

① Typhoid fever:

An acute illness with fever caused by infection with the *Salmonella typhi* bacteria contracted from contaminated water and food. Also called enteric fever, bilious fever and yellow jack.

Typhoid fever is a systemic infection caused by *Salmonella enterica* serotype *Typhi*.

It is an enteric fever because it belongs to the family *Enterobacteriaceae*. It can also be caused by *Salmonella paratyphi*, a related bacterium that usually causes a less severe illness.

① Major cause morbidity and mortality.

① Food, water borne disease. The bacteria are deposited in water or food by a human carrier and then spread to other people.

① This bacteria grows at 37°C . it is best temperature for their growth.

Transmission:

There are some transmission to show the bacteria are transfer one to another -

① fecal-oral route.

① close contact with patients or carriers.

① contaminated water and food.

① flies and cockroaches.

Epidemiology:

① current estimates from the WHO suggest that the world wide incidence of TF is approximately 16 million cases

Sub:

annually with > 600,000 deaths.

① From the Kelantan state's public health department registry, 1394 records of confirmed typhoid fever patients admitted to various hospitals within the state from year 2004 to 2009 were retrieved.

② The distribution of typhoid patients by demographic variables were Malay 98.1%.

females 50.9%.

District of Kota Bharu 71.8%.

An important observation here was the predominance of males in the age groups.

Contagious:

① Typhoid fever is highly contagious. An infected person can pass the bacteria out of their body in their stools, less commonly, in their urine.

② Contamination of the water supply can, in turn, taint the food supply. The bacteria can ~~survive~~ survive for weeks in water or dried sewage. How do people get typhoid fever.

③ work in or travel to area where typhoid fever is endemic.

④ work as a clinical microbiologist handling salmonella typhi bacteria.

⑤ Have close contact with someone who is infected or has recently been infected with typhoid fever.

⑥ Drink water contaminated by sewage that contains S typhi.

Time to person with Typhoid fever:

① A person with typhoid fever is contagious anywhere from days to years, some researchers suggest a few

Individuals may be contagious indefinitely.

① About 3% - 5% of people become carriers of the bacteria after the acute illness.

② Others suffer a very mild illness that goes unrecognized

These people may become long-term carriers of the bacteria even though they have no ~~sym~~ symptoms and the source of new outbreaks of typhoid fever for many years.

Pathophysiology:

Ingest contaminated food.

↓
Ingested bacilli invade small intestinal mucosa.

↓
Taken up by macrophage and transported to regional lymph node.

↓
S. typhi multiply in the intestinal lymphoid tissue.

↓
Interact with enterocytes and M cells during the 1-3 week of incubation period (~~Onset~~ Diarrhoea)

↓
End of incubation period, bacilli enter bloodstream (onset of typhoid fever)

↓
Bacteria invade the gallbladder, biliary system and lymphatic tissue of the bowel and multiply in high numbers.

↓
Then pass into the intestinal tract (stool)

Sub:

Symptoms:

Incubation period is typically about 10-14 days but can be longer, and the onset may be insidious.

Symptoms are often nonspecific and clinically nondistinguishable from other febrile illness.

Clinical severity varies and severe cases may lead to serious complications or even death.

Clinical features:

Stage - 1

① slowly rising of temperature for 4-5 days.

② Abdominal pain and myalgia.

③ Malaise.

④ Headache.

⑤ constipation.

⑥ Relative bradycardia.

Stage - 2

① Signs and symptoms of 1st week progress.

End of 1st week:

Rose spots may appear on the upper abdomen and on the back of spine.

① cough.

② splenomegaly.

③ Abdominal distension with tenderness.

④ Diarrhea.

End of 2nd week:

Delirium, complications, then coma and death.

Diagnosis:

- ① With appropriate antibiotic therapy, most patients recover from the disease.
- ① Most of those who got sick had failed to receive a vaccination prior to travel.
- ① Typhoid fever kills hundreds of thousands of people annually each year.
- ① Most deaths occur in developing countries where the disease is common.
- ① There is a concern that multi-antibiotic-resistant strains of bacteria are becoming more common worldwide.

Recovery period (treatment):

- ① If the individual survives to fourth week, the fever, mental state, and abdominal distension slowly improve over a few days.
- ① Intestinal and neurologic complication may still occur in surviving untreated individuals.
- ① Weight loss and debilitating weakness last months.
- ① Some survivors become asymptomatic *S. typhi* carriers and have the potential to transmit the bacteria indefinitely.

Investigation:

- Blood culture.
- ① Specific serologic test.
- Identify salmonella antibodies / antigens
- ① Widal test and ELISA.
- ① Urine and stool culture.
- ① Marrow culture.
- ① Punch - biopsy samples of rose spots culture.
- ① clot culture.