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3rd Class / ٢٠١٨ الصف الثالث

Objectives of lecture:

١. Identify the Shigellae & its species.
٢. Recognize the microscopical & macroscopical characteristic features of Shigellae.
٣. Define the toxins of Shigellae.
٤. Explain the main pathogenesis of Shigellosis.
٥. Outline the C.f. of Shigella dysentery.
٦. Explain the diagnosis of Shigellosis.
٧. Outline the treatment & prevention of Shigellosis.

The main references:

١. Medical microbiology (Jawetz, Melnick & Adelberg`s).
٢. Medical Microbiology an introduction to infectious diseases (Sherris).
٣. Diagnostic microbiology (Bailey & Scott`s).
٤. Pictures from the net.

Shigellae

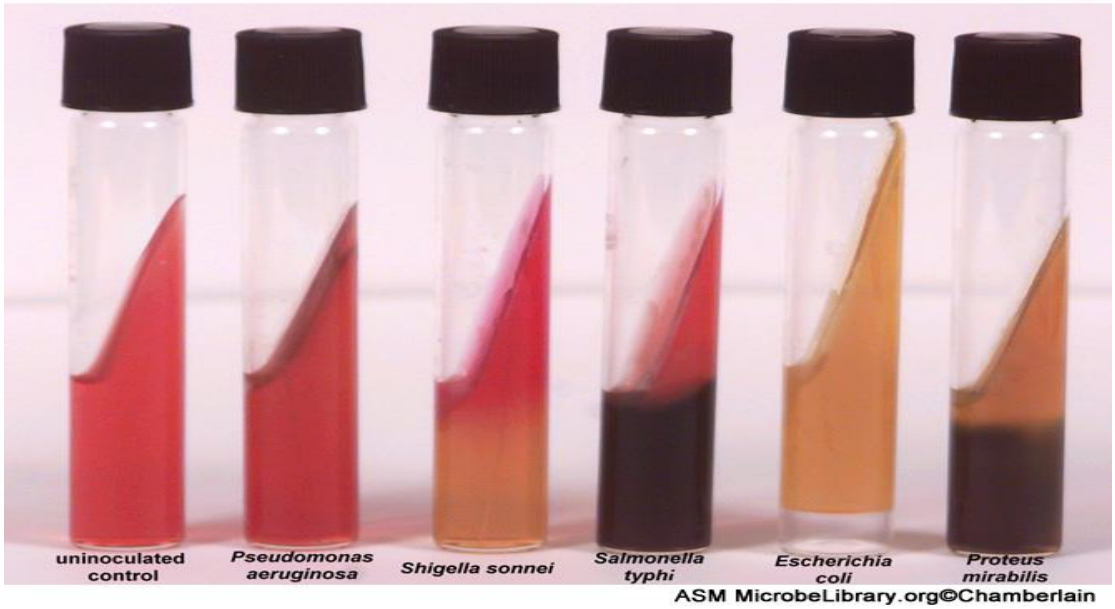
The normal habit of the Shigella is intestinal tract, its strict human pathogen. ShigeIIae are non motile, don`t ferment lactose, but ferment other carbohydrates produce acid without gas. There are 4 species of Shigellae related to *E.coIi* biochemically.

- *S. dysenteriae* (Group A)
- *S. flexneri* (Group B)
- *S. boydii* (Group C)
- *S. sonnei* (Group D)

Morphology

A. Microscopically Shigellae are slender, G —ve, rods, coccobacillary form occur in young cultures.

B. Macroscopically or culturally facultative anaerobic but grow best an aerobically. Convex, circular, transparent colonies, with intact adage 2 mm in diameter in 24 hr.



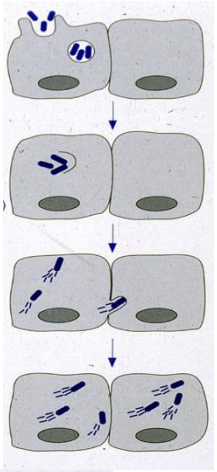
Pathogenesis:

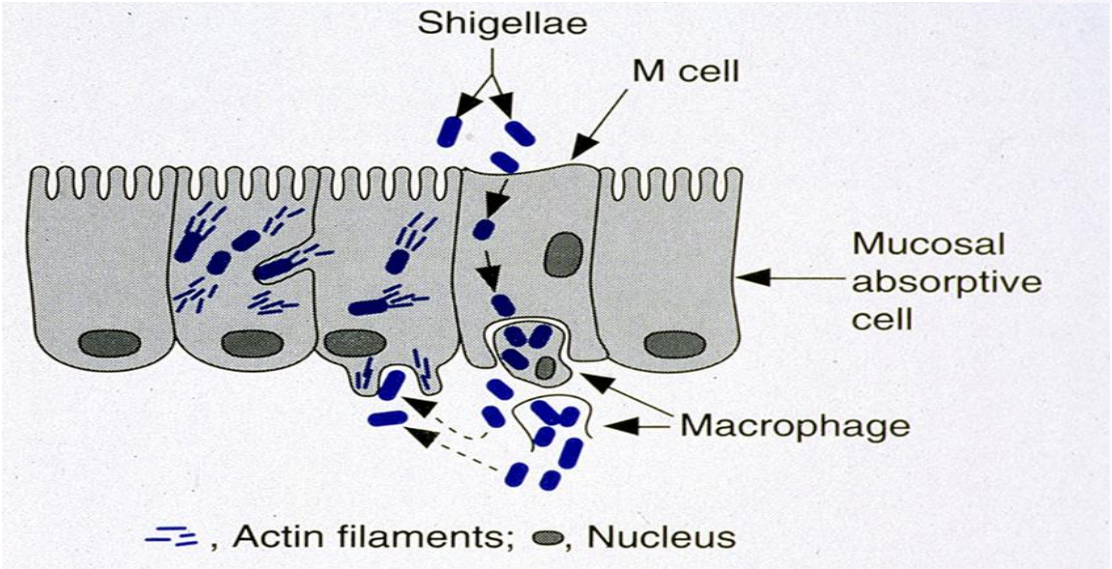
Shigellae infections are limited to the GIT, it highly communicable. The pathological process include invasion of mucosal epi. Cells of small intestine by phagocytosis but they can escape from phagocyte vacuoles then multiplication & spread within epi. Cells cytoplasm & passage to other adjacent cells & causes ulcer in colonic epi..

Toxins:

١. endotoxin ⟶ LPS ⟶ irritation of the bowel wall.
٢. exotoxin ⟶ enterotoxin diarrhea contain blood & pus.
⟶ neurotoxin meningitis & coma.

Bacterial invasion of the host





C.F. of Shigella dysentery or Shigellosis (Shigella dysenteriae):

Its fecal — oral spread in low infective dose (high infectivity). Short

l.P. (1—2), sudden lower abdominal pain (rectal spasm), fever, watery diarrhea mixed with blood & mucus, may lead to dehydration & acidosis even death. During recovery from infection most persons develop circulating Ab to Shigella but these don't protect against re-infection.

Lab. Diagnosis:

a. Samples: Fresh stool, mucus flecks, &rectal swabs for culture.

b. Culture: The materials are streaked quickly as soon as (to avoid loss of viability) on differential media (MacConkeys agar) & on selective media Salmonella-Shigella (S-S agar) which inhibit growth other Enterobocteriaceae & G+ve bacteria.

c. Serology: Ab- titer may show a rise in specific Ab(lgM). lgA-Abs in the gut may limit the re-infection.

Treatment:

Ciprofloxacin, ampicillin, tetracyclin, trimethoprim-sulfamethoxazole, & chloramphenicol are most commonly inhibit growth of Shigella.

Prevention:

Standard good sanitation, hand washing, & proper cooking of food.