Salmonella Typhi

Salmonella typhi is the causative agent for typhoid fever, which is characterized by fevers, GI distress, abdominal pain and pathognomonic rose spots on the abdomen. Unlike most other acute bacterial infections, affected patients demonstrate a monocytic immune response. First-line treatment is a cephalosporin or fluoroquinolone. Live attenuated oral and IM capsular polysaccharide vaccines are available for prophylaxis.



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Characteristics

Colonizes Gallbladder
Gallbladder
Salmonella typhi colonizes the gallbladder and use it as a long-lasting reservoir; some antibiotics may promote a longer period of colonization.

Monocytic Immune Response
Monocyte-monkey In-moon
With Salmonella typhi infections, the bacteria are absorbed through Peyer’s patches lymph tissue in the small intestine, where macrophages phagocytose but do not destroy the bacteria. S. typhi can then use macrophages to spread throughout the body and evade detection from the immune system. This triggers an overall monocytic response in an affected patient.

Symptoms

Typhoid Fever
Typhoon Fever-beaver
One of the initial symptoms of typhoid fever is an increasingly high fever (up to 103-104 degrees F) that is accompanied by chills and body aches.

Abdominal Pain
Abdominal Pain-bolt
Patients may complain of diffuse abdominal pain and present with abdominal distention and hepatosplenomegaly.

Rose Spots on Abdomen
Roses on Abdomen
A pathognomonic feature of typhoid fever are 2-4 mm salmon-colored patches known as rose spots; these cutaneous manifestations represent bacterial emboli that have traveled to the skin.

Constipation Followed by Diarrhea
Corked Con-toilet Followed by Toilet
Once fever is established, patients begin to develop GI distress with constipation and then diarrhea.

Treatments

Ceftriaxone
Chef-tri-axes
Patients with salmonella should undergo a trial with cephalosporins such as ceftriaxone or fluoroquinolones such as ciprofloxacin. Cephalosporins are preferred in children due to their lower side effect profile.

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Fluoroquinolones

Flower-queen

Fluoroquinolones like ciprofloxacin or ofloxacin are the preferred treatment in adults with typhoid fever. If their symptoms do not improve after a trial of fluoroquinolones and cephalosporins, they may have multi-drug resistant S. typhi. An alternative treatment regimen with azithromycin could be attempted at this point.

Considerations

Oral Vaccine - Live

Oral Vaccination-syringe in Live salmon

The oral typhoid vaccine efficacy at providing immunoprotection was 35% at year one and increases to 58% after two years. Patients who are immunocompromised or pregnant are not candidates for the oral vaccine, as is the case with all live vaccines. Either vaccine is recommended for people who have had close contact with Salmonella typhi and travelers to endemic areas.

IM Vaccine - Capsular Polysaccharide

In-muscle Vaccination-syringe with Capsule Polly-sac

The intramuscular typhoid vaccine efficacy at providing immunoprotection was 69% after one year but drops to 59% after two years. Either vaccine is recommended for people who have had close contact with Salmonella typhi and travelers to endemic areas.

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