ENTERIC FEVER

Dr. Nida Anjum, Assistant Professor, MU-II, HFH.



RMU is thriving to upgrade the Integrated Clinical Oriented Modular Curriculum and Teaching. There are many deficiencies in this system which RMU has learned with five year experience of real ground experience. We have designed the teaching (lecture) model of integration, covering all components of vertical and horizontal and clinical integration along with continuous step ladder pattern of research, professionalism and ethic. This teaching strategy is in alignment with assessment principles of integrated modular curriculum.

LECTURE CONTENT ANALYSIS

CORE SUBJECT	60%
HORIZONTAL INTEGRATION	20%
VERTICAL INTEGRATION	15%
RESEARCH AND ETHICS	5%

Learning objectives

At the of this lecture students will be able to

- Recognize epidemiology of Enteric fever.
- Describe clinical findings of enteric fever.
- Describe investigations, differential diagnosis, complications, and treatment of enteric fever.

Causative

Agent

Enteric fevers are caused by infection with Salmonella enterica serotypes: Typhi and Para typhi A, B and C.

STRUCTURE OF SALMONELLA Cytoplasm Pili Ribosomes Capsule wall Plasmolemma DNA Flagella Plasmid

Epidemiology

The enteric fever is endemic

- South Asia
- Sub-Saharan Africa
- Latin America



Mode of transmission is faeco- oral route.

Humans are the only reservoirs.



of age group



Clinical features

- Fever that starts low and increases daily, possibly reaches as high as 104.9 F
- Headache
- Coated tongue
- Weakness and fatigue
- Muscles aches
- Sweating
- Dry cough

- Loss of appetite and weight loss
- Abdominal pain
- Diarrhea or constipation
- Rash
- Abdominal distention

Remember

Any patient presenting with fever with no clear focus of infection in an endemic setting, for more than 3 days should be suspected to have typhoid fever.

First Week	
 Fever Headache Myalgia Relative bradycardia 	Constipation Diarrhea and vomiting
Second Week	
Second Week	
 Rose spots on trunk Splenomegaly Cough 	Abdominal distension Diarrhea
 Rose spots on trunk Splenomegaly Cough End of second week 	Abdominal distension Diarrhea



ROSE SPOTS

Complicated Enteric fever

Suspected or culture proven enteric fever with jaundice, drowsiness, severe abdominal pain, intestinal hemorrhage, sepsis and septic shock.

Complications of Enteric fever

Bowel

- Perforation
- Hemorrhage

Septic foci

- Bone and joint infections
- Cholecystitis
- Meningitis

Toxic phenomenon

- Myocarditis
- Nephritis

Chronic carrier state

• Persistent gallbladder carrier state

 TABLE 1. IMPORTANT COMPLICATIONS OF TYPHOID FEVER.

Abdominal Gastrointestinal perforation Gastrointestinal hemorrhage Hepatitis Cholecystitis (usually subclinical) Cardiovascular Asymptomatic electrocardiographic changes Myocarditis Shock Neuropsychiatric Encephalopathy Delirium Psychotic states Meningitis Impairment of coordination Respiratory Bronchitis Pneumonia (Salmonella enterica serotype typhi, Streptococcus pneumoniae) Hematologic Anemia Disseminated intravascular coagulation (usually subclinical) Other Focal abscess Pharyngitis Misc arriage Relapse Chronic carriage

Chronic Carrier

An individual excreting S. typhi in the stool or urine for more than 1 year after a blood culture confirmed episode of enteric fever. In the absence of culture confirmation of prior disease, it is not possible to label as a carrier.

Laboratory Diagnosis

- Blood cultures gold standard for the diagnosis of enteric fever.
- Sensitivity is 40% to 80% in the early course of the disease.
- Other body fluids can also be used for culture such as bone marrow, rose spot biopsy extracts, duodenal aspirates, urine, and stool.
- Bone marrow aspirate culture as 90% sensitivity.

Serological tests

Serological tests (Widal and Typhi Dot) are not recommended for the diagnosis of Typhoid. Both have very low sensitivity and specificity and not provide information antimicrobial sensitivity.

Treatment

- Ciprofloxacin, Ceftriaxone, Cefotaxime, Cefixime, Azithromycin, Meropenem.
- Duration of treatment for uncomplicated disease is 5 to 7 days, and for complicated enteric fever is 10 to 14 days.
- Start Ciprofloxacin as an empirical treatment.
- Antibiotics of limited usefulness due to high prevalence of resistance: Chloramphenicol, Amoxicillin, and Co- trimoxazole.

PREVENTION

GENERAL MEASURES:

- Hand washing.
- Boiling of water before consumption.
- Thorough washing of raw fruits and vegetable before eating.
- Avoid food and bereveges from street vendors.
- Control of flies: Ensure cooked food is covered to protect it from files.
- Avoid eating undercooked meat.

Vaccines

- Vi Typhoid conjugate vaccine.
- Typhoid vaccine (T.A.B)

Neither vaccine is 100% effective.

Rising XDR-Typhoid Fever Cases in Pakistan: Are We Heading Back to the Pre-antibiotic Era?

Muhammad Hammad Butt1*, Aqsa Saleem2, Syed Owais Javed2, Irfan Ullah3, Mujeeb Ur Rehman4, Nayyer Islam4, Muhammad Azam Tahir5, Tangina Malik6, Sara Hafeez7 and Shahzadi Misbaha IFaculty of Pharmacy, University of Central Punjab, Lahore, Pakistan 2Dow University of Health Sciences, Karachi, Pakistan 3Kabir Medical College, Gandhara University, Peshawar, Pakistan 4Department of Pharmaceutics, Faculty of Pharmaceutical Sciences, Government College University, Faisalabad, Pakistan 5Khaldunia college of Pharmacy, Lahore, Pakistan 6University of the Punjab, Lahore, Pakistan 7Department of Biotechnology, Quaid-i-Azam University, Islamabad, Pakistan

- Extended drug resistant typhoid fever (XDR): resistant to five antibiotics; chloramphenicol, ampicillin, co-trimoxazole, fluoroquinolones, and third-generation cephalosporins.
- First case reported in 2016 in Sindh province Pakistan.
- From November 2016 to June 2021 a total of 5,741 confirmed cases of XDR-TF were reported in all districts of Sindh province (excluding Karachi).

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- Provision of adequate sanitation, clean drinking water, and a system for waste management should be ensured by the government in underprivileged areas, as they are the primary source of transmission of infectious diseases.
- Widespread vaccination programs and public awareness campaigns addressing proper hygiene practices should be routinely conducted.
- Knowing that antimicrobial resistance leads to the emergence of newer more resistant strains, strict laws should be set in place to ensure that healthcare workers do not over-prescribe antibiotics.

THANKYOU