Salmonella

Species of medical importance

1- S. typhi (The typhoid bacilli)
2- S. paratyphi A (produce paratyphoid fever)
3- S.paratyphi B (produce paratyphoid fever)
4- S. paratyphi C (Bacteremia without intestinal involvement)
5- S. typhimiurium (Food poisoning)
6- S. enteritidis (Food infection)
7- S. cholerasuis (Hog cholera bacillus)
8- S. pullorum (White diarrhea in children)
9- S. gallinarum (Fowl typhoid bacillus)

Morphology and staining

- Short rods (bacilli) (indistinguishable from other enterobacteriaceae)
- Motile with peritrichous flagella except S. pullorum and S. gallinarum .
- Capsulated
- Gram-negative

Laboratory Diagnosis

1- **Specimen**: for the diagnosis of enteric fever . specimens include, blood, feces and urine for culture may be used depending on the course of illness .
   A- Blood: Organisms can usually be detected in 75-90% of patient during the first 10 days of infection and in about 30% of patient during the 3rd week.
   B- Feces: Organisms can usually be isolated from 40-50% of patient during 3rd week
   C- Urine: Organisms can usually be isolated from 25% of patient after the second week of infection.

D- Serum: Is used for the detection of serum antibodies (widal test).

2- Isolation and Identification

A- Enrichment and Selective Media

❖ Enrichment medium

Contains substance which have a growth stimulation of salmonella and shigella and inhibitory to the other contamination. Ex. Selenite-F Broth , Tetrathionate broth.

❖ Selective medium

Solid media containing lactose as differential sugar, an indicator to produce color changes when the PH of the colony becomes acid as a result of lactose fermentation and an inhibitor for gram positive bacteria and most gram nigativ bacteria other than salmonella and shegilla.

1- **Bismuth Sulfide Agar (BSA):** Considered by many as the best medium for the isolation of Salmonella typhi.
2- **Brilliant Green Agar (BGA):** this medium is good for isolating Salmonella species other than S. typhi.
3- **Salmonella Shegilla Agar (SSA):** Colorless colonies.
4- **Deoxycholate Citrate agar(DCA)**
5- **Xylose Lysine Deoxycholate Agar (XLD)**

B- Growth characteristics

1- On macConkey agar and SSA: colorless colonies
2- BGA: slightly pink colonies
3- BSA: black colonies

C- Biochemical characteristics

1- TSI: ALK/A with small amount of H_2S
2- IMViC reaction: - + - +
3- Motility +
4- Urease –

D- Serological testing:

1- On clinical isolate : all clinical suspected salmonella isolate must be subjected to serotyping by polyvalent and monovalent antisera.

2- On patients: Serological test (Widal test) must be performed after 10 days of infection.
Widal test: is a classic serologic test used in diagnosis of salmonella infection, O Ag and H Ag prepared from bacteria species used in this test detect Abs in patients serum. This test agglutination test.