

Vibrio cholerae Non-O1
Halophilic vibrios
Aeromonas & Plesiomonas

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VIBRIO



V. CHOLERAE

OTHER VIBRIO SPP.

O1

O139

NON O1/O139

Classical

El Tor

Ogawa

Inaba

Hikojima

Non O1 *V. cholerae*

They may resemble biochemically to *V. cholerae* O1/O139, but do not agglutinate with O1 or O139 antisera.

Clinically, they differ from O1/O139 strains as follows:

- 1. Gastroenteritis**
- 2. Extraintestinal manifestations**

Halophilic vibrios

Halophilic vibrios can withstand higher salt concentration ($>6\%$) in contrast to *V. cholerae*, which can tolerate up to 6% . They are widespread in marine environments. Cases tend to occur during late summer and early rain fall, when the bacterial counts are highest in the water.

Vibrio parahaemolyticus

Though *V. parahaemolyticus* was first reported from Japan (1953), the incidence of infection has greatly increased in several countries including Japan since 1993.

In India, it has been reported from Kolkata.

Clinical Manifestations

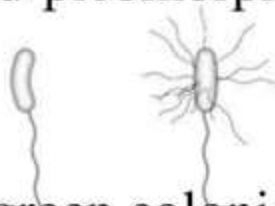
- Food borne
- Extraintestinal manifestations

Pathogenesis

- Pathogenesis of *V. parahaemolyticus* is related to the presence of the following virulence factors:
 - Polysaccharide capsule
 - Hemolysin
 - Urease enzyme

LAB. DIAGNOSIS

- Morphology- it is capsulated, shows bipolar staining in fresh isolates and pleomorphism in older cultures.
- Motile
- On TCBS, agar it produces green colonies
- **Kanagawa phenomenon-** it causes Beta hemolysis on Wagatsuma agar (a special type of high salt blood agar).
- Swarming: it swarms on blood agar



Vibrio vulnificus

- Though rare, *V. vulnificus* produces the most severe infection among the *Vibrio* species.

CLINICAL MANIFESTATIONS

It can cause two distinct syndromes:

1. Primary sepsis
2. Primary wound infection

Lab. diagnosis

- *V. vulnificus* can be cultured from blood or cutaneous lesions. Key biochemical reactions include-
- Ferments lactose

Treatment

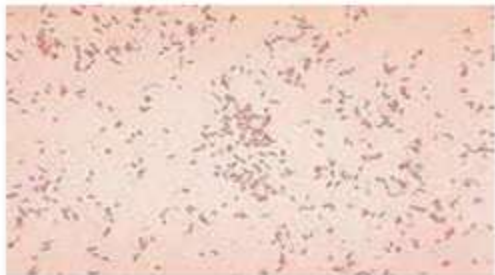
Tetracycline

Vibrio alginolyticus

- V. alginolyticus can occasionally cause eye, ear and wound infections.
- Few cases of otitis externa, otitis media and conjunctivitis have been reported.
- It is rarely causes bacteremia in immunocompromised hosts.
- It is most salt- tolerant Vibrio
- Disease is usually self limiting.

Aeromonas

- INTRODUCTION - Aeromonas is a gram negative facultative anaerobic rod that morphologically resembles members of the family Enterobacteriaceae.
- As with Vibrio , extensive reorganization of the taxonomy of these bacteria has occurred.
- Fourteen species of Aeromonas have been described most of which are associated with human disease.



- The most important pathogens are *Aeromonas hydrophila*, *Aeromonas caviae*, and *Aeromonas veroni bivar sobria*.
- The organisms are ubiquitous in fresh and brackish water.
- The two major diseases associated with *Aeromonas* are gastroenteritis and wound infections (with or without bacteremia).

HABITAT

Aeromonas species are indigenous to aquatic environment worldwide.

Aeromonas have been isolated from fresh water, chlorinated water, polluted water and occasionally marine environment and their numbers are highest at warm months.

Aeromonas species have also been isolated from store produce and meats and from environmental and seafood sources.

The organisms are associated with a wide variety of diseases in warm- and cold-blooded vertebrates, including frogs, fish, reptiles snakes, and birds.

CLINICAL INFECTION

- Septicaemia: Mainly in immunocompromised individuals
- Cellulitis and wound infections: Infections associated with exposure to contaminated water or after alligator bite. The infection usually results in gangrene-like syndrome.
- Food poisoning: A number of food poisoning outbreaks have been reported.

- Diarrhoea: Most commonly watery in consistency and sometimes cholera-like of short duration. Occur in all ages but mainly in children less than 3 years. Several reports associated *Aeromonas* species with travelers' and chronic diarrhoea.
- Others: A wide range of infections that include: meningeal, sore throat, urinary tract, ear, endocarditis, septicemia, etc

LABORATORY DIAGNOSIS

- Motile with single polar flagellum
- MacConkey agar- produce non lactose fermenting pale colonies
- Oxidase and catalase positive

Genotyping classification

- DNA hybridization

Treatment

- Ciprofloxacin



Plesiomonas

- *Plesiomonas shigelloides* is a species of bacteria that was formerly classified in the family *Vibrionaceae*, but now most microbiologists agree that a better classification is in the order Enterobacterales.



- It is a Gram-negative, rod-shaped bacterium which has been isolated from freshwater, freshwater fish, and shellfish and from many types of animals including humans, cattle, goats, swine, cats, dogs, monkeys.

Characteristics of *Aeromonas* and *Plesiomonas* Gastroenteritis

<u>Epidemiological Features</u>	<u><i>Aeromonas</i></u>	<u><i>Plesiomonas</i></u>
Natural Habitat	Fresh or brackish water	Fresh or brackish water
Source of Infection	Contaminated water or food	Contaminated water or food
<u>Clinical Features</u>		
Diarrhea	Present	Present
Vomiting	Present	Present
Abdominal Cramps	Present	Present
Fever	Absent	Absent
Blood/WBCs in Stool	Absent	Present
		
<u>Pathogenesis</u>	Enterotoxin (??)	Invasiveness
		

Thank you