- Introduction
- V. cholera
- Etiology
- Pathogenesis
- Clinical features
- Diagnosis
- Treatment
- References
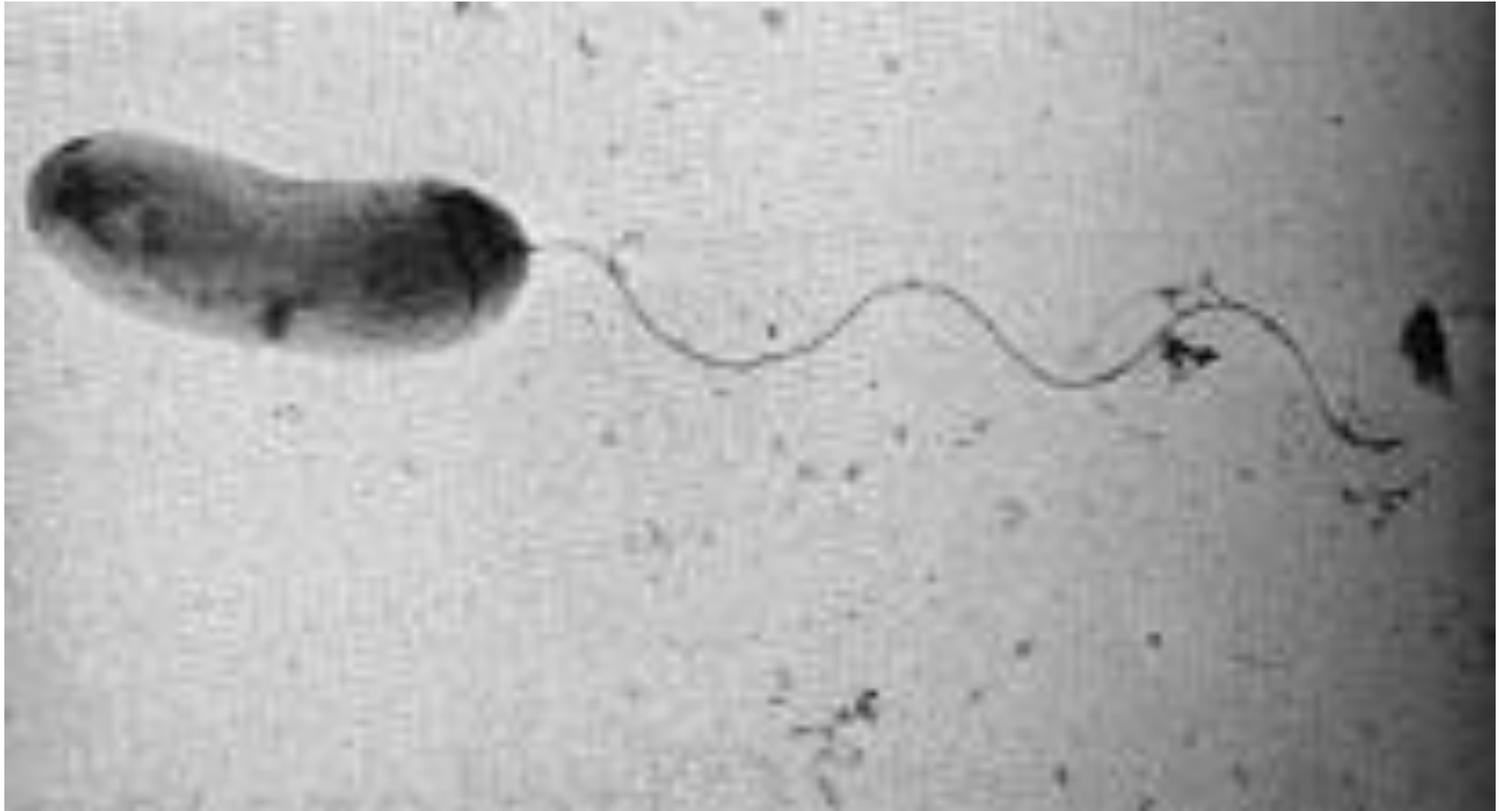
Introduction

- **Vibrio cholerae** – Cholera is an acute, severe diarrheal disease caused by Vibrio cholerae that affects millions of people each year. Without prompt rehydration, death can occur within hours of the onset of symptoms. Cholera affects people of all ages, but children are involved disproportionately.
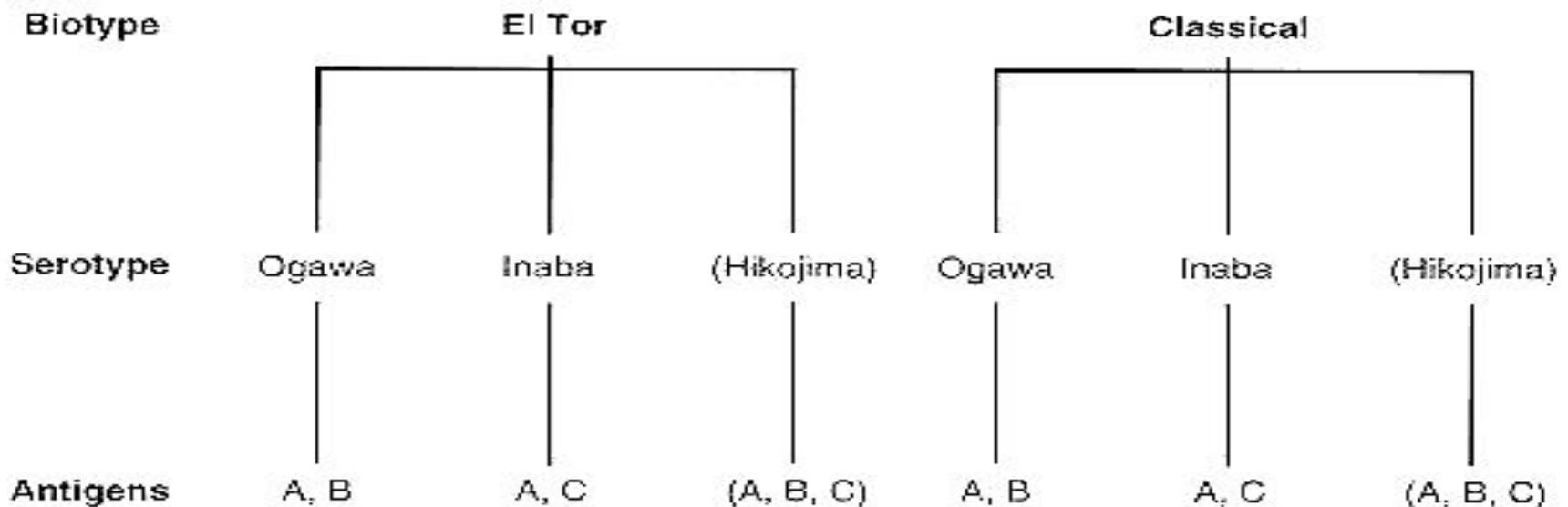
v. Cholera

- Strains of Vibrio cholerae are classified according to somatic or O groups. V. cholerae strains are separated further into two main serotypes (Ogawa and Inaba) and two biotypes (classic and El Tor). V. cholerae responsible for epidemic cholera belong to serogroups O1 and in recent decades, O139. It is estimated that V. cholerae causes 1 to 4 million cases of diarrhea and more than 100,000 deaths annually. During the past several decades, despite advances in water sanitation technology and antibiotic treatment, the seventh cholera pandemic has spread. The cholera burden has grown strikingly during the past 4 years and has spread to countries previously spared by this disease. The current spread has proved especially violent, as illustrated by the recent deadly epidemics in East Africa and Haiti.
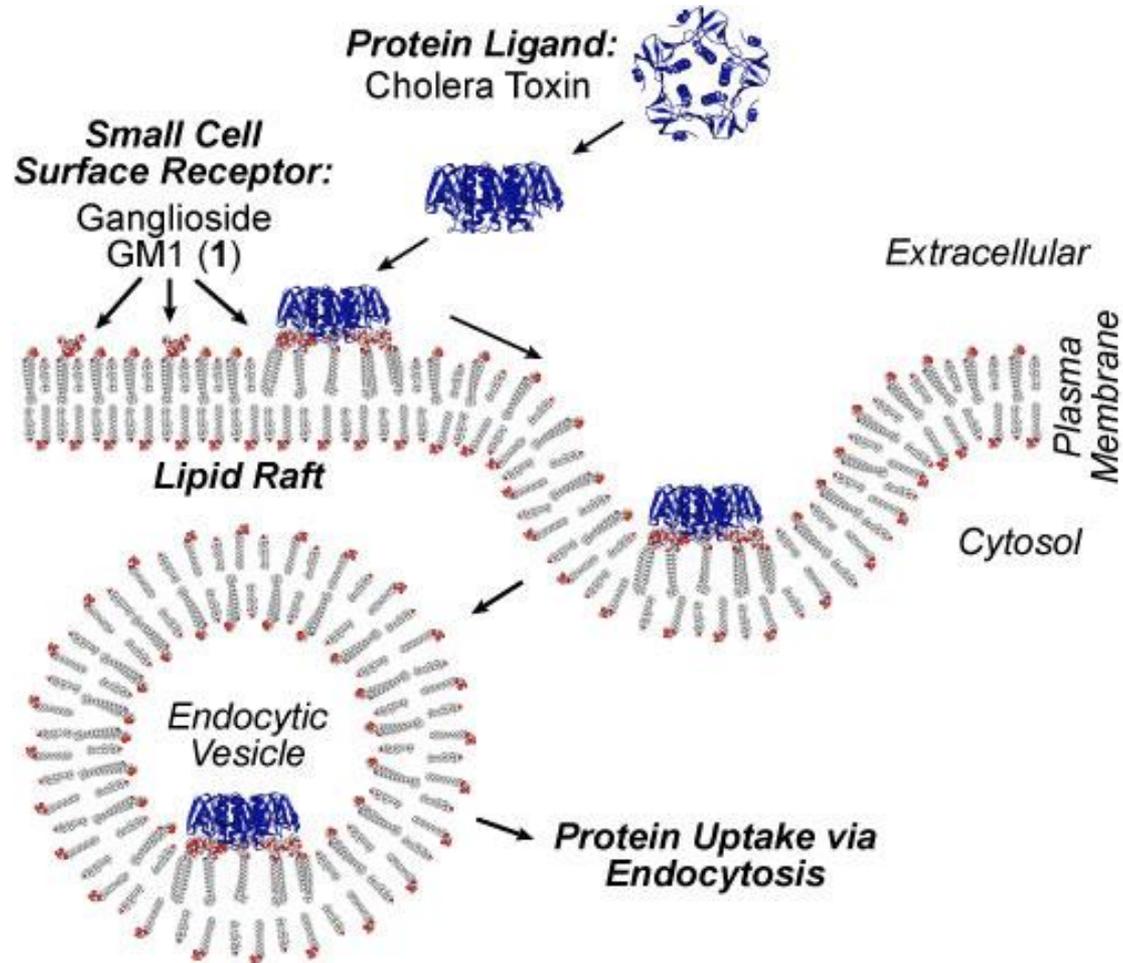
v. Cholera

Etiology
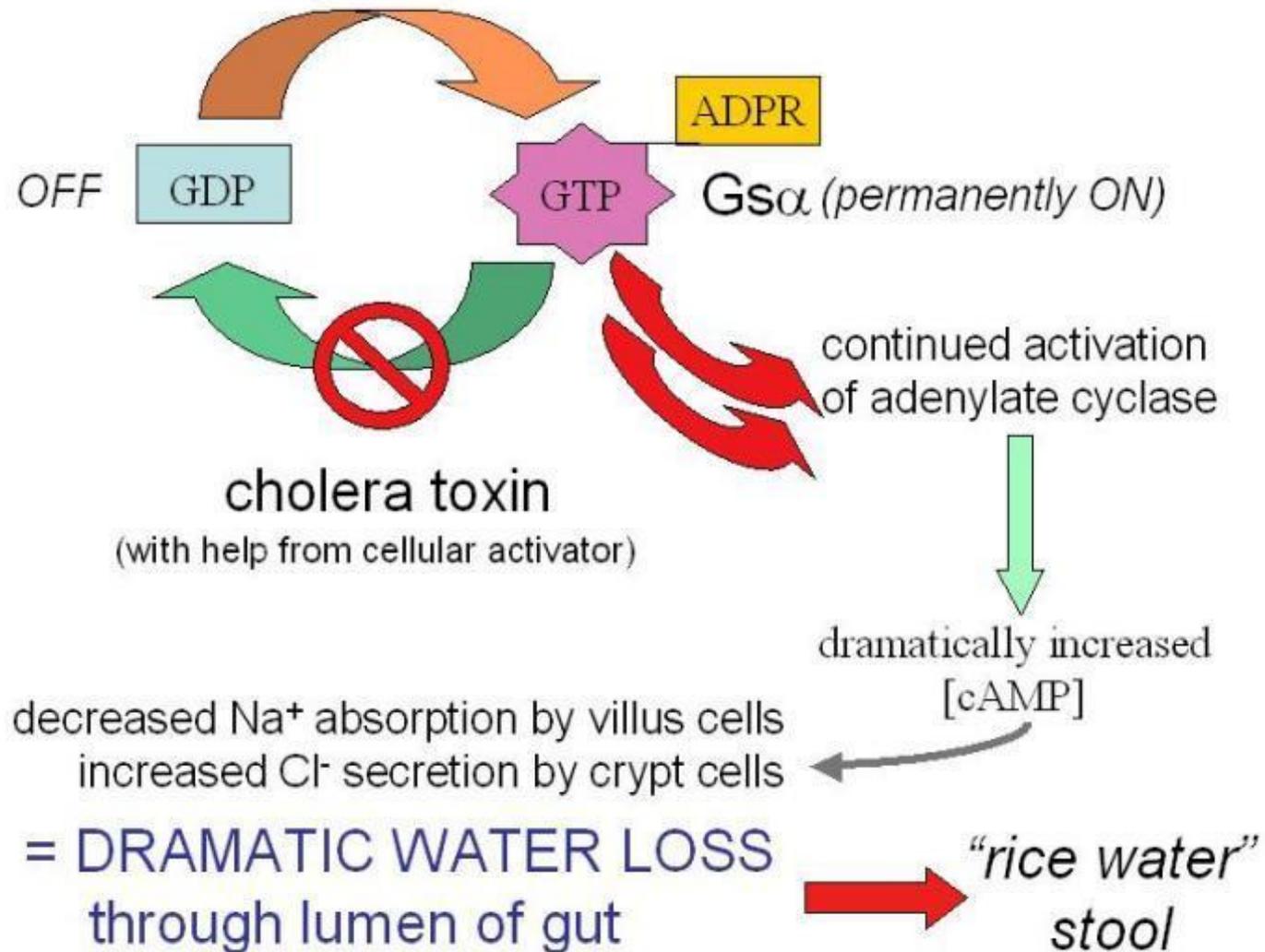
- Causative agent of cholare is v. Cholera which transmittes by fecal-oral contamition. Cholera is Gramnegative bacteria.

Biotype	El Tor			Classical		
Serotype	Ogawa	Inaba	(Hikojima)	Ogawa	Inaba	(Hikojima)
Antigens	A, B	A, C	(A, B, C)	A, B	A, C	(A, B, C)

Pathogenesis

Pathogenesis

OFF | GDP

ADPR

GTP | **Gsα** *(permanently ON)*

continued activation of adenylate cyclase

cholera toxin
(with help from cellular activator)

dramatically increased [cAMP]

decreased Na⁺ absorption by villus cells
increased Cl⁻ secretion by crypt cells

= DRAMATIC WATER LOSS
through lumen of gut

"rice water" stool

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Clinical features

- Diarrhea
- Vomiting
- Dehydration
- Decreasing of arterial pressure
- Hypokalemia
- Rapid loss of body fluids and electrolytes
- Hypovolemic shock and death

Diagnosis

- Anamnesis
- Macroscopic stool examination
- Microscopic examination
  - Stool leukocytes
  - Bacteriological method
  - Serological method
- Immunological examination
  - PCR
- Stool culture

Diagnosis

- V. cholerae strains can be isolated from stool with use of thiosulfate–citrate–bile salt–sucrose agar, which is the most convenient and frequently used selective medium. Placement of the specimen into an enrichment broth, such as alkaline peptone water with 1 percent sodium chloride (pH 8.5) for 5 hours before placement on thiosulfate–citrate–bile salt–sucrose agar enhances the isolation of vibrios. Serotyping is necessary to classify organisms into those that cause typical epidemic cholera (i.e., O1 and O139 serotypes) and those that cause less severe disease (i.e., non-O1, or nonagglutinating vibrios).253 V. parahaemolyticus, like other vibrios, can be cultured on thiosulfate–citrate–bile salt–sucrose agar. Strains associated with diarrhea are Kanagawapositive on Wagatsuma agar (i.e., show hemodigestion resembling β-hemolysis), which is a marker for pathogenicity. V. parahaemolyticus can be serotyped on the basis of the O and K antigens.118

Diagnosis

- Stool culture in salt-containing media, with study of isolates for O1 serotype

Treatment

- Effective antibiotic treatment reduces the volume and duration of diarrhea in patients with cholera and reduces the number of days that symptomatic patients shed viable V. cholerae. Tetracyclines, quinolones, and macrolides are active against V. cholerae; however, antibiotic resistance occurs frequently, and resistant strains can emerge rapidly. Therefore, the choice of antibiotic agent is based on results of local antibiotic resistance patterns. Stool cultures performed as part of a surveillance program are also useful for monitoring trends in antimicrobial resistance. In areas of endemicity, many strains have become resistant to tetracycline and to fluoroquinolones. In these areas, azithromycin treatment is preferred and is administered as a single dose of 1 g in adults and 20 mg/kg in children. At present, azithromycin resistance remains rare; and owing to the potential toxicity of tetracyclines and fluoroquinolones in children and pregnant women, azithromycin is also preferred for these patients.

References

- Feigin and Cherry's textbook of pediatric infectious diseases

- Cholera bacterium

- Wikipedia