

Coryneform Bacteria Or Corynebacteria

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They include *C. diphtheriae* = the cause of diphtheria

Gram – positive rod



Non – sporing



Non – motile



Catalase positive



Arranged in

- 1- Palisades
- 2- V shaped
- 3- Chinese Lettering



Contain granules called
(metachromatic granules)

They include:

- A. *Corynebacterium diphtheria* causing diphtheria
- B. *Listeria monocytogenes* - Listerosis
- C. *Diphtheroids*
 - a. Normal flora of the skin
 - b. Can contaminate blood taken for culture
 - c. Can cause disease in (patients with lower immunity)

Corynebacterium Diphtheriae

Appearance:

- Chinese Lettering
- When stained by Albert's stain they show dark purple metachromatic granules.

They grow on:

A. Blood agar, the colonies appear in *3 sizes*:

= Gravis

= Intermedus

= Mitis

B. Selective media containing *K. tellurite*.

C. Loeffler's medium help in the production of metachromatic granules.

Diphtheria – Epidemiology

1. It is a human disease: it spreads by droplets from nasopharyngeal secretions of :
 - a. Infected patients or
 - b. Carriers
2. It is a disease of children after the age of 6 months
WHY?
3. Rare in developed countries (because of vaccination program).

Pathogenesis:

- Mainly by production of powerful exotoxin.
- It affects:
 - a) Upper respiratory tract
 - b) Skin
- Local inflammation of the throat and tonsillar region with exudate and necrosis producing a pseudomembrane.
- This membrane can extend to the *Larynx*.
- Does not cause bacteraemia.
- But they produce a powerful exotoxin.


The toxin is composed of two units A and B.

- Unit B for attachment to the host cells.
- Unit A is the active unit. It acts by stopping protein synthesis by inactivating elongation factor II (EF2).

It affects:

- a) Heart (**cardiac muscles**)
 - causing myocarditis, muscle death leading to heart failure. It can show ECG changes
- b) Nerves: both peripheral and cranial causing neuritis.

Clinical Features:

- a) Incubation period is short 2-6 days.
 - b) Pharyngeal or tonsillar diphtheria in
 - Fever
 - Malaise
 - Fatigue
 - Sore throat with a spreading of a pseudomembrane that extends to the larynx.
 - Patient will present with air way obstruction and may be death.
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Clinical Features: (Continued)

c) Nasal diphtheria = thick nasal discharge
intoxication is rare.


with

d. Oedema of the neck region → enlarged of
Lymphnode and **Bulk** neck appearance.

Skin or cutaneous diphtheria presents as skin
lesions.

Diphtheria

A. Clinical:

1. History (*see above*)
 2. Throat examination presence of membrane which bleeds on removal.
 3. Enlargement of cervical lymph nodes leading to bull neck appearance (*rare*).
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B. Laboratory Diagnosis:

a. Throat swab or skin swab

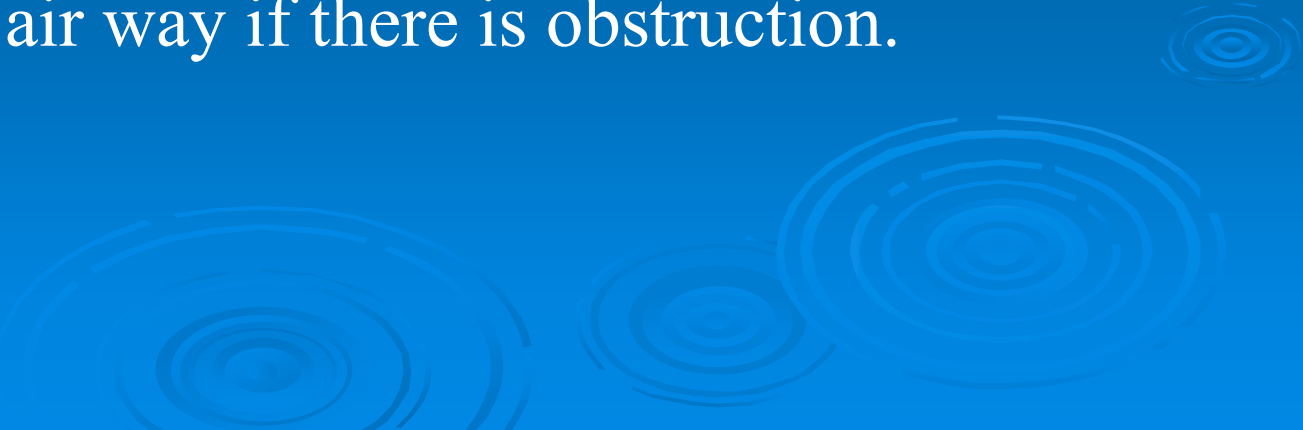
1. Microscopic examination of the throat swab is not very helpful WHY?
2. Culture on tellurite medium or Leoffeler's medium
3. Stain – metachromatic granules – Albert's stain
4. Do sugar fermentation tests for identification

5. Toxogenicity testing. This is the most available confirmatory test for diagnosis of cases of diphtheria.

a. ELEK' plate: reaction commonly used now.

b. BEFORE: animal test but not done nowadays.

Treatment

1. Most important is antitoxin
 2. Penicillin or erythromycin
 3. Bed rest and supportive treatment.
 4. Secure an air way if there is obstruction.
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- The bottom right corner of the slide features a decorative graphic of several concentric, light blue circles that resemble ripples on water, set against the dark blue background.

Prevention:

For triple vaccine DPT contains:

D = Diphtheria

P = Pertussis

T = Tetanus

- Given at the age of 2, 5, 7 months then at 18 months and 5 years later.
- Those in contact with a case of diphtheria case should be vaccinated.

SCHICK TEST

➤ It test for presence of antitoxin (antibodies in patient serum)

Procedures:

Inject small amount of toxin in patient *forearm if:*

1. There is no antitoxin. The toxin will cause skin lesions. So the patient needs vaccination.
2. If there is antitoxin in patient serum, antitoxin will neutralize the effect of the toxin. So there will be no reaction. Patient does not need vaccination.

Listeria Gram + Ve Rods

- Most important species is *Listeria monocytogenes*.
- Weakly motile at 37°C but shows active “tumbling motility” at 25 °C.
- They cause infections in:
 - a. Pregnant women = (granulosa infantiseptica in foetus)
 - b. Neonates = fever, septicaemia and meningitis
 - c. Immunocompromised patients
 - d. Food poisoning = from meat, milk and cheese.

Diagnosis: Culture of the suitable specimen.

Treatment: = Ampicillin, Gentamicin,
Vancomycin

= But they are resistant to
Cephalosporin.