

Team Medicine

33#

Common endemic
infections in Saudi Arabia

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A 32 year old man presented with fever, fatigue, body aches and headache for 1 week. He returned 2 weeks ago from a trip to Egypt.

Notice: fever without focal symptoms like cough and sputum (general).

Viruses are not commonly stay for a week.

Typhoid fever

- It is an acute febrile disease, caused by *Salmonella typhi* and *S. paratyphi* A, B,C
- *S. typhi* and *paratyphi* lives only in humans.
- Persons with typhoid fever carry the bacteria in their bloodstream and intestinal tract.
- Carriers recovering from typhoid fever shed *S. Typhi* in their feces .
- It is transmitted through the ingestion of food or drink contaminated by infected people.

Fever without focal symptoms.

Now we start to see it from non-travelers

Salmonella enteritidis has more than 1200 serotypes.

When patient recovers, it still in patient's body (carrier) : this is the source to infect others.

Epidemiology

Africa, south and central Asia and some part of south America are endemic.

- ◆ strongly endemic
- ◆ endemic
- ◆ sporadic cases



Pathogenesis of Enteric fever

The organisms penetrate ileal mucosa

- Reach mesenteric lymph nodes - multiply there.
- Invade Blood stream

- Infect Liver, Gall Bladder,, spleen, Kidney, Bone marrow.
- After 7-10 days bacilli pass into blood stream

(Secondary bacteremia)

When bacteria reach blood, fever starts and patient comes to clinic. (In secondary bacteremia).

Clinical features

- Develop 1- 3 weeks after exposure. This is the incubation period
- May be mild or severe. Gradual onset
 - Intermittent fever
 - Malaise, headache
 - Abdominal pain
 - Constipation or Diarrhea depending on the stage of the illness
 - Rose-colored spots on the chest
 - Enlarged spleen or liver.
- Healthy carrier state may be follow acute illness.

Rash in Typhoid

- Rose spots: 2 -4 mm in diameter raised discrete irregular blanching pink maculae's found in front of chest lower chest and upper abdomen
- Appear in crops of up to a dozen at a time
- Fade after 3 – 4 days

They are erythematous

When you press on them, they blanch on pressure



Complications

- Pneumonia, meningitis, osteomyelitis
- Severe intestinal hemorrhage and intestinal perforation this is what kill the patient

- If not treated can be fatal.

Carriers

- 5% of the survivors continue to excrete the organism for months = carriers.
- In carriers the bacteria remain in the gall bladder and are shed into the intestine.

Found positive in stool culture

Investigations

- WBC usually normal. In fact, neutropenia
- ESR elevated
- Blood, bone marrow, or stool cultures gold standard (blood culture)

If stool culture is +ve and there is symptoms (fever) = typhoid fever is the diagnosis.

If stool culture is +ve and there is no symptoms (fever) = carrier

- Widely test (serum agglutination test) unreliable
Cross reactions– false positives with other salmonellae

Blood Cultures in Typhoid Fevers

- Bacteremia occurs early in the disease
- Blood Cultures are positive in

1st week in 90%

2nd week in 75%

3rd week in 60%

4th week and later in 25%

Positivity decline with time



Differential Diagnosis characterized by absence of focal symptoms

- Brucellosis
- Tuberculosis disseminated or milliary
- Infective endocarditis
- Lymphoma
- Adult Still's disease and SLE
- Malaria

Treatment

- 3rd generation cephalosporins, like Ceftriaxone are effective
- Flouroquinolones, like ciprofloxacin are the drugs of choice for treatment of typhoid fever.
- Fever may continue for several days after starting therapy. Doesn't mean treatment isn't effective , you need to continue
- The majority are cured with antibiotics

10% may relapse.

Prevention and Control (WHO,2009)

Control measures:

- Health education proper sanitation
- Antibiotic treatment reduces who carry the organism for prolonged period.
- Excluding disease carriers from food handling.
- A vaccine is available

recommended for travellers to high risk areas. It does not provide full protection

Vaccine's effective is 50%

A 32 year old man presented with fever, fatigue, body aches and headache for 1 week. He returned 2 weeks ago from a trip to Egypt.

Brucellosis related to doctor who discover it (David Bruce)

- Other names: called multifever and undulant fever. الحمى المالطية
- Systemic febrile illness
- Zoonosis ..occurs worldwide. Acquired from animals
- B. melitensis and B. abortus are most frequent.
- The incubation period 1 – 4 weeks. little longer than typhoid

20 years ago was epidemic. And now incidence decline significantly.

Transmission

Infection transmitted to humans by:

- contact with fluids or meat from infected animals (sheep, cattle, goats, pigs, or other animals)
- eating food products such as unpasteurized milk and cheese .
- The disease is rarely, if ever, transmitted between humans.

Veterinarians are at high risk especially when having contact with placenta.

Poachers are also at high risk especially after Aladha Eid because they have a cut wound and are in contact with animal's blood

Pathogenesis

- Enter the body
- To lymph nodes get multiplied
- To blood stream
- Reticuloendothelial System
- Blood
- Any organ spleen, liver, bone, joint

Clinical Manifestations

Often fits one of the three patterns:

- Acute febrile illness resembling typhoid.
 - Fever & acute monoarthritis (hip/knee)
 - low grade fever, low back pain, hip pain **for prolonged period**
- Symptoms :
 - Fever, Night sweats, Fatigue
 - Anorexia, Weight loss
 - Arthralgia ,Low back pain **common**
 - Depression
 - Signs:
 - Arthritis **swollen, red, erythematous**
 - lymphadenopathy
 - Hepatosplenomegaly

Localised Brucellosis **commonly localized in bone and joints especially sacroiliac joint**

- Osteoarticular disease: especially sacroileitis, vertebral spondylitis and large joints arthritis
- Genitourinary disease, especially epididymo-orchitis
- Neurobrucellosis, usually presenting as meningitis, radiculopathy. **Occasionally**
- Abscess involving the liver, spleen, abdomen. **common**

Radiculopathy : pain in distribution of any long nerves

Differentials

- Typhoid fever
- Tuberculosis
- Infective endocarditis

- Collagen vascular disease
- lymphoma

Investigations

- WBC
- ESR
- Blood cultures *slow to grow , have to mention brucella culture in order to keep it at least for 4 weeks.*

slow growth = 4 weeks

- Serology: SAT positive in recent infection *you treat only with clinical symptoms*

No diagnostic level...>1:360

Treatment

- Treatment for uncomplicated Brucellosis
 - Streptomycin + Doxycycline for 6 weeks *streptomycin has to be injected*
 - Rifampicin + Doxycycline for 6 weeks *most people*
 - ? TMP/SMX + Doxycycline for 6 weeks
- Treatment of complicated Brucellosis
 - Endocarditis, meningitis
 - No uniform agreement
 - Usually 3 antibrucella drugs for 3 months

For children and pregnant women, don't use doxycycline. Give cotrimoxazole and rifampicin

Relapse

- About 10 percent of patients relapse after therapy.
- Most relapses occur within three months following therapy and almost all occur within six months.

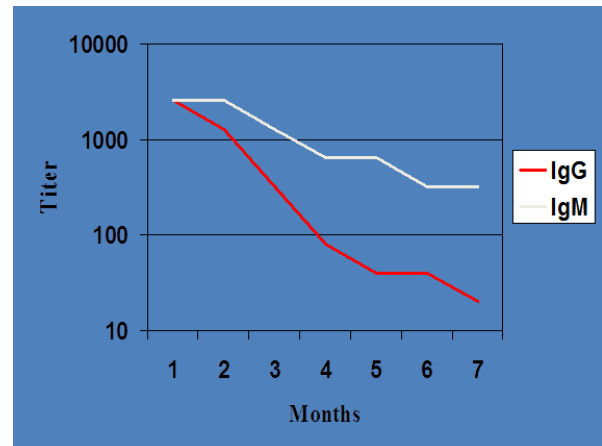
- Relapse should prompt assessment for a focal lesion, especially hepatosplenic abscess
- Most relapses can be treated successfully with a repeat course of a standard regimen. [The same treatment](#)

Treated Brucellosis

Serology: IgG form quickly.

usually within 3 months or so, level is very low.

While IgM remain for a long period.



A 22 year old student presented with nausea, abdominal pain and diarrhea for 2 days. On examination, he was febrile with mild peri-umbilical tenderness.

Acute Gastroenteritis [main feature is diarrhea – most likely infection](#)

[Vomiting is not a specific symptom.](#)

[Not all gastroenteritis have fever.](#)

Defence mechanisms

- Gastric acidity
- GI peristalsis
- Normal flora [doesn't allow organisms to settle](#)
- Immune defences [in mucosa of GIT. Particularly, secretion of immunoglobulin A + lymphatic](#)

Causes of gastroenteritis

- Viruses [rotavirus = infect children = most important cause of infant mortality in the world = die from dehydration = hydrate to treat them](#)

[Not adult: because by age of two years 95% of children have antibody against it.](#)

- Bacteria
- Parasites *giardia and entamoeba histolytica*

Pathogenesis of diarrhea

- Villous damage *causes malabsorption*
- Enterotoxin *bind to cells = increase intracellular cAMP = causes fluid goes reverse the normal direction = secretory diarrhea*
- Cytotoxin *kills lining mucosal cells.*
- Invasion *like salmonella = inflammatory G.E*

Bacteria Gastroenteritis

- Salmonella enteritides *most important*
- Shigella spp.
- Campylobacter jejuni
- Vibrio cholera
- E . Coli *some serotypes (most common cause of traveler's diarrhea)*
- C. difficile *in patient using antibiotics*

- Transmission: contaminated food or drink
- Presentation: abdominal pain, nausea, vomiting, diarrhea +/- fever *fever when there is invasion*
- Diagnosis: stool microscopy & culture *looking for pus cells*
- Treatment: fluids PO/IV *oral when there is no vomiting*
- Antibiotics: -only for severe cases or impaired immunity

- in shigella and cholera usually severe and can infect others and to decrease the duration of the illness

Intestinal Amebiasis

- Transmission : by cysts
- Causes invasive colitis
- Presentation: asymptomatic

acute dysentery characterized by lower abdominal pain = left iliac fossa = with diarrhea which is initially watery then it becomes frequent loose in small quantities associated with tenismus.

chronic amebiasis period of diarrhea for a week then recovery or constipation then diarrhea and so on for weeks and months.

- Complications: liver abscess necrotic material within a space
- Diagnosis: stool microscopy , serology cysts or trophozoites . serology is important in diagnosis of liver abscess.
- Treatment: metronidazole

Giardiasis:

- Transmission:
- Colonise upper small intestine
- Presentation: asymptomatic – mild to moderate :abd. pain , flatulence
- May become chronic
- Diagnosis: stool microscopy
- Treatment: metronidazole

In amebiasis and giardiasis, the chance of finding a parasite by a single examination is 30% (so do it three times)

Food poisoning

- A. Vomiting within 6 hrs of eating *staph aureus*
- B. Abd pain , diarrhea after 8 – 16 hrs *clostridium perfringens*
- C. Abd. Pain , diarrhea after 16 – 48 hrs *bacterial*
- D. Abd. Pain, diarrhea , fever 16- 48 hrs *bacterial (invasion)*

Summary

- Typhoid fever is an acute febrile disease, caused by *Salmonella typhi* and *S. paratyphi A, B, C*
- Brucellosis transmitted to human by contact with fluids or meat from infected animals
- Causes of gastroenteritis are Viruses ([rotavirus](#)), Bacteria, Parasites([giardia](#) and [entamoeba histolytica](#))
- Intestinal Amaebiasis is asymptomatic and Complicated to liver abscess and diagnosis by stool microscopy and Treat it by metronidazole
- Giardiasis is asymptomatic and colonise upper small intestine, Diagnosis: stool microscopy , Treatment: metronidazole
- Bacteria Gastroenteritis Present with abdominal pain and Diagnosis by stool microscopy & culture and Treat it by fluids
- Food poisoning :-

Case	cause
Vomiting within 6 hrs of eating	staph aureus
Abd pain , diarrhea after 8 – 16 hrs	clostridium perfringens
Abd. Pain , diarrhea after 16 – 48 hrs	bacterial
Abd. Pain, diarrhea , fever 16- 48 hrs	bacterial (invasion)