

TYPHOID FEVER

Enteric fever

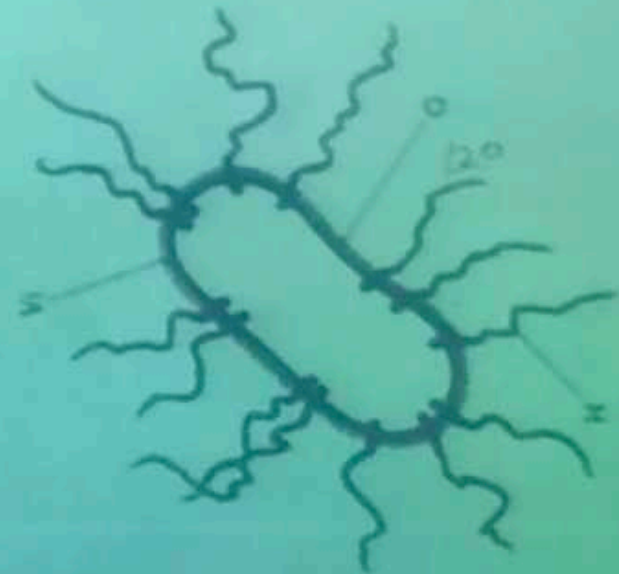
By

Prof. Iqbal Ahmad Azhar

Etiology :

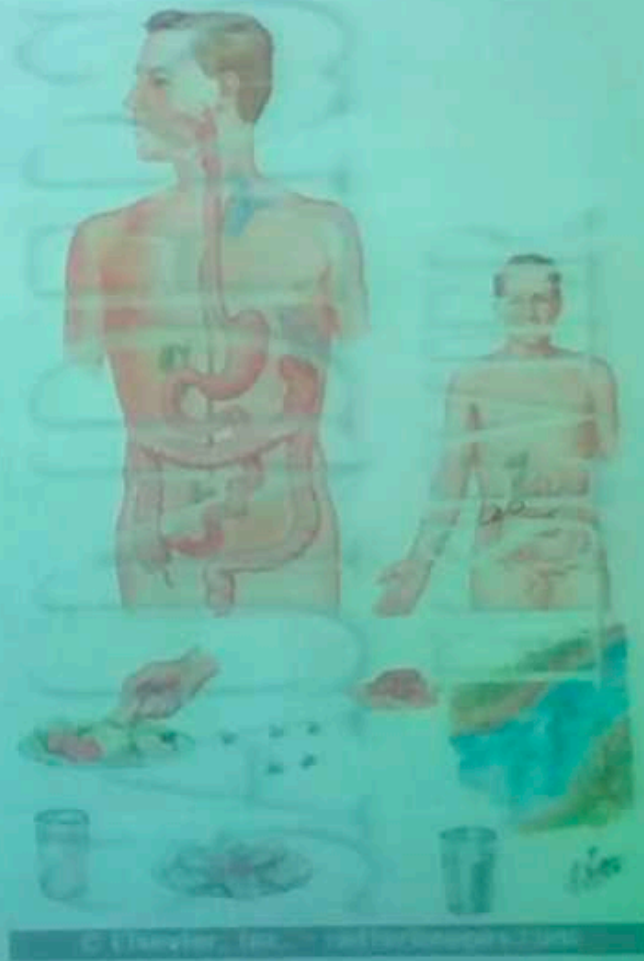
- Typhoid fever is caused by a virulent bacterium called *Salmonella typhi* thriving in conditions of poor sanitation and crowding. G-ve bacilli in family Enterobacteriaceae

- Antigen: located in the cell capsule
 - ❖ H (flagellar antigen).
 - ❖ Vi (polysaccharide virulence Ag).
 - ❖ O (Somatic Ag)



Transmission

- *S typhi* has no nonhuman vectors.
 - ❖ via food handled by an individual who chronically sheds the bacteria through stool or, less commonly, urine
 - ❖ Hand-to-mouth transmission after using a contaminated toilet and neglecting hand hygiene
 - ❖ Oral transmission via sewage-contaminated water or food.



Epidemiology

- Typhoid fever occurs worldwide, primarily in developing nations whose sanitary conditions are poor.
- Typhoid fever is endemic in Asia, Africa, Latin America, the Caribbean, and Oceania.
- Typhoid fever infects roughly 26.9 million people and kills an estimated 260,000 people every year.
- The incidence of typhoid fever is <math><15</math> cases per 100,000 population in the developing world, with estimated rates ranging from 100-1,000 cases per 100,000 population in under developed world.



High endemicity Medium endemicity Sporadic outbreaks

Risk factors

- Worldwide, children are at greatest risk of getting the disease
- Work in or travel to endemic area
- Have close contact with someone who is infected or has recently been infected with typhoid fever
- Weak immune system such as use of corticosteroids or diseases such as HIV/AIDS
- Drinking water contaminated by sewage that contains *S. typhi*

Pathology

Essential lesion:

- proliferation of RES
 - specific changes in lymphoid tissues
 - and mesenteric lymph nodes.
- "typhoid nodules"

Most characteristic lesion:

- ulceration of mucous membrane in the region of the Peyer's patches of the small intestine

Clinical presentation

- The incubation period for typhoid fever is 7-14 days (range 3-60 days)
- If not treated, the symptoms develop over four weeks, with new symptoms appearing each week but with treatment, symptoms should quickly improve.

Clinical manifestations

The initial period (early stage due to bacteremia)

- **First week:** non-specific, insidious onset of fever
- **Fever up to 39-40°C** in 5-7 days, step-ladder (now seen in < 12%),
headache, chills, toxic, tired, sore throat, cough, abdominal pain and diarrhea or constipation.

second and third weeks.

- fever reaches a plateau at 39-40. Last 10-14 days.
- more toxic and anorexic with significant weight loss.
- The conjunctivae are injected, and the patient is tachypneic with a thready pulse and crackles over the lung bases.
- Abdominal distension is severe. Some patients experience foul, green-yellow, liquid diarrhea (pea soup diarrhea).
- The neurological symptoms include apathy, confusion, and even psychosis.

- Necrotic Peyer patches may cause bowel perforation and peritonitis. This complication may be masked by corticosteroids. At this point, overwhelming toxemia, myocarditis, or intestinal hemorrhage may cause death.

- **Signs and symptoms:**
relative bradycardia.
- **Splenomegaly, hepatomegaly**
- **rash (rose-spots):30%**, maculopapular
a faint pale color, slightly raised
round or lenticular, fade on pressure
2-4 mm in diameter, less than 10 in No.
on the trunk, disappear in 2-3 days.

Rash in Typhoid

- Rose- spots: found in front of chest
- Appear in crops of upto a dozen at a time



defervescence stage

- By the **fourth week** of infection:

If the individual survives, the fever, mental state, and abdominal distension slowly improve over a few days.

Intestinal and neurologic complications may still occur. Weight loss and debilitating weakness last

- Some survivors become asymptomatic carriers and have the potential to transmit the bacteria indefinitely

convalescence stage

- the **5th week**: disappearance of all symptoms, but can relapse

- **Fulminant infection:**

rapid onset, severe toxemia and septicemia.

High fever, chill, circulatory failure, shock, delirium, coma, myocarditis, bleeding and other complications, DIC.

Common Clinical Features of Typhoid Fever in Children

FEATURE

High-grade fever

Coated tongue

Anorexia

Vomiting

Hepatomegaly

Diarrhea

Toxicity

Abdominal pain

Pallor

Splenomegaly

Constipation

Headache

Jaundice

Obtundation

Ileus

RAT

Complications

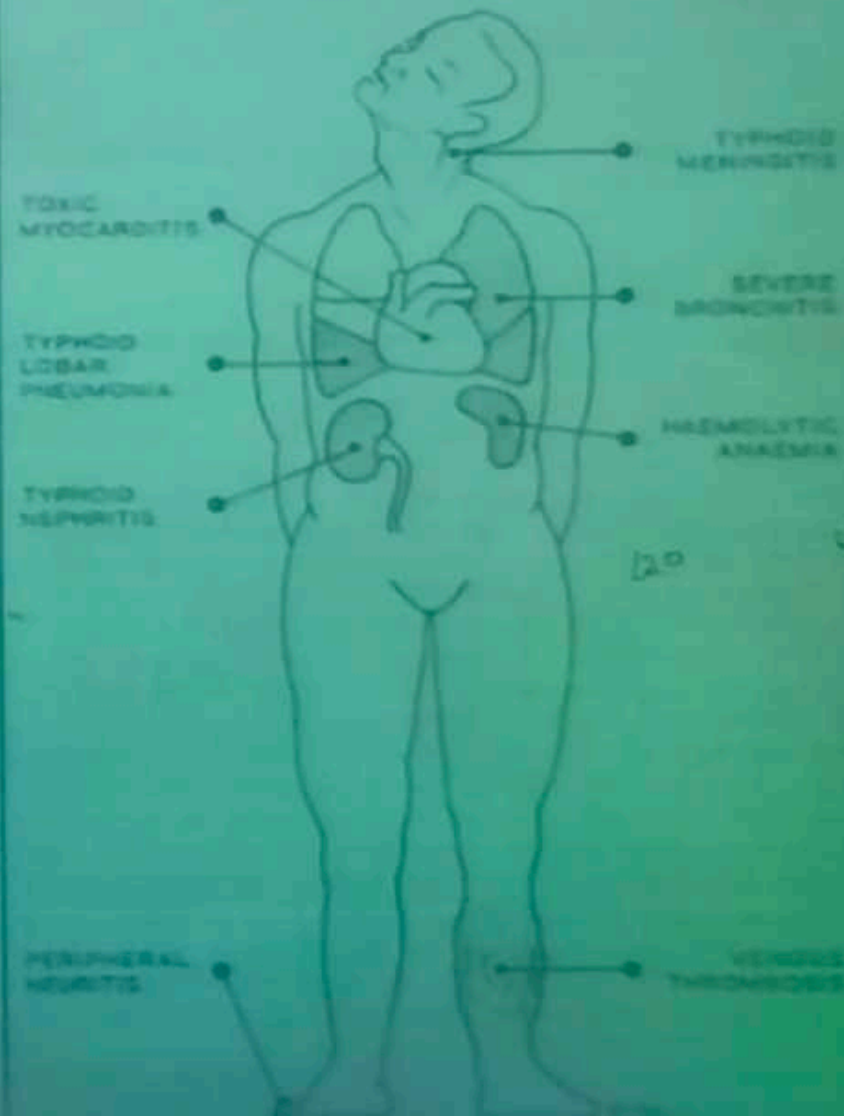
Intestinal bleeding or perforation

The most serious complication of typhoid fever

Other, less common

- Myocarditis
- Pneumonia
- pancreatitis
- UTI
- Osteomyelitis
- Meningitis

MEDICAL COMPLICATIONS



DIAGNOSIS

- BLOODCULTURE

- 5-10 ml of Blood is inoculated into 50 – 100 ml of Bile broth (0.5 %).

- Larger volumes 10-30 ml and clot cultures increase sensitivity

- Blood culture is positive as follows:

- I. 1st week in 90%

- II. 2nd week in 75%

- III. 3rd week in 60%

- IV. 4th week and later in 25%

TREATMENT

1-General :

- Isolation and rest
- suitable diet include easy digested food or half-liquid food and drinking more water
- IV fluid to maintain water and acid-base and electrolyte balance
- Symptomatic : antipyretic

Drug treatment

- *Ciprofloxacin*: 15 mg/kg/d for 7 days

FOR QUINOLONE-RESISTANT CASES

- *Ceftriaxone i/v* 75mg/kg/d for 10-14 days
- Cefixim (oral) 10-20 mg /day for 10-14 days
- Azithromycin (oral) 10-20 mg /day for 7 days
- Meropenam i/v 10-20 mg/ day for 10-14 days

MDR TYPHOID FEVER

- Resistant to chloramphenicol and quinolones

XDR TYPHOID FEVER

- Resistant to chloramphenicol, quinolones, ceftriaxone, cefixim

Carrier

Asymptomatic and have positive stool or rectal swab cultures for *S. typhi* a year following recovery from acute illness.

Treatment: **co-trimoxazole** 2 tab twice/d for 6 wk, OR

ciprofloxacin 750 mg twice/d for 4 wk

Relapse

- Apparent recovery can be followed by relapse in 5 – 10 % of untreated patient
- culture +ve of *S.typhi* after 1-3 wks of defervescence
- Symptom and signs reappear
- the bacilli have not been completely removed
- Some cases relapse more than once
- On few occasions relapses can be severe and may be fatal.