

Lecture 6

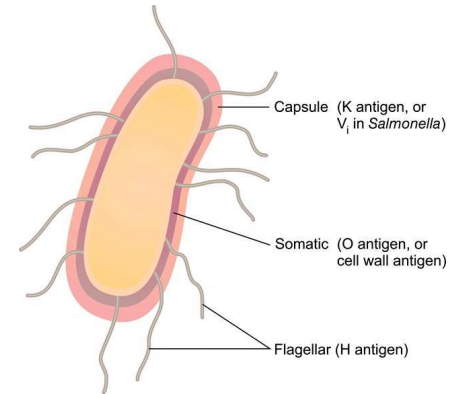


SALMONELLA & SHIGELLA

- Additional Notes
- Important
- Explanation
- Examples

Salmonella (in laboratory)

- Gram negative facultative anaerobic bacilli
- Non lactose fermenting colonies
- Salmonella motile bacteria
- Enterotoxin
- It has Fimbria for adhesion.
- It has 3 antigenic structure (see the picture)
 - ✓ O somatic antigen (or v1 in serotype typhi) (heat-stable)
 - ✓ H flagellar antigen (heat labile)
 - ✓ K capsular antigen
- Salmonella has two serotypes and 6 subserotypes, typhi and Salmonella paratyphi are the pathologic subserotype in human

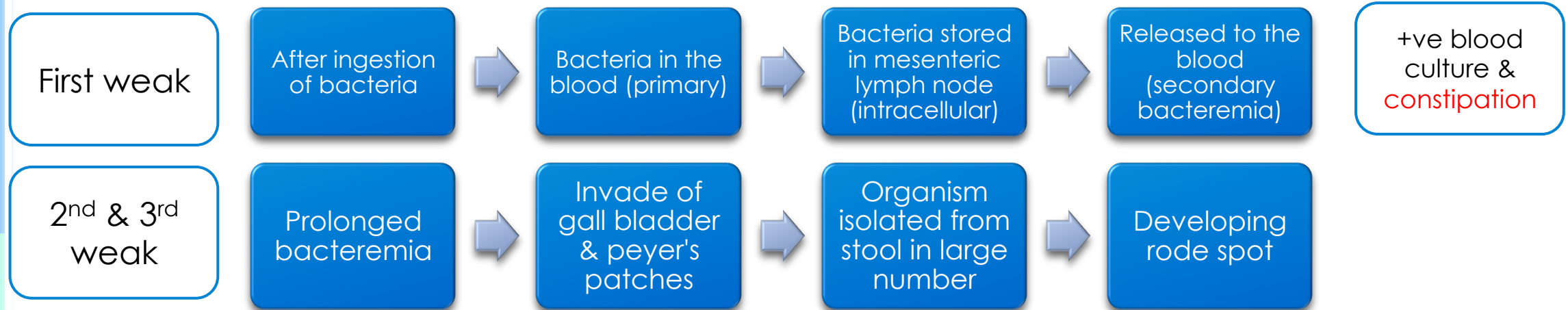


Salmonella (in clinic)

	1- Enteric (typhoid) fever	2- Gastroenteritis
Subspecies	<i>S. Typhi</i> & <i>S. paratyphi</i>	Other <i>S. Enterica</i> subspecies
Source	Only human (Ingestion of contaminated food by infected or <u>carrier</u> individual)	Water food and milk contaminated with human or animal excreta
Symptoms & signs	<ul style="list-style-type: none">▪ Prolong fever▪ Bacteremia▪ Splenomegaly▪ Dissemination to multiple organs▪ Leukopenia See the pathogenesis to see more symptoms	<ul style="list-style-type: none">▪ Abdominal pain▪ watery diarrhea▪ sometimes fever.▪ It can cause bacteremia in immunosuppressing conditions.
Infective dose	10 ³ bacteria	10 ⁶ bacteria
Note	In Pakistan and India: because of misuse of antibiotics: there are a resistant bacteria.	

Important

Pathogenesis of enteric fever:



- Complication of typhoid fever:
 - ✓ Necrotizing cholecystitis
 - ✓ Bowel hemorrhage and perforation
 - ✓ Pneumonia and thrombophlebitis
 - ✓ Meningitis, osteomyelitis, endocarditis and abscesses.
- Treatment for typhoid fever:
 - ✓ ampicillin
 - ✓ TMP-SMX
 - ✓ Chloramphenicol
 - ✓ Ciprofloxacin & ceftriaxone (only in resistant cases)
- Treatment for gastroenteritis: Self-limiting (fluid and electrolyte replacement only)

Shigella

- Gram negative facultative anaerobic bacilli
- Non lactose fermenting colonies
- Shigella is non-motile bacteria
- Invasion of the GUT
- They don't cause bacteremia.
- Infective bacterial dose: 200 bacteria
- Human is the only source.
- Shigella has 4 types:
 - ✓ *S.sonnei* (the least severe)
 - ✓ *S.flexneri*
 - ✓ *S.boydii*
 - ✓ *S.dysenteriae* (the most severe) common in developing countries

Shigella

- Symptoms:
 - ✓ bacillary dysentery (blood, mucus and pus in the stool)
 - ✓ Abdominal pain
 - ✓ Fever
 - ✓ Tenesmus
 - ✓ Can lead to rectal prolapsed in children
- Complications: ileus, obstruction dilatation, toxic mega colon, seizures & HUS.
- Treatment:
 - ✓ IV Ceftriaxon + including:
 - ✓ Ampicillin
 - ✓ Doxycycline OR oral TMP-SMX OR Ciprofloxacin

	Salmonella	Shigella
Organisms	Non lactose fermenter gram negative bacilli	Non lactose fermenter gram negative bacilli
Motility of the organism	Motile	Non motile
Incubation period	Gastroenteritis → 8-36 hrs Typhoid fever → 1-2 weeks	24 - 48 hrs (1-2 days)
Infective dose	10 ⁶ bacteria Highly Infectious	Low infective dose < 200 bacilli Low infectious
Source	Salmonella non typhi → Water, food and milk contaminated with human or animal excreta Salmonella typhi and S. paratyphi → the source is human	• Person to person through fecal – oral route
Antigenic structure	O. Somatic Antigen (Heat Stable) H. Flagellar Antigen (Heat Labile) VI. Capsular Antigen	O. Somatic Antigen K. Capsular Antigen

Quiz

1. Salmonella is a motile bacteria, while Shigella is a non-motile bacteria:

- a) True b) False

2. A patient diagnosed with Enteric fever, which subspecies you're supposed to see in his biopsy?

- a) Salmonella enterica b) Shigella dysenteriae
c) Salmonella typhi and paratyphi d) Shigella sonnei

3. According to the patient in Q.2, which one of these symptoms will be present in his case?

- a) Watery diarrhea b) Prolong fever c) Bacillary dysentery d) Tenesmus

Quiz

4. Gastroenteritis causes bacteremia in:

- a) HIV patients
- b) TB patients
- c) Cardiac failure patients
- d) Renal failure patients

5. The infective dose of gastroenteritis is:

- a) 10^2 bacteria
- b) 10^6 bacteria
- c) 10^3 bacteria
- d) 10^7 bacteria

6. Which one of these symptoms is Shigella's symptoms?

- a) Bacillary dysentery
- b) Watery diarrhea
- c) Tenesmus
- d) Both a and c