

ENTERIC FEVER

LECTURE

BY

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DEFINITION

- Severe systemic disease
- Caused by salmonella ser typhi
- Characterized by
 - Prolonged febrile illness
 - Abdominal pain, diarrhea
 - Delirium
 - Rose spot
 - Splenomegally

ETIOLOGY

- *Salmonella typhi*
- *Salmonella paratyphi a*
- *Paratyphi b (schottmuelleri)*
- *Paratyphi c (hirschfeldii)*
- Others

- Gram negative bacilli
- Resistant to drying & cooling
- Survive in sewage, fecal material & dried food
- Three types of antigens
 - Somatic (o)
 - Flagellar (h)
 - CAPSULAR (vi)

INCIDENCE

- 500/100,000 cases
- 12.5 cases annually world wide

EPIDEMIOLOGY

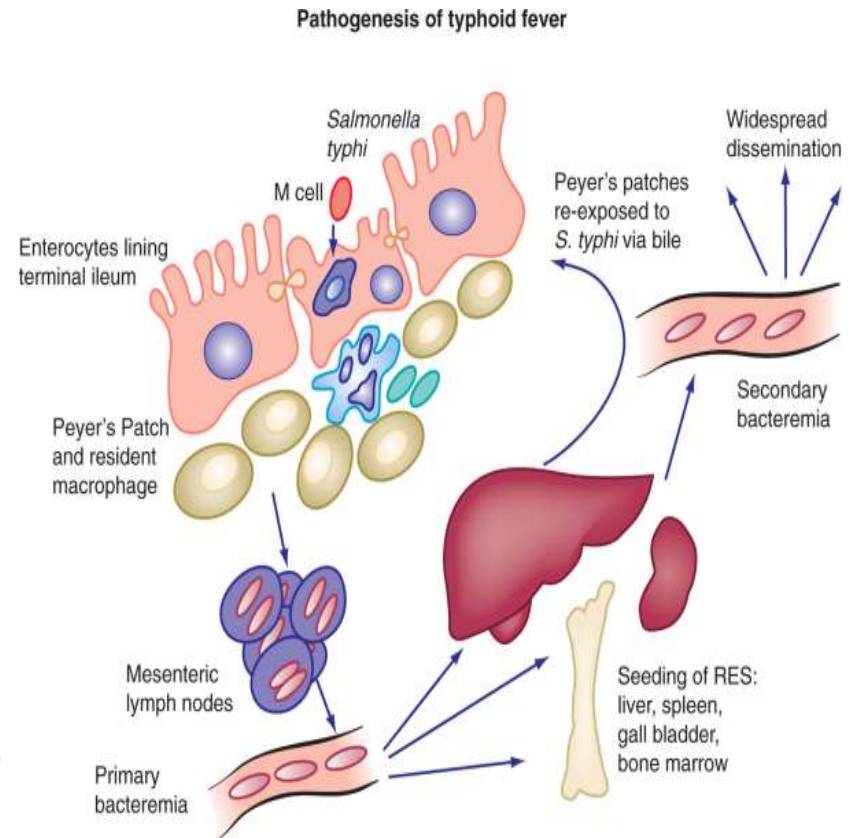
- All ages & both sexes
- Fecal-oral transmission
- Natural reservoir
- Major reservoirs
 - Poultry, pets
 - Contaminated water
 - Infected fruits & vegetables
 - Infected humans
- Transplacental
- Intra partum

INCUBATION PERIOD

- 7- 14 days
- Size of ingested inoculum
 - $(10^5 - 10^9)$
- Immune status of host
 - Cell mediated immunity

PATHOGENESIS

- Hyperplasia of peyers patches
 - Necrosis & ulcer formation
- Hyperemia and focal necrosis of mesenteric lymph nodes
- Liver, spleen & bonemarrow.
- Mulltiplication in walls of gallblader



VIRULENCE FACTORS

- Stomach acidity
- Gene encoded the invasion of peyer patches
- Organisms survive within the macrophage
- Circulating endotoxin
- Cytokine production
- Cell mediated immunity

CLINICAL FEATURES

- Transplacental transmission
 - Abortion
 - Premature delivery
- In neonates
 - Vomiting, diarrhea & abdominal distention
 - Hepatomegally
 - Jaundice, anorexia & wt loss
 - Fever, fits

INFANTS & YOUNG CHILDREN

- Relatively rare
- Mild – severe disease
- Gastroenteritis
- Febrile fits
- Jaundice & hepatosplenomegaly

CHILDREN & ADOLESCENTS

- FIRST WEEK
 - Gradually increasing persistent fever
 - Headache
 - Abdominal pain
 - Diarrhea
 - Lethargy, anorexia

CONTT...

- SECOND WEEK
 - Sustained high fever
 - Acutely ill, disoriented
 - Relative bradycardia
 - Distended, diffusely tender abdomen
 - Hepatosplenomegaly
 - Rose spots
 - Focal infection



CONTT...

- THIRD WEEK
 - Nausea, vomiting.....Complication
 - Intestinal bleeding
 - Signs of perforation
 - Shock
 - Coma

CONTT...

- FORTH WEEK & LATER
 - Restoration of symptoms
 - Relapse
 - Emaciation
 - Malaise
 - Lethergy

CARRIER STATE

- asymptomatic excretion of organisms for more than one year

DIAGNOSIS

- ISOLATION OF SALMONELLA
 - Blood culture (40-60%)
 - Stool & urine culture
 - Bone marrow culture(85-90%)

CONT...

- SEROLOGICAL TESTS
 - WIDAL TEST
 - After 10 days
 - Antibody response to somatic “o” & Flagellar “h” antigens
 - 1:160Suggestive
 - Rising titre

TYPHIDOT TEST

- More rapid test
- Detected within 1st week
- **Igm antibodies**.....Acute typhoid fever
- **Igm & igg antibodies**...acute infection
in middle stage
- **Igg antibodies**.....Previous infection

POLYMERASE CHAIN REACTION

- Quick detection
- Amplify specific genes of *S. Typhi* in blood
- More specific & sensitive

SUPPORTIVE INVESTIGATION

- COMPLETE BLOOD PICTURE
 - Normochromic, normocytic anemia
 - Relative leukopenia
 - Leukocytosis
 - Thrombocytopenia

OTHERS

- Liver function test
- Proteinuria
- Fecal leukocytes & blood

DIFFERENTIAL DIAGNOSIS

- Gastroenteritis
- Viral illness
- Bronchopneumonia
- Tuberculosis
- Anicteric hepatitis
- Leukemia. Lymphoma

COMPLICATIONS

- **INTESTINAL PERFORATION 0.5-3%**
 - **Distal ileum**
 - **Increased abdominal pain, tenderness, vomiting & peritonitis**

GIT

- Intestinal hemorrhage 1-10%
 - Increase pulse rate
 - Drop in temperature & blood pressure
- Overt hepatitis
- Cholecystitis

NEUROLOGICAL COMPLICATION

- Meningitis
- Toxic encephalopathy
 - Increased intracranial pressure
 - Cerebral thrombosis
 - Acute cerebellar ataxia
 - Chorea
 - Aphasia
 - Deafness
 - Transverse myelitis
 - Psychosis

TOXIC MYOCARDITIS

- FATTY INFILTRATION & NECROSIS
 - Arrhythmias
 - Sinoatrial block
 - St-t changes
 - Cardiogenic shock

OTHERS

- Pneumonia
- Fatal bone marrow necrosis
- Endocarditis
- Pyelonephritis
- Osteomyelitis
- Septic arthritis

SPECIFIC TREATMENT

- 1st line antibiotic
 - Ampicillin
 - Amoxicillin
 - Tmp-smx
 - Chloramphenicol
- Resistance upto 49-83%
- 14 days treatment

- 2ND LINE ANTIBIOTIC

- Third generation cephalosporin

- Ceftriaxone

- Cefotaxime

- Oral cefixime

- Fluoroquinoloneo

- Ofloxacin

- Ciprofloxacin

SUPPORTIVE TREATMENT

- Fluid and electrolyte balance
- Nutritional support
- Blood transfusion
- Platelet transfusion
- Surgical intervention
- Short course of dexamethasone
 - Shock, obtundation, stupor or coma

TREATMENT FOR CARRIER

- High dose of amoxicillin plus probenecid
 - 4-6 week
- Ciprofloxacin
- Cholecystectomy

PROGNOSIS


- Prompt therapy
- Age of patient
- Previous state of health
- Salmonella serotype
- Complication
- Mortality upto 10%
- Relapse4-8%

PREVENTION

- Improved sanitation & clean water
- Personal hygiene
 - Hand washing
 - Food preparation practices
- Eradicate carrier state

VACCINES

- Oral live attenuated ty21 a strain
 - Four enteric coated capsules on alternate day
 - Recommended for > 6yrs
- Vi capsular polysaccharide
 - Intramuscular
 - >2 yrs
 - Booster every two yrs

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- No vaccine can provide 100% coverage
 - Personal hygiene is must

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Thankyou