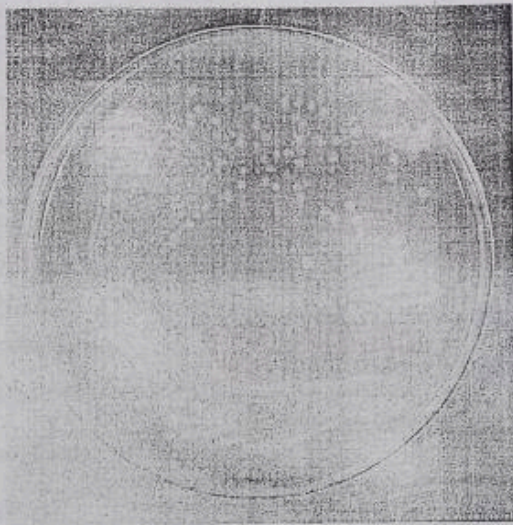


2mf

Haemophilus influenzae (Chocolate agar)

A 50-year-old man with a long history of smoking now has a fever and a cough productive of ^{yellow} greenish sputum. His physician suspects pneumonia, which is confirmed by chest x-ray. A sputum sample was plated on chocolate, blood, and MacConkey agars. Colonies only grew on chocolate agar. Gram stain of the resulting bacteria resembled that shown. The bacteria were oxidase positive and required supplementation with heme and NAD. What is the most likely etiology and infection?



1. Name the causative agent and the disease.
2. Describe the morphology of this bacterium on Gram staining.
3. Why these organisms require enriched media for their growth?
4. Is it ^{Yes} Capsulated? If yes. What is the chemical ^{Polysaccharide phosphate} composition of its capsule?
5. Enlist the other diseases caused by it. ^{meningitis, sepsis, septic arthritis, cellulitis.}
6. What is the treatment and prevention of this disease?
7. Name the respiratory Gram negative rods. ^{H. influenza, Brdella Pertussis}
8. Enlist three important causes of meningitis.
9. Name the bacterium causes whooping cough.
10. Pathogenesis of hemophilus influenza.
- (11) Virulence factors
- (12) Laboratory investigation.

H. influenza
Brodella
Pertussis

KEY:

1. The patient most likely has **bronchopneumonia** caused by *Haemophilus influenzae*.
2. Gram-negative pleomorphic rods or Gram negative cocco-bacillus (1-4µm in length & 0.4µm in diameter).
3. Growth on enriched medium (chocolate agar) indicates a fastidious organism. *indicates fastidious organisms.*
4. Yes & polyribose phosphate.
5. Meningitis, Sinusitis & otitis media, Epiglottitis, Septic arthritis, Cellulitis, Sepsis, especially in splenectomized patients.
6. Treatment of choice for meningitis or other serious systemic infections: **ceftriaxone**. Upper respiratory tract infections (otitis media sinusitis) treated with either **amoxicillin-clavulanate** or **trimethoprim-sulfamethoxazole**
Prevention: Vaccine contains capsular polysaccharide (polyribose phosphate) of *H. influenzae* type b conjugated to diphtheria toxoid or other carrier protein, given between ages of 2 and 15 months.

7. *Haemophilus influenzae*

Bordetella pertussis → Pink cough
Legionella pneumophila

8. *Haemophilus influenzae*

- *Neisseria meningitidis*
- *Streptococcus pneumoniae*
- *Listeria monocytogenes*

9. *Bordetella pertussis*

10 Pathogenes of hemophilus influenza

* Enters body through upper respiratory tract, resulting in either asymptomatic colonization or infections such as otitis media, sinusitis or pneumonia.

Carrier rate in upper tract for *H. influenzae* b was

2-4% before antibiotics & reduced to less than 1%

now.

(11)

endotoxins
Anti phagocytic capsule,
IgA protease

(12) Gram staining → gram-ve coccobacillus
1-4µm in length 0.4µm in diameter
chocolate agar with 5-10% CO₂ for 48 hours.

Serological Test:-

→ Capsular swelling Test.

→ Fluorescent antibody staining

→ Counter immunoelectrophoresis

→ Latex agglutination tests.

Lab. diagnose depends on the isolation of the organism heated with a (blood) chocolate agar (enriched with a two growth factors for bacterial respiration. namely factor X (heme compound) factor V (NAD).