

G +ve cocci

STREPTOCOCCI

Streptococci



- Gram-positive
- Spherical that form pairs or chains during growth.
- Nonmotile
- Catalase negative.
- Clinically important genera include
Streptococcus and **Enterococcus**

CLASSIFICATION OF STREPTOCOCCI



- Streptococci can be classified by hemolytic properties of the organisms into:
- **Complete** disruption of erythrocytes with clearing of the blood around the bacterial growth is called **β -hemolysis**.
- **Incomplete** lysis of erythrocytes with reduction of hemoglobin and the formation of green pigment is called **α -hemolysis**.
- **Non-hemolytic (gamma hemolysis)**.



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STREPTOCOCCUS PYOGENES



- The most clinically important member of this group
- Individual cocci are spherical or ovoid and are arranged in chains.
- It can invade apparently intact skin or mucous membranes
- In infected patients it resides on skin and mucous membranes .
- *S. pyogenes* is usually spread person to person by skin contact and via the respiratory tract

Toxins & Enzymes

Streptococcus pyogenes



Cytokines

Pyrogenic exotoxins

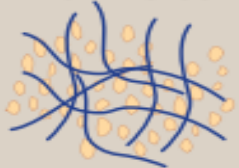
Cause various effects, including the rashes seen in scarlet fever and streptococcal toxic shock disease.



Streptolysin O Streptolysin S

Damage mammalian cells, resulting in cell lysis and release of lysosomal enzymes.

Fibrin clot



Plasmin



Streptokinase

Catalyzes conversion of plasminogen to plasmin, causing lysis of clots, facilitating the rapid spread of organisms.

C5a



C5a peptidase

Inactivates complement component C5a.

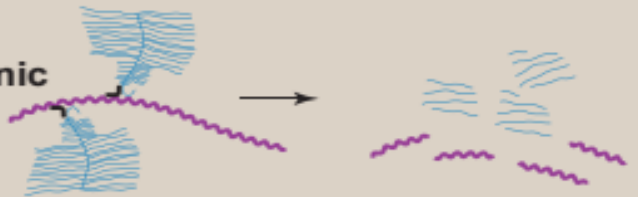
DNA



Streptodornases

DNases that degrade the viscous DNA in necrotizing tissue or exudates, aiding the spread of infection.

Hyaluronic acid



Hyaluronidase

Disrupts the organization of ground substance, facilitating the spread of infection.

DISEASES ATTRIBUTABLE TO INVASION BY *S PYOGENES*



- 1.** The most common bacterial cause of **Pharyngitis** in school-age children 5 to 15 years of age.
 - Transmission is by respiratory droplets.
- 2. Impetigo:** skin infection forms yellow crusty sores



POSTSTREPTOCOCCAL DISEASES



- Following an acute *S pyogenes* infection, there is a latent period of 1–4 weeks, after which nephritis or rheumatic fever occasionally develops.
- **Nephritis** is more commonly preceded by infection of the skin;
- **Rheumatic fever** is more commonly preceded by infection of the respiratory.

CAN ALSO CAUSES



- **Cellulitis, Streptococcal Gangrene
Bacteremia/Sepsis**

STREPTOCOCCUS AGALACTIAE



- Gram-positive
- Catalase-negative organisms
- Found in **vagino****cervical** tract of female carriers, and the **urethral** mucous membranes of male carriers as well as in the gastrointestinal tract.
- Transmitted sexually among adults and from an infected mother to her infant at birth.
- Leading cause of meningitis and septicemia in neonates.

STREPTOCOCCUS PNEUMONIAE (PNEUMOCOCCUS)



- The typical gram-positive
 - a) Lancet-shaped diplococci
 - b) Leading cause of **pneumonia**.
 - c) Causes adult bacterial **meningitis**
 - d) The most frequent cause of **otitis media**.

ENTEROCOCCI



- *E. faecalis* and *E. faecium* are the most important clinically.
- They are not very virulent.
- They cause of **nosocomial** infections as a result of their multiple **antibiotic resistance**
- They seldom cause disease in healthy individuals.
- Can spread to normally sterile sites, causing UTI, bacteremia/sepsis, endocarditis, or intra-abdominal abscesses.



THANK YOU