



Microbiology

Mid

Summaries



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يمكن تلاقوا تفاصيل زيادة على كونه تلخيص بس للأمانة بدي ياه يكون شامل لأنه دكتور هالة ما درست مايكرو RS قبل،، لهيك ما بعرف اسئلتها دقيقة او عامة 🙏 بيعينكم الله بالنهاية عشان مصلحتنا و بالحالتين بيضل احسن من كثرة السلايدات 🙏 و شغلة اخيرة ما تخافوا من عدد الصفحات لأنه أنا تاركة كثير فراغات (عشان الترتيب) ، موفقين ❤️❤️

GROUP A, BETA- HAEMOLYTIC STREPTOCOCCI (STREPTOCOCCUS PYOGENES)



General characteristics 📌

Gram-**positive** cocci, some are capsulated, facultative **anaerobes**, grow on **blood agar** & produce complete (**Beta**) hemolysis, Catalase **negative**, Bacitracin **sensitive**

Virulence Factors 📌

A) Adherence factors as: 1- **Fibronectin**- binding protein (protein F) & (LTA), 2- **M protein** (projections on cell wall)

B) Anti-phagocytic factors: 1- **M protein** (resists phagocytosis), 2- **Hyaluronic acid capsule** (immunological mask), 3- **C5a peptidase**

C) Spreading factors: 1- **Streptokinase (Fibrinolysin)**, 2- **Streptodornase (Deoxy nuclease / DNase)**, 3- **Hyaluronidase**

D) Toxins: 1- **Streptolysins (Hemolysins)** (pore forming cytotoxin), **O** is O2 labile & antigenic but **S** is opposite & responsible for β -hemolysis

2- **Pyrogenic** (fever inducing) exotoxins (A, B and C), **SPE A** (erythrogenic toxin) causes **rash** in scarlet fever.

Diseases caused by strep A 📌

(1) **Pyogenic (suppurative)** as pharyngitis, (2) **Toxicogenic** as scarlet fever, (3) **Immunologic** as rheumatic fever, acute glomerulonephritis

Streptococcal pharyngitis (Strep throat) (Acute follicular tonsillitis): swollen tonsils, purulent exudate 2) **Scarlet fever (scarlatina)** produced by

erythrogenic toxin (lysogenized by **bacteriophage**), scarlet erythematous **rash**, "**strawberry**" tongue is a characteristic lesion seen in

scarlet fever 3) **Post-strepto**: strains bearing certain M proteins r nephrogenic (**AGN**) while different M proteins r **rheumatogenic**, disorders

occur **weeks** after local infection, Inflammation is caused by (**autoantibody**) response to streptococ M proteins that **cross-react**

Rheumatic fever: Follows pharyngitis / (AGN): Follows skin infections

Diagnostic tests: 📌

Specimen: throat swab, (gram stain not useful), **Antigen detection** tests: ELISA or agglutination tests (**rapid**),

Serology (**ASO test**): for post-strepto diseases, **Treatment**: All B-haemolytic group A streptococci are sensitive to

penicillin G, Treatment of **scarlet fever**: penicillin+ **antitoxin** serum



General characteristics 📌

Gram **+ve rods**, **Non-spore-forming**, **Non-motile**, **club-shaped** giving V, Y or **Chinese-letter** appearance & have inclusion granules

(**metachromatic** or **volutin**) seen by **methylene blue** or **Neisser** or **Albert's** stain, **Aerobes**, grow on enriched media: 📌

1- On **Loeffler's serum** (grayish **white** colonies) 2- On **blood tellurite** agar (**Selective medium**) give **black** colonies.

Virulence factors 📌

Diphtheria toxin is the **main virulence factor**, produced **only** by the strains infected by bacteriophage (**lysogenic**),

It consists of 2 fragments (A, B) 📌 **A** is for inhibition of protein synthesis (**Inactivate elongation factor 2**).

Pathogenesis, clinical picture, laboratory diagnosis, treatment, prevention, etc... 📌

A) Tonsillar diphtheria: most common, transmitted by **droplets**, organism does **not** invade, multiply **locally**, the toxin causes local necrosis with fibrinous exudate resulting in **grayish white pseudomembrane**, The **exotoxin** released diffuses to the blood stream causing **toxaemia**, affects other organs **B) Nasal infection** is common while conjunctival or **skin** diphtheriae is rare (by contact)

Suffocation due to laryngeal obstruction, **heart** damage: Irregularities of cardiac **rhythm**, **nerve** damage: difficulties swallowing, **speech**, vision

Diagnosis is **clinical**, but **Laboratory diagnosis**: **A. Direct smears**: are stained with Gram, methylene blue or Neisser stains.

(**negative result cannot exclude diphtheria**), **B. Cultures**: are made on Loeffler's serum and blood tellurite media.

Treat: 1- **Diphtheriae anti-toxin serum**: given without delay, neutralizes the **free** toxin (Not Fixed), produced in animals so it's **IM, IV**

2- **Chemotherapy**: **Antibiotics** are given in **association** with **anti-toxic** serum

Bezc of allergy

Prevent: 1- **Isolation**, 2- **Active immunization (vaccine)**: Diphtheriae toxoid **DPT**, 3- **passive immunization**

Disease: **fuso-spirochetal (Vincent angina)**: it's **ulcero-membranous pharyngitis**, gram **-ve anaerobic bacilli**, characterized by unilateral pseudo membrane & found in immune compromised patients