

ENTERIC FEVER (TYPHOID)

WHEN TO SUSPECT/ RECOGNISE

Case definition:

Suspect case of typhoid (For Level 1 & 2 facility) - Based solely on clinical grounds. Patient having fever for three days with relative bradycardia, severe frontal headache, initial constipation & remittent fever increasing in a step ladder fashion

Probable case of typhoid fever (For Level 2 & 3 facility) - A patient with fever (38°C and above) that has lasted for at least three days increasing in a stepladder fashion, relative bradycardia, severe frontal headache, initial constipation with a positive serodiagnosis or antigen detection test but without S.typhi isolation. There should be no malarial parasite in the peripheral blood smear; patient has lymphocytosis with normal or low TLC count.

Confirmed case of typhoid (For Level 4 facility)- a patient with fever (38°C and above) that has lasted for at least three days, with a laboratory confirmed positive culture (blood, bone marrow, bowel fluid) of S.typhi or with positive sero diagnosis ('O' titre more than 1/60 or 'H' titre more than 1/320).

Chronic carrier - Chronic carrier is a person excreting S.typhi in stools or urine (or has shown repeated positive bile or duodenal string cultures) for longer than one year after the onset of acute typhoid fever.

INCIDENCE OF THE CONDITION IN OUR COUNTRY

- Globally 17 million cases of typhoid fever and 600,000 associated deaths occur annually
- Endemic disease in India
- 1% of children upto 17 years suffer every year
- Common in age group 3- 19 yrs
- Case Fatality Rate in developing countries between 30-50% due to multi drug resistance & delayed initiation of antibiotics

DIFFERENTIAL DIAGNOSIS

Essentially any condition having onset of fever with abdominal pain & hepatosplenomegaly. Important ones include:

- Malaria
- Visceral leishmaniasis (Kala - Azar)
- Dengue fever
- Short term viral fevers
- Hepatointestinal amoebiasis

DIAGNOSTIC CRITERIA, INVESTIGATIONS, TREATMENT & REFERRAL CRITERIA

LEVEL 1: AT SOLO PHYSICIAN CLINIC:

Clinical Diagnosis : Incubation period usually 7-14 days (range 5-21 days),

First week: Non specific features of malaise, headache, rising remittent fever (step wise fashion) with initial constipation followed by diarrhoea, mild cough with conjunctivitis

Second week: Patient is toxic & apathetic; sustained high temperatures with relative bradycardia; rose spots on upper thorax; distended abdomen; hepatomegaly and/or splenomegaly

Third week: Patient delirious with abdominal distension & profuse pea soup diarrhea

Investigations : The diagnosis would be mostly clinical. However, samples could be collected & sent for following lab investigations outside:

- Peripheral blood smear for MP
- Blood for Hb, TLC (Leucopenia in adults & leucocytosis in children), DLC
- Platelet Count (Thromocytopenia)

Treatment

Early antibiotic treatment is essential to decrease mortality. Can be started empirically if clinical suspicion strong

- Tepid sponging to bring down temperature
- Tab Paracetamol 10 mg/kg TDS for 4 days
- Presumptive treatment for malaria after collecting blood slide viz Tab Chloroquine (Base) 10mg/kg stat
- First line antibiotic- Oral Ciprofloxacin/ Ofloxacin-7.5 mg/kg BD for 5-7 days (drug of choice even in multidrug resistant typhoid)
- Second line antibiotics (Wide spread resistance reported in India)
 - Oral Amoxicilin 25mg/kg TDS for 10-14 days
 - Oral Trimethoprim / Sulphamethoxazole 4/20 mg/kg BD for 10-14 days

Referral criteria

- Fever not subsiding within 48 hrs of initiation of antibiotics.
- Feeble pulse, tachypnoea, basal crepitations
- Pregnant women & children below 1 year
- Neurological complications or patient extremely toxic or delirious

LEVEL 2: AT 6-10 BEDDED PRIMARY HEALTH CENTRE

Clinical Diagnosis : Same as Level 1 for a fresh case reporting directly.

Investigations:

- Same as Level 1
- Rapid test for malaria/ Peripheral blood smear
- Urine R/E for pus cells (to exclude UTI)
- X Ray chest (to exclude ARI & look for complications like pneumonia)
- Typhi Dot (if available)
- Send samples for blood culture & stool culture to Level 3 facility

Treatment

- Same as Level 1
- ORS packet 1 per 12 hrs in case of mild dehydration

Referral criteria

- Evidence of complications like perforation , peritonitis, pneumonitis, shock, severe dehydration, GI bleed
- Fever not subsiding in 48 hrs
- Feeble pulse, tachypnoea, basal crepitations, malena
- Neurological complications or patient extremely toxic or delirious
- Sudden fall in blood pressure

LEVEL 3: AT 30-100 BEDDED COMMUNITY HEALTH CENTRE

Clinical Diagnosis : It is possible that the patient may be in advanced stage of the disease or with complications manifest by the time he reaches this level. Enteric fever would be diagnosed more or less without any doubt with sensitive & specific laboratory support available at this level of care.

Investigations:

- Same as Level 2 for a fresh case reporting directly
- Blood Culture (Ideally a clot culture) & antibiotic sensitivity test if history upto 14 days
- Urine Culture if history upto 14-21 days
- Stool Culture if history is upto 7 days
- Widal Test
- Ultrasound Abdomen (To rule out amoebic liver abscess)
- PTTK & APTT

Treatment

- Same as Level 2 in case of uncomplicated Typhoid
- Patient having complications (or persistent vomiting, severe diarrhea and abdominal distension) but non resistant strains of Typhoid:

First Line: Ciprofloxacin/ Ofloxacin IV 7.5 mg/kg q 12 hrly for 10-14 days

Second Line: (Wide spread resistance reported in India)

Chloramphenicol IV 12.5 mg/kg q 6 hrly for 14-21 days

Ampicillin IV 25 mg/kg q 6 hrly for 10-14 days

Trimethoprim / Sulphamethoxazole IV 4/20 mg/kg q 12 hrly for 14 days

- In case of multidrug resistance
 - Oral Cefixime 5 mg/kg BD for 7-14 days
 - Oral Azithromycin 10mg/kg OD for 7 days
- ORS packet 1 per 12 hrs in case of mild dehydration
- Ringer lactate is the best fluid for intravenous replacement and fluid requirement is calculated every 8 hrs based on urine volume , stool output and bleeding (if any) and estimated insensible loss (as much as 5 litres/ 24 hrs in a hot humid climate). On an average a patient would require a maximum of 6 litres of Ringer Lactate in a day.
- Observe for peritonitis. This can be identified clinically by a characteristic board like rigidity of the abdomen. Emergency Laprotomy with Surgical repair may have to be undertaken.

Referral criteria:

- Undertake constant lab and clinical monitoring. If no signs of improvement in 5 days or complications not controlled by specialists at the centre, refer to next level
- Patient having apathy, psychosis, confusion, seizures or coma

LEVEL 4: AT 100 OR MORE BEDDED DISTRICT HOSPITAL

Clinical Diagnosis : Usually the patient would be in advanced stage of the disease or with complications manifest by the time he reaches this level. Enteric fever would already have been diagnosed more or less without any doubt with sensitive & specific laboratory support available at Level 3 itself. This level essentially entails management of severe complications.

Investigations:

- Same as Level 3 for a fresh case reporting directly

- Blood Culture (Ideally a clot culture) & antibiotic sensitivity test (enlarge scope)
- Bone marrow culture (90% sensitive even after 5 days of antibiotic therapy)
- Culture of intestinal secretions (highly sensitive)
- Echocardiography (In case of endocarditis)
- CSF culture (In case of CNS complications)
- CT/MRI (In case of CNS complications)
- Vi antigen serology (to detect chronic carrier)

Treatment

- Same as Level 2 in case of uncomplicated Typhoid
- In case of multidrug resistance patient who is unable to take oral drugs
- Ceftriaxone IV 30 mg/kg q 12 hrs for 10-14 days
- Ringer lactate as described in Level 3 care.
- A patient in shock will require IV fluids as 6 litres of crystalloid as a bolus. Besides ionotropes viz vasodilators like Arginine Vasopressin (4 U/hr) will have to be administered depending on the severity of the shock.
- Observe for peritonitis. This can be identified clinically by a characteristic board like rigidity of the abdomen. Emergency Laprotomy with Surgical repair may have to be undertaken. IV antibiotics like Ampicillin (1gm/day), Gentamycin (5 mg/kg/day) & Metronidazole (500 mg/day) will be required.
- In case of CNS symptoms Dexamethasone 3 mg/kg IV followed by 8 doses of 1mg/kg every 6 hrs.
- Management protocol for lower GI bleed should be as follows:
 - I.V Fluids - Two large-bore peripheral intravenous catheters should be inserted and isotonic I.V. fluid administered (upto 2 litres). A Foley catheter should be placed to facilitate monitoring of intravascular volume status.
 - Blood transfusion Packed RBC transfusion till hematocrit is 25% or greater. One pack can raise Hb by 1gm%.
 - Inj Ranitidine 50 mg IM or slow IV every 6-8 hrs
 - Colonoscopy

Treatment of chronic carrier

- Oral Amoxicillin- 3 gms in adults (100 mg/kg in children in 3 divided doses) for 3 months or
- Trimethoprim / Sulphamethoxazole 8/40 mg BD for 3 months or
- Ciprofloxacin 750 mg BD for 4 weeks

SUGGESTED READING

1. Manson's Tropical diseases, Edited by Gordon cook, Alimudin Zumla; 21st edition. 2003, Published by Saunders, Elsevier Science, London NW17 BY, Hardbound. ISBN-070202790-X
2. Mandell, Douglas, Benett's Principles & Practices of Infectious Diseases, Edited by GL Mandell, R Dolin, JE Benett's 6th edition.2005, Published by Elsevier churchil livingstone, The Cutis centre, Philedelphia, Pennsylvannia- 191076, Hardbound, ISBN-0-443-06643-4
3. Harrison's Textbook of Internal Medicine, Edited by Dennis L Kasper, Eugene Braunwald, Anthony S. fauci et all; 16Th edition. 2005, Published by Mc Graw Hill, medical publishing division, New York, Hardbound, ISBN-007139140-1
4. API Textbook of medicine. Edited by SN Shah, 7Th edition 2003, Published by The Association of Physicians of India, Mumbai, Hardbound