influences appear to affect the course of disease since hepatitis is often more severe in girls at menarche as well as in pregnant women. In this study, the severity of typhoid fever in general and hepatic dysfunction in particular was also most marked in adult women, 98.5% (64 of 65) of whom were in the reproductive age group (15–45 years old). Estrogens have various stimulatory effects on macrophages, including Kupffer cells, with the latter considered the primary sites of localization of S. typhi within the liver, and to have the potential to cause direct hepatic injury under such conditions via generation of free-oxygen radicals. However, any possible role of estrogen in the severity of disease as noted in our female patients remains speculative because the level of estrogen was not determined in any of these patients.

That the immune response of the host to acute infection might have a role in determining the severity of disease as noted above is further supported by the fact that sex-related differences are most marked between adult women and children with the latter being considered to be relatively immunologically naïve. Notable findings among others are the paucity or absence of extremely high (≥ 1:640) Widal antibody (either O or H) titers, glomerulonephritis (absent in all) and transverse myelitis (absent in all) in children, and their extreme predilection (present in 10 of 37 cases) in women. The absence of such a high Widal antibody titer in
children may not be surprising. Jefferis and Kumararatne\textsuperscript{18} found low antibody levels against non-\textit{Salmonella} polysaccharide antigens in children \( \leq 10 \) years old. Of note, 59.5\% (22 of 37) of the children in this study belonged to this age group. Immune complex mediation has been corroborated and postulated in the pathogenesis of glomerulonephritis and transverse myelitis, respectively, in typhoid fever,\textsuperscript{19} with and without clinical manifestations of bleeding. Although endotoxin levels in blood were not assayed in these patients, clinical and paraclinical findings in this subgroup can be explained on the basis of known biologic effects of endotoxin\textsuperscript{26,27} even in the context of its role in typhoid fever.\textsuperscript{28,29} In this study, the frequency of headache was lower than would have been expected,\textsuperscript{19} but was higher than that reported by others.\textsuperscript{30} In two prospective studies from India with no children,\textsuperscript{31,32} splenomegaly was noted in more than one-third of the patients. However, unlike ours study, malaria, which can also result in splenomegaly in the acute stage,\textsuperscript{33} was not systematically excluded by appropriate laboratory investigations in those studies. In fact, in one study\textsuperscript{32} all five (of 125) patients tested had malaria. More than one-third of the patients in this series were children, 45.9\% (17 of 37) of whom presented with diarrhea (and positive stool samples...

\begin{table}
\centering
\caption{Selected abnormal laboratory findings on admission in typhoid fever patients by sex} \label{tab:lab_findings}
\begin{tabular}{llllll}
\hline

& \textbf{Variables*} & \textbf{Males (n = 46)} & \textbf{No. positive/ no. tested} & \textbf{Females (n = 56)} & \textbf{No. positive/ no. tested} & \textbf{P} \\
\hline
Hematologic
\hline
Anemia (Hemoglobin \(< 11 \text{ g/dL}) & 16/43 & 37.2 & 21/50 & 42.0 \\
Thrombocytopenia (platelet count \(< 150 \times 10^9\text{/L}) & 17/39 & 43.6 & 24/47 & 51.1 \\
Leukopenia (Leukocyte \(< 4 \times 10^9\text{/L}) & 12/44 & 27.3 & 12/48 & 25.0 \\
Occult blood loss in stools & 13/20 & 65.0 & 2/30 & 6.7 & 0.004 \\
Reticulocytosis (Reticulocytes 3–4\%) & 10/44 & 22.7 & 2/48 & 4.2 & 0.02 \\
Liver function tests & & & & & \\
Serum AST (\(>42 \text{ IU}) & 5/46 & 10.9 & 25/54 & 46.3 & 0.003 \\
Total serum bilirubin (\(>17\mu\text{mol/L}) & 1/46 & 2.2 & 8/54 & 14.8 \\
Serum GGT (\(>64 \text{ IU}) & 1/46 & 2.2 & 8/54 & 14.8 \\
All three & 1/46 & 2.2 & 8/54 & 14.8 & 0.04 \\
Urinealys & & & & & \\
Proteinuria (1 to 2 by dipstick) & 1/46 & 2.2 & 11/54 & 20.4 & 0.02 \\
Sediments & & & & & \\
Red blood cells (2–4/HPF) & 1/46 & 2.2 & 11/54 & 20.4 \\
Red blood cell casts (2–3/LPF) & 1/46 & 2.2 & 11/54 & 20.4 \\
Granular casts (2–4/LPF) & 1/46 & 2.2 & 11/54 & 20.4 \\
All four & 1/46 & 2.2 & 11/54 & 20.4 & \\
\hline

\end{tabular}

* Values are the number (%) of patients.

\textsuperscript{a} AST = aspartate aminotransferase; GGT = gamma-glutamyltranspeptidase; HPF = high-power field; LPF = low-power field. Normal values: hemoglobin = 11.5–13.5 g/dL; platelet count = 150–450 \times 10^9/L; leukocyte count = 4–11 \times 10^9/L; reticulocyte count = 0.2–2\% of red blood cells; AST = 10–42 IU; total bilirubin = 0–17 \mu\text{mol/L}; GGT = 7–64 IU; Proteinuria (by dipstick method) = trace; red blood cells in urinary sediment = 0–1/HPF; red blood cell cast in urinary sediment = 0/LPF; granular casts in urinary sediment = occasional.

\begin{table}
\centering
\caption{Outcome in typhoid fever patients by sex} \label{tab:outcome}
\begin{tabular}{llll}
\hline

& \textbf{Complications} & \textbf{Males* (n = 46)} & \textbf{Females* (n = 56)} & \textbf{P} \\
\hline
Overall & 14 (30.4) & 25 (44.6) & 0.21 \\
Intestinal perforation & 5 (10.9) & 0 (0.0) & 0.04 \\
Glomerulonephritis\textsuperscript{†} & 1 (2.2) & 11 (19.6) & 0.02 \\
Typhoid hepatitis\textsuperscript{†} & 1 (2.2) & 8 (14.3) & 0.04 \\
Death & 0 (0.0) & 1 (1.8) & \\
\hline

\end{tabular}

* Values are the number (%) of patients.

\textsuperscript{†} See Results for details.
for parasitic ova), and this probably explains the rarity of constipation in our patients compared with that reported by others.31,32 This is not unexpected because in typhoid fever, diarrhea, not constipation, has also been reported by others7 to be more common in children than in adults.

The resident’s decision to admit a patient was not necessarily influenced by the clinical severity of illness alone; the reasons for admission, which were not necessarily mutually exclusive, might have been a sign, a combination of symptom and sign, or a presumed pathologic or pathophysiologic process. For example, of the 11 (6 males and 5 females) apyrexial patients said to have mild illnesses, nine (5 males and 4 females) had splenomegaly plus anorexia and one female patient had splenomegaly, headache, and moist rales. As expected,34 physicians’ assessments of clinical severity without any knowledge of initial laboratory results were remarkably accurate. This is supported by the fact that significant sex-related differences are virtually restricted to the patients’ laboratory profiles and the relative paucity of these abnormal laboratory findings in patients who were assessed to be mildly ill. Furthermore, these sex-related differences are still maintained when cases are stratified by severity of illness.

We strongly believe that even if clinicians were to consider any possible cultural differences between sexes in terms of how they respond to their illnesses, their conclusions would not have been different. This is because in every case clinical symptoms, which could be influenced by cultural factors,35 were evaluated in conjunction with the presence or absence of such physical signs as various degrees of pyrexia, hepatomegaly, splenomegaly, rose spots, rales, confusion, meningism, transverse myelitis, and abnormal vital signs. Abdominal tenderness was usually localized in the right upper quadrant and commonly associated (28 of 34) with hepatomegaly. If we were to assess the initial severity of illness on clinical grounds, as done by the clinicians, our conclusion would not have been different because criteria similar to those used by the admitting medical officers have also been proposed by others.1

We excluded all cases in whom diagnoses of typhoid fever were confirmed by the results of the Widal tests, despite the fact that the background antibody titers among healthy subjects in this area are very low and few are vaccinated with typhoid-paratyphoid vaccine.36 This is because we could not exclude the possibility of any difference that may exist between males and females37 in terms of background antibody titers, degree of specific anamnestic response, maximum antibody titer, generation of nonspecific cross-reactive antibody, or a combination thereof. Furthermore, when one considers the entire study population and each sex group separately, serologically diagnosed cases were found to differ from blood culture–positive cases in terms of certain clinical features, laboratory findings, and complications (Khan M and others, unpublished data). Although nutritional status may be relevant in the outcome of typhoid fever,19 it is considered unlikely to be the case in our patients because all had similar socioeconomic backgrounds. The possibility of coinfections with other organisms, diarrheal or parasitic, was explored by meticulous examination of stool samples. Results were unremarkable except those previously mentioned. No patient had bloody diarrhea. We have not observed any phage variation of S. typhi in recent years and phage type A remains the commonest phage type in South Africa, including KwaZulu Natal (Korrnhof HJ, South African Institute of Medical Research, Johannesburg, South Africa, unpublished data).

We conclude that men and women with typhoid fever differed with respect to certain clinical features, laboratory findings, and complications in that while intestinal perforation, occult blood losses in stools, extremely high Widal O antibody titers (≥1:640) were significantly more frequent in males, women had more severe disease with chest signs consistent with bronchopneumonia and transverse myelitis and significantly more complications of glomerulonephritis and hepatitis. Whether these differences are due to differences in immune response of the host to acute infection need to be determined in a prospective study.

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### Table 5

<table>
<thead>
<tr>
<th>Findings</th>
<th>Age 0–14 years old (n = 57)</th>
<th>Age &gt; 14 years old (n = 65)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Males* (n = 20)</td>
<td>Females* (n = 17)</td>
</tr>
<tr>
<td>Severity of illness§</td>
<td>10 (50.0)</td>
<td>7 (41.2)</td>
</tr>
<tr>
<td>Mild</td>
<td>10 (50.0)</td>
<td>10 (58.8)</td>
</tr>
<tr>
<td>Moderate</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Severe</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Moist rales</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Transverse myelitis</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Abnormal LFT§§</td>
<td>29 (100.0)</td>
<td>1 (6.7)</td>
</tr>
<tr>
<td>Reticulocytosis (3–4%)</td>
<td>10/18 (55.5)</td>
<td>0/15 (0.0)</td>
</tr>
<tr>
<td>Occult blood loss in stools</td>
<td>0/5 (0.0)</td>
<td>0/5 (0.0)</td>
</tr>
<tr>
<td>Abnormal urinalyses</td>
<td>0/0.0</td>
<td>0/35 (0.0)</td>
</tr>
<tr>
<td>Complications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intestinal perforation</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Typhoid hepatitis§</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Glomerulonephritis§</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
</tr>
</tbody>
</table>

* Values are the number (%) of patients.

§ Significance of difference between adult (> 14 years old) males and females.

‡ Significance of difference between all children (0–14 years old) and adult females.

§ Significance of difference between adult males and females.

¶ LFTs = liver function test results.
References


