



Microbiology

Subject :

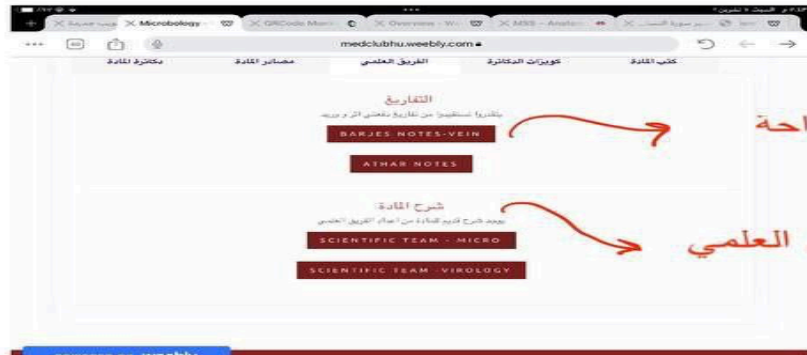
Lec no : 9

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وَقَالَ رَبِّ زِدْنِي عِلْمًا

تجدون في guidance مادة المايكرو على موقع النادي :

للوصول الى guidance المايكرو و تفاريغ
المادة كاملة :



فاريغ برجس جدا!!!!!! قوية ، سفا!!!!!!حة

شرح للفريق العلمي



كل اعمال الفريق العلمي تنشر على قناة
التليغرام



بتلاقرو هون ملف سكتشي ، بدل
ما تحضروا الفيديوهات بتلاقروها
هون كتابية

Treatment

- Drug resistance is common
- Benzyl penicillin is effective antibiotic, if the strain is sensitive
هي بتقدر تتفاعل مع هذا ال antibiotic ويبطل له تأثير
- Cloxacillin or Methicillin is used against β -lactamase producing strains
هذا ال antibiotic اقوى
ممکن هذا العلاج ما يشتغل ببسب MRSA
فبنستخد علاج اخر
- Methicillin Resistant *Staphylococcus aureus* (MRSA)
strains have become common
- Vancomycin is used in treatment of infections with MRSA strains

كيف بدى اعرف ال strain في البكتيريا هاي ؟ بسبب culture و Sensitive لل antibiotic

S. epidermidis

Pathogenic

بتدخل من خلال الاجسام الغريبة

- Common habitat of skin
- It is a common cause of (stitch abscesses)
- It has predilection for growth on implanted foreign bodies such as artificial valves, shunts, intravascular catheters and prosthetic appliances leading to bacteraemia
- Endocarditis may be caused, particularly in drug addicts

نتيجة عدم تعقيم مكان
خيطة الجرح



زى الوصلة بين منطقتين
صناعي صمام في الجدار

زى الفرغرينا

زى مدمنين المخدرات بتلاتي ايده معفنة وما بعقمها قبل ما يوخذ
الجرعة

او معفنين و كمان ما معهم مصاري ف بشتركوا في نفس الابرة



S. saprophyticus

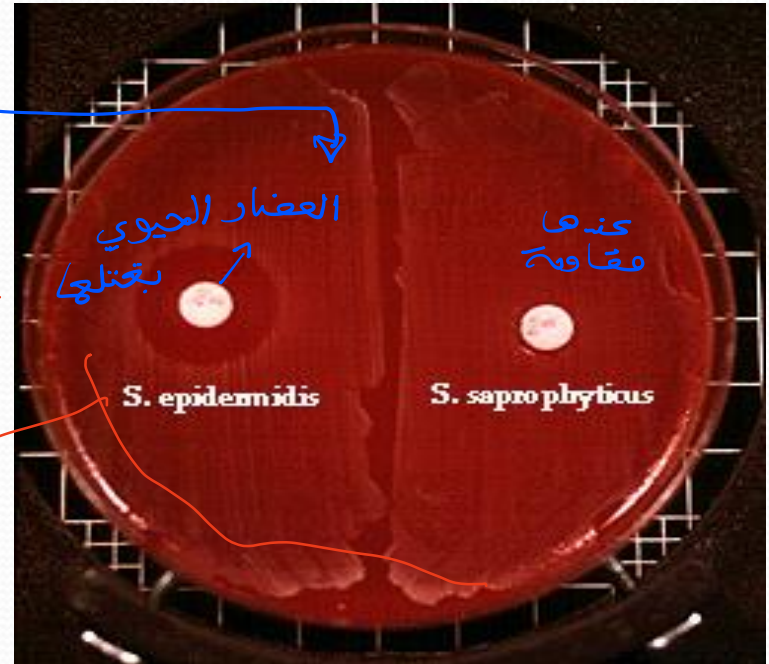
(Honey month cystitis)

- It causes urinary tract infections, mostly in sexually active young women
- The infection is symptomatic and may involve the upper urinary tract
بالغالب في ال bladder
بس ممكن الالتهاب يطلع لافوق لل kidney
- It is one of the few frequently isolated that is resistant to Novobiocin

Burning in the urine من الاعراض

بميز بينهم من خلال الاعراض ومكان الاصابة او
المقاومة للantibiotic

الاختلاف بينهم انه



agar
مقاومة

Distinguishing features of the major species of staphylococcus

هذا ملخص بين ال ٣ انواع

Characters	<i>S.aureus</i>	<i>S.epidermididis</i>	<i>S.saprophyticus</i>
Coagulase	+	-	-
Novobiocin sensitivity	<u>Sensitive</u>	<u>Sensitive</u>	<u>Resistant</u>
Mannitol fermentation	+	-	-

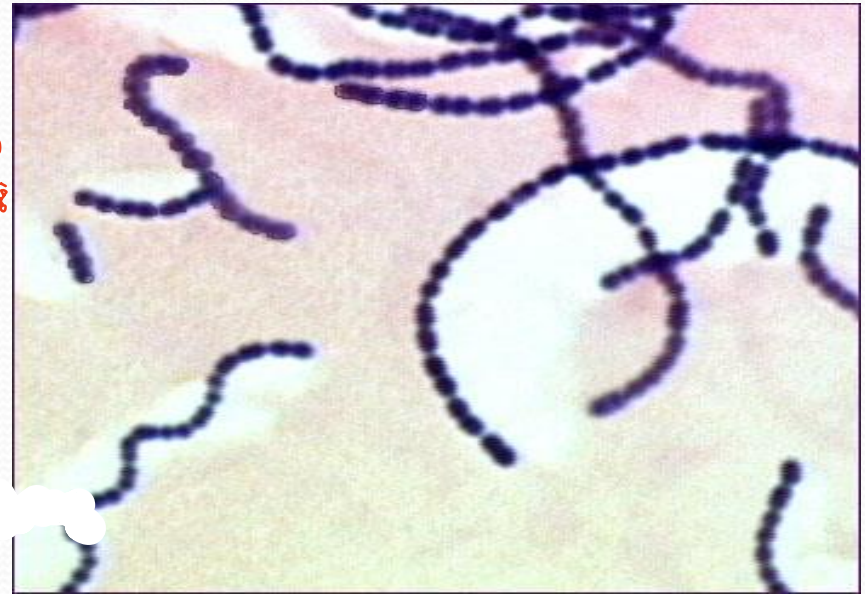


Streptococci

General Characters

في اختلاف بينها وبين ال staph

- ١ • Gram-positive cocci
- ٢ • Chains or pairs إختلاف
- ٣ • Usually capsulated قرون ممكن وانعدام بإختلاف عوامل ال
الاصطناعية
- ٤ • Non motile
- ٥ • Non spore forming
- ٦ • Facultative anaerobes
- ٧ • Fastidious إختلاف عوامل ال
الاصطناعية
- Catalase-negative (Staphylococci are catalase-positive)

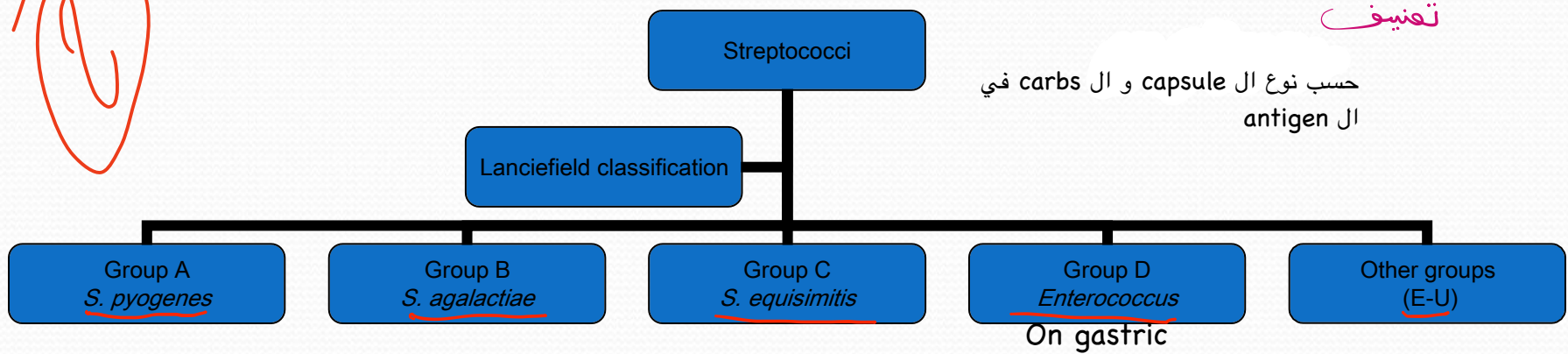


Classification

Streptococci can be classified according to:

- Oxygen requirements
 1. Anaerobic (Peptostreptococcus) catalase negative لانها
 2. Aerobic or facultative anaerobic (Streptococcus)
- Serology (Lanciefield Classification)
- Hemolysis on blood agar

Serology: Lanciefield Classification



- Streptococci classified into many groups from A-V
- One or more species per group
- Classification based on C- carbohydrate antigen of cell wall
 - **Groupable streptococci**
 - A, B and D (**more frequent**) *الأكثر إنتشار في الأنتجة*
 - C, G and F (**Less frequent**)
 - **Non-groupable streptococci**
 - (1) • S. pneumoniae (pneumonia) *سبب مرض في الرئة*
 - (2) • viridans streptococci
 - e.g. S. mutans
 - Causing dental carries

Classification Based on

Hemolysis on Blood Agar

هذا تصنيف
اسهل

1. α -hemolysis

- Partial hemolysis with green discoloration around the colonies
- e.g. non-groupable streptococci (*S. pneumoniae* & *S. viridans*)

2. β -hemolysis

- Complete hemolysis with clear zone of hemolysis around the colonies
- e.g. Group A & B (*S. pyogenes* & *S. agalactiae*)

3. γ -hemolysis

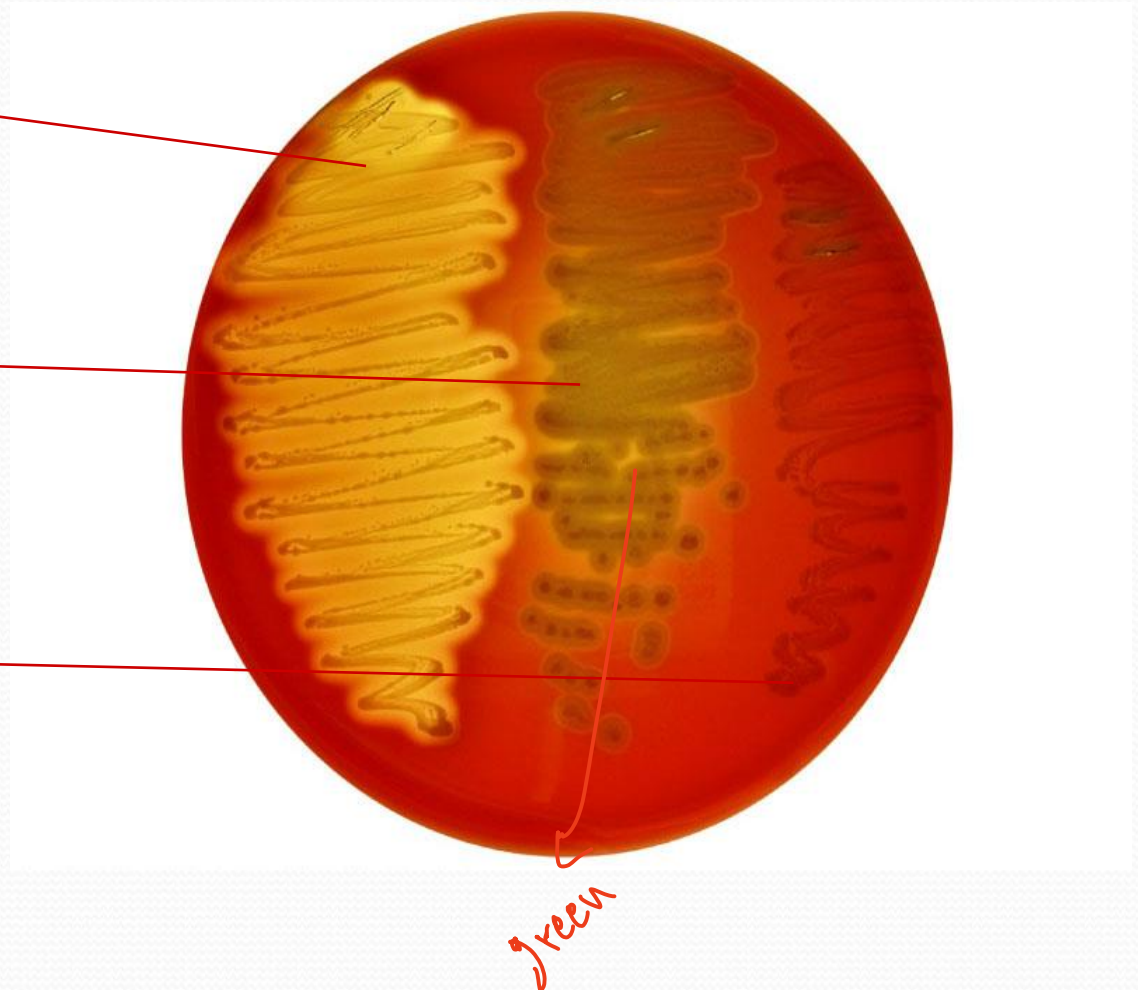
- No lysis
- e.g. Group D (*Enterococcus* spp)

Hemolysis on Blood agar


A, B ← β-hemolysis

Non-groupable ← α-hemolysis

D ← γ-hemolysis



Group A streptococci

- Include only *S. pyogenes*
- Group A streptococcal infections affect all ages
↑↑ peak incidence at 5-15 years of age
- 90% of cases of pharyngitis 
- Infection can lead to severe complications including rheumatic fever and glomerulonephritis

Pathogenesis and Virulence Factors

1

• Structural components (cross reactivity)

- M protein-interferes with lysis of the bacteria
- Lipoteichoic acid & F protein-adhesion
- Hyaluronic acid capsule

نظارة
تتداخل مع
الاصطدام
المضادة
الاجسام
القلبية

الاصطدام
المضادة
بتفكك
النسجة
ال articular

لسوء الحظ
هذا البروتينات
بتعمل
cross
reactivity
with
human
body tissue

2

• Enzymes-facilitate the spread of streptococci through tissues

- Streptokinases tissue ال بحطم
- Deoxynucleases nuclic acid بحطم
- C5a peptidase c5a ال وتحديد peptide ال بحطم

3

• Pyrogenic toxins mediates bacteremia and shock

4

• Streptolysins (lyse red blood cells, white blood cells, and platelets)

- Streptolysin O
- Streptolysin S

Disease caused by *S. pyogenes*

Suppurative

Non-Invasive

1. Pharyngitis “strep throat”
2. Skin infection: Impetigo

Invasive

1. Scarlet fever-rash that begins on the chest and spreads across the body
1. **Pyoderma- pus-producing lesion that usually occurs on the face, arms, or legs**
2. Necrotizing fasciitis-toxin production destroys tissues and eventually muscle and fat tissue (flesh eating bacteria)

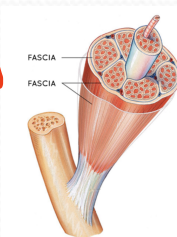
Pyogenes



التهاب

Non Suppurative

- Rheumatic fever
- Glomerulonephritis



بروح ال antibody على الكلية في مصفاة وبسكرها



Group B *Streptococci*

- Include mainly *S. agalactiae*

- Infections:

- Neonatal disease

الفحص المراد لتشخيص الحالة blood او Cerebrospinal fluid

1. Early onset in neonates who are less than 7 days old. Vertical transmission of the organism from the mother. Manifests in the form of pneumonia or meningitis with bacteremia. Associated with a high mortality rate → التهاب السحايا
 2. Late-onset infection between 1 week and 3 months after birth. Usually occurs in the meningitis form. Mortality rate is not as high as early-onset
- Other: Systemic, Cutaneous, UTI's

Group D *Streptococci*

- Group D streptococci are divided into:
 1. those that will grow in 6.5% saline (enterococci)
 2. and those that will not (non-enterococci)
- Enterococci are distantly related to other streptococci and have been moved into the genus *Enterococcus* which are members of the gut flora.
- Associated infections
 - Bacteremia
 - Urinary tract infections
 - Wound infections
 - Endocarditis

Streptococcus Pneumonia

- **General characteristics**

- **Inhabits the nasopharyngeal areas** of healthy individuals
- Typical opportunist
- Gram-positive diplococci

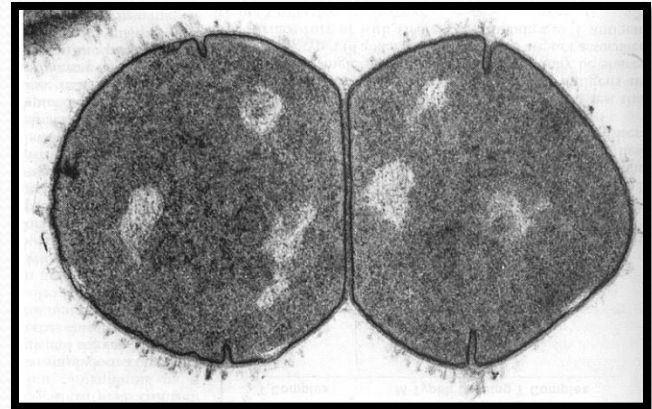
- **Virulence factors**

- Polysaccharide capsule

- **Clinical infections**

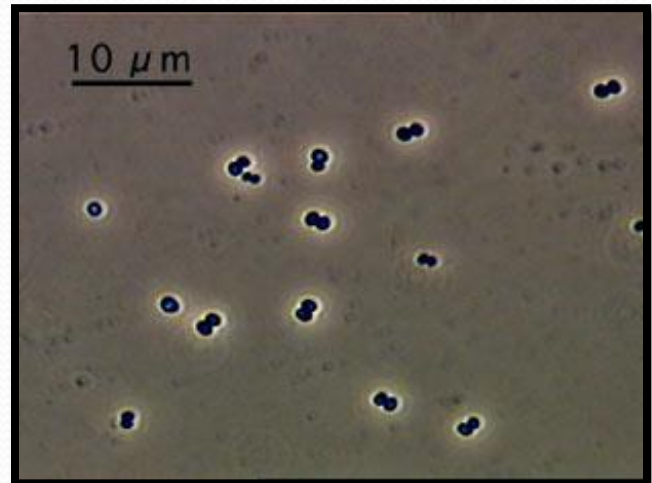
- **Pneumonia**
- **Meningitis**
- **Bacteremia** التهاب الدم
- **Sinusitis/otitis media**

التهاب الجيوب والاذن الوسطى



كل ثنتين
مع
بعض

يقح مع خروج
دم من اعراض
ال pneumonia



الم شديد في الراس
خصوصا عندما ينزل
راسه من اعراض
sinusitis

Gram Positive Cocci Flow Chart

خطوات عمل الفحص من اجل المساعدة في التشخيص

