

Enteric fever (Typhoid and paratyphoid fever)

Bacteriology

It caused by Salmonella Typhi (S. typhi) and Salmonella Paratyphi (S. Paratyphi) which cause typhoid and paratyphoid fever respectively ,it is G -ve. bacilli flagellated bacteria has somatic (O) antigen , flagellated (H) antigen and polysaccharide virulence antigen (Vi) antigen it is facultative anaerobic bacteria salmonella has many serotypes but most virulent bacteria are S.typhi and S. paratyphi bacteria . It transmitted by orofaecal route (fluid ,food ,feces and flies) .

Incubation period : 10-14 days .

Pathophysiology

The patients with achlorhydria ,malignancy especially with lymphoma ,sickle cell anemia at high risk of getting enteric fever infection . If human consume contaminated diet or water with pathogenic salmonella the bacteria (10^6 - 10^8 bacteria is needed to cause infection) will invade Peyer's patches in small intestine where it multiply there inside monocyte where bacteria resist monocyte killing activity , then it cause bacteremia to infect reticuloendothelial system specially the spleen ,liver, lymph nodes and bone marrow where it multiply there and cause secondary bacteremia to cause symptoms and lodged in tumor tissues ,aneurysm and bone infarct .It infect gall bladder and if there is gall stone the bacteria will remain there and continue to discharge bacteria with stool after cure of infection to become chronic carrier .

Clinical features

Enteric fever infection is common and endemic in Iraq , it classified into three weeks signs and symptoms .

1st week the patient develop step ladder fever 40 °C after incubation period with myalgia ,arthralgia , headache and constipation in children the patients develop vomiting and diarrhea with relative bradycardia (usually with fever tachycardia if not occur it called relative bradycardia) , at the end of first week the patients will develop rose spot rash in upper abdomen and back which is crops of rose to red color slightly elevated maculopapular rash which fade in pressure . At the end of first week and beginning of second week 7th-10th days the patients develop palpable splenomegally .

In the 2nd week the patient develop diarrhea and cough features of acute bronchitis . At the end of 2nd week and at beginning of 3rd week the patients will develop complications perforation of small intestine the patients will has abdominal pain ,distension and tenderness or the patient may develop hemorrhage (bleeding per rectum) due to ulceration at peyer's patches with bleeding the temperature will be normal or subnormal . The patient may develop acute cholecystitis , acute meningitis ,toxic phenomena like carditis and nephritis ,the patient may develop coma which carry high risk of mortality .

Investigations

- 1- White cell count will be low or lower normal level .C-reactive protein elevated .
- 2- Serological test : Antibodies against Salmonella antigens somatic antigen (O antigen) and flagellated antigen (H antigen) this test called Widal test but it has false positive results make sensitivity of this test is low for prove of the diagnosis .
- 3- Prove of salmonella bacteria by culture .Blood culture has high yield in first 10 days of the disease and stool culture better yield after 10 days of infection while bone marrow culture is positive usually in all the course of the disease but usually it rarely needed because it is invasive procedure unless diagnosis is not proved by another tests .
- 4- Rarely PCR is needed to prove the disease because it is costly and not always available .

Treatment

It has good response to :

- 1- Third generation cephalosporine (ceftriaxone vial 1gm and cefotaxime 2- 3 gm daily) injection .
- 2- Ciprofloxacin 500 mg twice daily intravenous or oral route and it is sensitive drug .
- 3- Azithromycin capsule 500 mg daily .
- 4- Ampicillin 750 mg 4 times daily intravenous or orally or amoxicillin 5 gm daily intravenous or orally is also sensitive drug but many areas are resistant to these antibiotics .
- 5- trimethoprim –sulfamethoxazole (methoprim) intravenous or orally twice daily .
- 6- chloramphenicol started with 4 gm for 4 days followed for 2 gm daily . It was used

before but now rarely used because it cause serious side effect like aplastic anemia and it cause grey baby syndrome in fetus or for pregnant women .

Better to use two drugs antibiotics to reduce relapse of disease because recrudescence of infection occur after a period of stopping antibiotics . Usually fever subsides 5 days after using antibiotics and antibiotics continued for 2 weeks .

Chronic carrier occur after completing antibiotics use where patients continue to discharge bacteria with stool intermittently usually occur with patients has gall stones , it is treated with ciprofloxacin tablets 500 mg twice daily for four weeks and may need cholecystectomy .

Paratyphoid fever

It is similar to typhoid fever but shorter course and milder symptoms , abrupt onset more incidence for rose-spots and enteritis , intestinal complications is less frequent .

Prevention

Typhoid and paratyphoid is endemic in Iraq vaccination is important it constitutes of two inactivated injectable and one oral live attenuated vaccine . Education of people about disease and route of transmission with good sanitation of hands , food and water .