

Typhoid Fever

According to the Centers for Disease Control and Prevention, approximately 400 cases of typhoid fever are reported in the United States every year. Nearly 75 percent of cases are related to international travel. Worldwide, typhoid fever continues to be very common in developing nations, infecting about 12.5 million people each year. Typhoid fever is caused by *Salmonella typhi*, which only infects humans and is obtained by a fecal oral route most often by contaminated food or water.

Symptoms of typhoid fever usually manifest between five and 21 days after exposure. Presenting complaints are usually nonspecific, including fever, chills, and constitutional symptoms. Patients may also feel weak, can have headache, anorexia and abdominal pain.

Classically during the first week of illness, patients report fever that rises in a “stepwise” fashion over the course of days and can be as high as 104 F. Notably patients can develop “temperature-pulse dissociation,” which reveals a relative bradycardia despite high fever, although this is not necessarily a specific finding for typhoid fever.

If left untreated, patients may develop “rose spots” during the second week of illness, manifested as salmon-colored macules on the trunk and abdomen. Further complications include hepatosplenomegaly and intestinal bleeding or perforation. Without treatment, mortality can be as high as 20 percent from complications, such as intestinal perforation or septicemia.

Laboratory evaluation of patients with typhoid fever can show leukopenia or leukocytosis and possibly anemia. Patients may also have mild to moderate transaminase elevation. Stool cultures are positive in up to 40 percent of cases, but can be negative at time of presentation. Blood cultures are the mainstay of diagnosis, being positive in up to 80 percent of patients. If blood cultures are negative and the diagnosis of typhoid fever is still considered, then bone marrow aspirate for culture could be considered, even after antibiotic therapy has begun.

Initial parenteral antibiotic typically is instituted with a beta lactam, such as ceftriaxone, cefotaxime or cefixime. Patients given antibiotics usually feel better within 48 to 72 hours. For sensitive organisms, oral therapy can be continued with amoxicillin, trimethoprim-sulfamethoxazole, or less commonly chloramphenicol or a fluoroquinolone. Two weeks of antibiotic therapy usually suffice for treatment. Of note, multi-drug resistant isolates are more frequent in the Indian subcontinent, Southeast Asia, Mexico, the Arabian Gulf and Africa. Treatment for these infections may require beta lactam or fluoroquinolone therapy and should be guided by local resistance patterns in conjunction with infectious disease consultation.

Patients who have had typhoid fever can continue to shed the bacteria after they are asymptomatic. Chronic carriage of the disease is uncommon (less than 5 percent of cases), but follow-up stool cultures need to be done to ensure that the patient has not become a carrier of the disease.

Prevention of typhoid fever is through avoiding potentially contaminated water, ice and foods while traveling and by vaccination. Two types of vaccinations exist; however, they are only partly (i.e., 50 percent to 80 percent) effective against disease. If one acquires *S.typhi*, then disease is attenuated. The Ty21A vaccine is oral, consists of four caplets taken every other day and needs to be completed at least seven days before travel. The second vaccine, an injectable Vi capsular polysacchride vaccine, must be completed at least two weeks before travel. The Ty21A vaccine affords five years of protection; the Vi capsular polysacchride vaccine affords two years of protection.

References

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