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Typhoid fever is a common, worldwide bacterial disease transmitted by *Salmonella typhi*, serotype Typhi.

LEARNING OBJECTIVES

- Summarize the four stages of untreated typhoid fever
- Discuss methods of prevention for typhoid fever

KEY POINTS

- The impact of Typhoid fever fell sharply with the improved sanitation techniques of the 20th century.
- Classically, the course of untreated typhoid fever is divided into four individual stages, each lasting approximately one week.
- Diagnosis is made by any blood, bone marrow or stool cultures and with the Widal test (demonstration of salmonella antibodies against antigens O-somatic and H-flagellar).

TERMS

- **eosinopenia**
Eosinopenia is a form of agranulocytosis where the number of eosinophil granulocyte is lower than expected; usually a predictor of bacterial infection.
- **Widal test**
The agglutination test for typhoid fever.
- **Peyer's patch**
Peyer's patches (or aggregated lymphoid nodules) are usually found in the lowest

portion of the

- lymphocytosis

An increase

- **dicrotic**

A type of pulse

e.g sepsis

Hello there, let us know...

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Educator

Student

Other

ant aorta,

EXAMPLES

- According to statistics from the United States Centers for Disease Control and Prevention (CDC), the chlorination of drinking water has led to dramatic decreases in the transmission of typhoid fever in the U.S.A..

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FULL TEXT

Typhoid Fever

Typhoid fever, also known as typhoid, is a common, worldwide bacterial disease. It is transmitted by the ingestion of food or water that has been contaminated with the feces of a person infected by the bacterium *Salmonella typhi*, serotype Typhi.

The disease has been known by many names, such as gastric fever, abdominal typhus, infantile remittant fever, slow fever, nervous fever or pythogenic (originating from filth or putrefaction) fever. The name "typhoid" means "resembling typhus" and comes from the neuropsychiatric symptoms common to typhoid and typhus. The term "enteric fever" is a collective term that refers to typhoid and paratyphoid.

The impact of this disease fell sharply with the improved sanitation techniques of the 20th century.

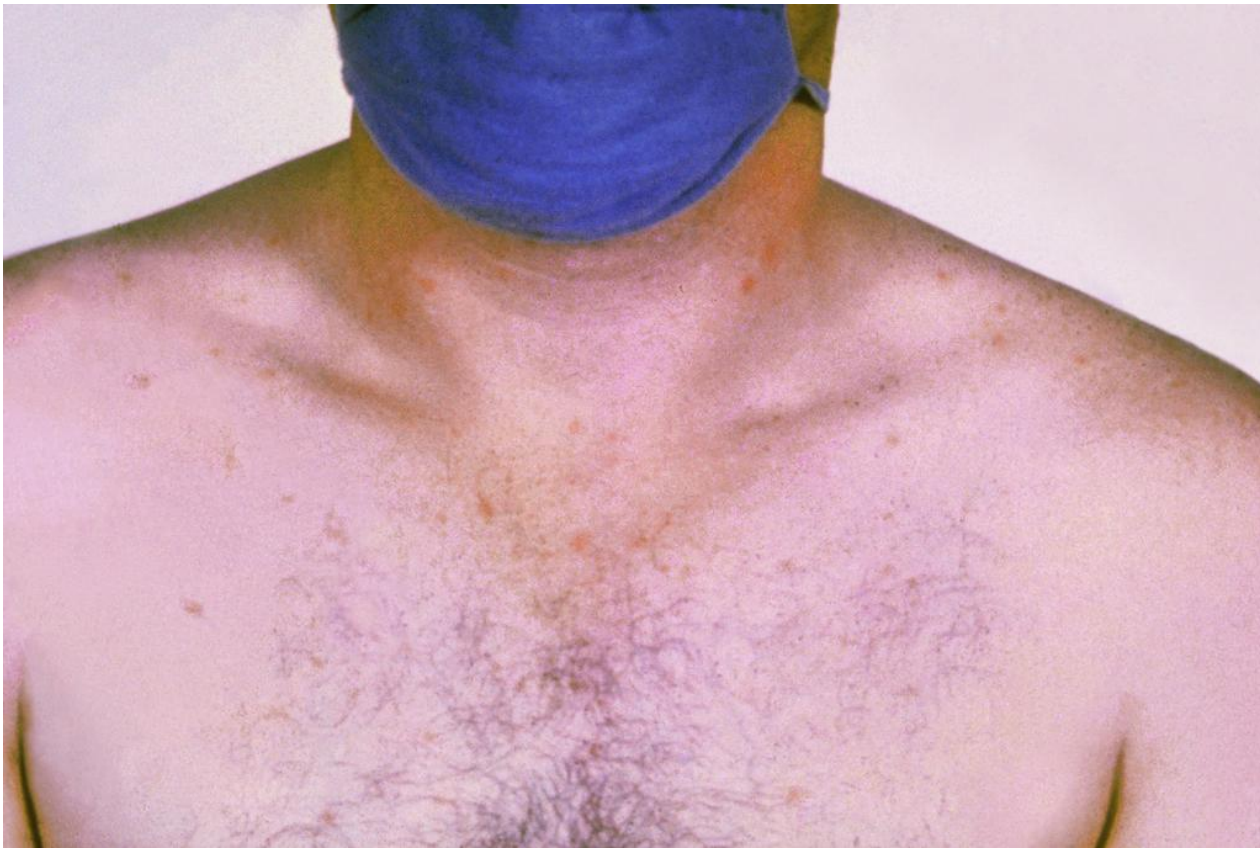
STAGES

Classically, the course of untreated typhoid fever is divided into four individual

stages, each lasting approximately one week.

First stage: the temperature rises slowly and fever fluctuations are seen with relative bradycardia (slow pulse), malaise, headache and cough. Nose bleeds (epistaxis) are seen in 25% of cases and abdominal pain can occur. There is leukopenia (a decrease in the number of circulating white blood cells), with eosinopenia and relative lymphocytosis. The classic Widal test is negative in the first week.

Second stage: the patient lies prostrate with high fever in plateau around 40 °C (104 °F) and bradycardia, classically with a dicrotic pulse wave. Delirium is frequent; patients may be calm, but sometimes agitated. This delirium gives typhoid its nickname of "nervous fever". Rose spots appear on the lower chest and abdomen in around a third of patients. The Widal test is strongly positive with antiO and antiH antibodies. Blood cultures may be still positive at this stage. (The major symptom of typhoid is that the fever usually rises in the afternoon in the first and second stages.)



Typhoid Fever

*Rose spots on the chest of a patient with typhoid fever due to the bacterium *Salmonella typhi**

Third stage: a number of complications can occur: intestinal hemorrhage due to bleeding in congested Peyer's patches and intestinal perforation in the distal ileum.

Fourth stage: by the end of the third week the fever starts subsiding (defervescence). This carries on into the fourth and final week.

PREVENTION

The bacteria which cause typhoid fever may be spread through poor hygiene habits and public sanitation conditions and, sometimes, also by flying insects feeding on infected feces. Public education campaigns encouraging people to wash their hands after defecating and before handling food are an important component in controlling the spread of the disease. A person may become an asymptomatic carrier of typhoid fever, suffering no symptoms, but capable of infecting others.

DIAGNOSIS

Diagnosis is made by any blood, bone marrow or stool cultures and with the Widal test (demonstration of salmonella antibodies against antigens O-somatic and H-flagellar). In epidemics and less wealthy countries, after excluding malaria, dysentery or pneumonia, a therapeutic trial time with chloramphenicol is generally undertaken while awaiting the results of the Widal test, and cultures of the blood and stool. The Widal test is time-consuming and often, when a diagnosis is reached, it is too late to start an antibiotic regimen.

VACCINATION

There are two vaccines licensed for use for the prevention of typhoid: the live, oral Ty21a vaccine (sold as Vivotif Berna) and the injectable Typhoid polysaccharide vaccine (sold as Typhim Vi by Sanofi Pasteur and Typherix by GlaxoSmithKline).

TREATMENT

The rediscovery of oral rehydration therapy in the 1960s provided a simple way to prevent many of the deaths of diarrheal diseases in general.

Where resistance is uncommon, the treatment of choice is a fluoroquinolone such as ciprofloxacin otherwise, a third-generation cephalosporin such as ceftriaxone or cefotaxime. Cefixime is a suitable oral alternative. Typhoid fever in most cases is not fatal. Antibiotics, such as ampicillin, chloramphenicol, trimethoprim-sulfamethoxazole, amoxicillin and ciprofloxacin have been commonly used to treat typhoid fever.

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PREV CONCEPT

NEXT CONCEPT

2 questions for use in quizzes have been written about this concept below

Place the following in correct order in reference to typhoid fever:
 I: Fever subsides
 II: Delirium occurs, rose spots appear and Widal test is positive
 III: Temperature rises, epistaxis and Widal test is negative
 IV: Intestinal hemorrhaging can occur

III, IV, II, I, II, IV, III, I, II, I, III, IV, and III, II, IV, I

Which of the following prevention methods can be used for both cholera and typhoid fever?

Targeting infected insects, Performing mass vaccinations on susceptible populations, There are no similar prevention methods due to differences in transmission modes, and Improving public sanitation conditions

KEY TERM REFERENCE

Diagnosis Appears in this related concepts: [Genital Ulcer Diseases](#), [Campylobacter](#), and [The Diagnostic Scheme](#)

Polysaccharides Appears in this related concepts: [Iron-Binding Proteins](#), [ABC Transporters](#), and [Polysaccharide Biosynthesis](#)

Symptoms Appears in this related concepts: [Scarlet Fever](#), [Other Fungi Involved in Respiratory Disease](#), and [Pneumocystis Pneumonia](#)

antibiotic Appears in this related concepts: [Industrial Production of Antibiotics](#), [Beta-Lactam Antibiotics: Penicillins and Cephalosporins](#), and [Antibiotics: Are We Facing a Crisis?](#)

antibiotics Appears in this related concepts: [Starvation Activates Survival Genes](#), [Organ Toxicity](#), and [Biologic Control of Microbes](#)

antibodies Appears in this related concepts: [Natural Active Immunity](#), [Precipitation Reactions](#), and [The Complement System](#)

antibody Appears in this related concepts: [Immunoassays for Disease](#), [Overview of Adaptive Immunity](#), and [Humoral Immune Response](#)

antigen Appears in this related concepts: [The Complement System and Heart Disease](#), [Blood Groups and Types](#), and [Types of WBCs](#)

antigens Appears in this related concepts: [Serology](#), [Dendritic Cells](#), and [Clonal Selection and Tolerance](#)

asymptomatic Appears in this related concepts: Exceptions to Koch's Postulates, Pelvic Inflammatory Disease (PID), and Lyme Disease

bacteria Appears in this related concepts: Damage to Proteins and Nucleic Acids, Food Spoilage by Microbes, and The Taxonomic Scheme

bacterium Appears in this related concepts: Overview of Gram-Positive Bacteria and Actinobacteria, Mu: A Double-Stranded Transposable DNA Bacteriophage, and Generation Time

bradycardia Appears in this related concept: Primary and Secondary Metabolites

cephalosporins Appears in this related concepts: Antibiotic Classifications, Microorganisms in the Hospital, and Inhibiting Cell Wall Synthesis

culture Appears in this related concepts: Distractions, Countercultures, and Context of Culture and Gender

epidemic Appears in this related concepts: History of Epidemiology, Current Epidemics, and Occurrence of a Disease

hygiene Appears in this related concepts: Staphylococcal Food Poisoning, Public Health Measures for Disease Control, and Two Factor Theory: Herzberg

pneumonia Appears in this related concepts: Viral Pneumonia, Pneumonia, and Bacterial Pneumonias

polysaccharide Appears in this related concepts: Carbohydrates: Sources, Uses in the Body, Dietary Requirements, Absorption and Feces Formation in the Large Intestine, and Methanogens Have Diverse Cell Forms

sanitation Appears in this related concepts: The Square Deal, Control of Nosocomial Infections, and The Environmental Impact of Cities

serotypes Appears in this related concepts: Colds, Cystitis, and Leptospirosis

stool Appears in this related concepts: Cyclospora Diarrheal Infection, Pathogenic Escherichia coli, and Viral Genomes in Nature

transmission Appears in this related concepts: Chain of Transmission, Portals of Exit, and HIV and AIDS

typhoid fever Appears in this related concepts: Ecological Associations Among Microorganisms, High Pressure, and Salmonellosis

vaccination Appears in this related concepts: Host Risk Factors, Medical Importance of Viruses,

and Vaccines for Prevention

vaccine Appears in this related concepts: Development of New Vaccines, Genetically Engineered Vaccines, and Overcoming Density-Dependent Regulation

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