

CASE REPORT ΕΝΔΙΑΦΕΡΟΥΣΑ ΠΕΡΙΠΤΩΣΗ

A case of typhoid fever with no travel history

The case is reported of typhoid fever in a healthy 25-year-old female without a history of travel outside the USA or contact with any sick person. This case highlights the importance of including enteric fever in the differential diagnosis when fever and abdominal symptoms are present, regardless of the travel history or presence of an epidemic, since *Salmonella* can be shed intermittently in the feces of asymptomatic carriers in the local community.

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Περίπτωση τυφοειδούς πυρετού
χωρίς ιστορικό ταξιδιού

Περίληψη στο τέλος του άρθρου

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Typhoid fever is a systemic infection with the bacterium *Salmonella enterica* serotype *typhi*. It was an important cause of illness and death in the USA and Europe in the 19th century. The improvement of sanitation systems led to a dramatic decrease in the incidence of typhoid in these regions. *S. typhi* (and *S. paratyphi*) infection, in contrast to infection with other types, is virtually always acquired by transmission from one human to another¹; there is a link to another person who either is actively infected or is a chronic carrier, such as the infamous cook known as Typhoid Mary.¹ In developed countries the condition is seen mainly in travelers, with occasional epidemics, such as that in the former Soviet Union 20 years ago, where a breakdown of the public health infrastructure resulted in an outbreak with 10,000 cases.¹

CASE REPORT

A 25-year-old African American female presented to the emergency department with fever of up to 41 °C and five episodes of watery green diarrhea per day for two weeks, associated with vomiting, dizziness, dyspnea on exertion, productive cough, a weight loss of 7 kg and myalgia.

The patient's medical history was unremarkable, except for a cesarian section two years previously and surgical termination of pregnancy 1 month prior to becoming ill. She was not on any medications and had no allergies. She did not smoke cigarettes

or use illicit drugs or alcohol. She lived with her family and had not traveled outside the USA. HIV testing was reported negative one month before presentation.

On physical examination, the patient appeared fatigued, but in no distress. Her temperature was 37.7 °C, blood pressure 98/71 mmHg, without orthostasis, heart rate 100/minute and respiratory rate 18/minute. Physical examination was unremarkable.

Complete blood count revealed normochromic normocytic anemia (hemoglobin 9.2 g/dL), with normal platelets, white blood count and differential. Serum chemistry revealed elevated alkaline phosphatase (271 IU/L), alanine aminotransferase (229 IU/L) and aspartate aminotransferase (110 IU/L). Total bilirubin was 0.9 mg/dL and albumin 3.1 g/dL; lactate dehydrogenase was above 2,000 IU/L. C-reactive protein (CRP) was 14 mg/L. The chest X-ray was unremarkable. The patient was admitted to the hospital.

Abdominal ultrasound revealed borderline gallbladder wall thickening. Computed tomography (CT) scan of the abdomen and pelvis showed mild splenomegaly, multiple enlarged mesenteric lymph nodes in the root of the mesentery and the right mid abdomen, right lower quadrant and left para-aortic area. There was also non-specific wall thickening of the terminal ileum, cecum and proximal ascending colon.

Serology was negative for hepatitis. Blood and urine cultures were positive for *Salmonella enterica* serotype *typhi*. Treatment with intravenous ciprofloxacin and fluids was initiated and the patient was placed on contact isolation. Her condition improved within the next 5 days and her fever and diarrhea resolved. She

was discharged with a follow up appointment in the Infectious Disease Clinic and oral ciprofloxacin was continued for a total of 10 days. The patient's family members were tested for possible asymptomatic carriage.

COMMENT

Acute gastrointestinal illness is exceedingly common; it is a self-limiting illness characterized by vomiting, diarrhea, that affects almost everyone at least once per year in the USA.¹ Food or water may serve as a primary source of infection. There are thought to be about 76 million cases per year of foodborne infection, 13 million cases per year of waterborne illness and 122 million cases of acute gastrointestinal illness each year in the USA for which human-to-human transmission is responsible.¹

Viruses, bacteria, and protozoa are the principal recognized causes of acute gastrointestinal illness. *Salmonella typhi* infection (typhoid fever) is currently rare in the USA, due to good hygiene, lack of crowding, and high public health standards for home and industrial sewage.¹ Typhoid fever in the USA continues to be associated with foreign travel, and in particular with travel to India.²

Infection with *Salmonella typhi* causes an estimated 20 million cases of typhoid fever and 200,000 deaths annually world wide. In the USA, approximately 300 clinical cases are reported per year.²

The onset of the disease is characterized by influenza-like symptoms, including chills and poorly localized abdominal discomfort. It is unusual for a patient hospitalized with typhoid to have normal bowel movements and no abdominal symptoms. Diarrhea usually occurs after the onset of fever in about one third of the cases.³ Initially, the fever is low grade, but it rises progressively, and by the second week it is often high and sustained (39–40 °C). The few physical signs associated with typhoid include coating of the tongue, abdominal tenderness, hepatomegaly, splenomegaly and relative bradycardia.⁴ A few rose spots, blanching erythematous maculopapular lesions approximately 2–4 mm in diameter, are reported in 5–30% of cases.⁴ These lesions are easily missed; they usually occur on the abdomen and chest and more rarely on the back, arms, and legs.

The hemoglobin level, white cell count, and platelet count are usually normal or reduced and levels of liver enzymes are usually elevated.⁴

Complications occur in 10–15% of patients,⁴ with gastrointestinal bleeding, intestinal perforation, and typhoid encephalopathy being the most important. Relapse occurs

in 5–10% of patients, usually two to three weeks after the resolution of fever.⁴

Up to 10% of convalescing patients with untreated typhoid excrete *S. typhi* in the feces for up to three months; 1–4% become long-term carriers, excreting the organism for more than one year. Up to 25% of long-term carriers have no history of typhoid.⁴ Chronic carriage is more common among women and the elderly and in patients with cholelithiasis. Most carriers are asymptomatic. Patients with an abnormal urinary tract may excrete the organism in the urine for long periods.⁴ The average case fatality rate is less than 1%.⁴

Blood culture is the standard diagnostic method; the test is positive in 40–60% of cases, usually early in the course of the disease.⁵ Culture of the bone marrow is more sensitive, the result being positive in 80–95% of patients with typhoid, even in patients who have been taking antibiotics for several days, regardless of the duration of illness.⁴ The sensitivity of blood culture is higher in the first week of the illness, is reduced by prior antibiotic use, and increases with the volume of blood cultured and the ratio of blood to broth.⁴ Cultures have also been made from the buffy coat of blood, streptokinase-treated blood clots, intestinal secretions and skin snips of rose spots. The sensitivity of stool culture depends on the amount of feces cultured, and the positivity rate increases with the duration of the illness.⁴ Stool culture is positive in 30% of patients with acute disease⁴ and usually becomes positive after the first week of infection.⁵ For the detection of carriers, several samples should be examined because of the irregular nature of shedding. The role of the Widal test is controversial, because the sensitivity, specificity, and predictive values of this widely used test vary considerably between geographic areas, and reliance on this test alone in areas where typhoid is endemic may lead to overdiagnosis.⁵ DNA probes and polymerase-chain-reaction (PCR) protocols have been developed to detect *S. enterica* serotype *typhi* directly in the blood, with a reported sensitivity above 90%.⁶ The PCR methods are not yet widely used and are impractical in many areas where typhoid is common.⁴

The introduction of chloramphenicol in 1948 marked a revolution in the treatment of typhoid fever. In the 1980s and 1990s, *S. typhi* developed resistance to all the drugs that were used as first-line treatment (chloramphenicol, trimethoprim, sulfamethoxazole, and ampicillin). Recent estimates of the proportion of multidrug-resistant infections among US patients range from 12% during the period 1985–1994 to 17% in 1996–1997.² About one-third of all *S. typhi* isolates were resistant to the quinolone nalidixic

acid.² There is strong evidence that the fluoroquinolones are currently the most effective drugs for the treatment of typhoid fever. In randomized, controlled trials, these drugs have proved safe in all age groups and are rapidly effective even with short courses of treatment (three to seven days) and the cure rates exceed 96%.⁴ Fluoroquinolones should be used at the maximum possible dose for a minimum of 10–14 days,⁴ and the patients should be carefully followed to determine whether they are excreting *S. typhi* in their feces. The third-generation cephalosporins and azithromycin are also effective drugs for typhoid. The parenteral fluoroquinolones are probably the antibiotics of choice for severe infections. Relapses should be treated in the same way as initial infections. The majority of intestinal

carriers can be cured by a prolonged course of antibiotics, provided they do not have gallstones. In the presence of cholelithiasis, cholecystectomy may be required in addition to antibiotic treatment.⁴

In conclusion, this case of typhoid fever was challenging in that neither the patient nor any of her family members had traveled outside the USA. A case of typhoid fever without travel history was recently documented in the UK.⁷ This case highlights the importance of including enteric fever in the differential diagnosis when fever and abdominal symptoms are present, regardless of the travel history, evening the absence of an epidemic, since salmonella can be shed intermittently in the feces of asymptomatic carriers in the local community.

ΠΕΡΙΛΗΨΗ

Περίπτωση τυφοειδούς πυρετού χωρίς ιστορικό ταξιδιού

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Περιγράφεται μια περίπτωση τυφοειδούς πυρετού, σε μια κατά τα άλλα υγιή 25χρονη γυναίκα, χωρίς ιστορικό ταξιδιού εκτός των ΗΠΑ και χωρίς καμιά επαφή με άτομα με παρόμοια συμπτώματα. Η συγκεκριμένη περίπτωση τονίζει τη σημασία του να περιλαμβάνεται ο τυφοειδής πυρετός στη διαφορική διάγνωση όταν πυρετός και συμπτώματα από την κοιλιά είναι παρόντα ανεξάρτητα από το ιστορικό ταξιδιών ή την παρουσία επιδημίας, αφού η σαλμονέλα του τυφού μπορεί να διασπείρεται ασυνεχώς με τα κόπρανα ασυμπτωματικών φορέων στην τοπική κοινότητα.

Λέξεις ευρητηρίου: Διάρροια, Πυρετός, Σαλμονέλωση

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