Streptococcus agalactiae

Streptococcus agalactiae, commonly called group B streptococci (GBS), is a gram-positive cocci that can cause serious disease in newborns. This organism can be differentiated from other gram-positive cocci, because it is beta-hemolytic, catalase-negative, and bacitracin-resistant. This organism also produces CAMP factor, which causes the area of hemolysis formed by beta hemolysin from Staphylococcus aureus to be enlarged. This organism can colonize the vagina of women, and cause serious disease in newborns as they pass through the vaginal canal during delivery. Common neonatal manifestations include pneumonia, meningitis and septicemia. Therefore, pregnant women are routinely screened for the presence of GBS in the vagina at 35-37 weeks, and women with positive cultures can receive intrapartum prophylactic treatment with IV penicillin during delivery.

PLAY PICMONIC

Characteristics

Group B Streptococci
(B) Bee Stripper
This bacteria is characterized by the presence of group B Lancefield antigen and is commonly called group B Streptococci (GBS).

Gram-Positive
Graham-cracker Positive-angel
This organism stains positive on Gram stain due to the thick peptidoglycan layer, which absorbs crystal violet.

Cocci
Cockeyed
This bacterium has a spherical shape.

Beta-Hemolytic
Beta-fish in Petri-dish
Strep agalactiae typically produces large zones of beta-hemolysis, which is the complete lysis of red cells in the blood culture media.

Bacitracin-Resistant
Resisting Bass wearing Resistance-bandana
Bacitracin can be used to distinguish Strep agalactiae from other beta-hemolytic Streptococci, like Strep pyogenes. Streptococcus pyogenes is bacitracin-sensitive, while Streptococcus agalactiae is bacitracin-resistant.

Catalase-Negative
Negative-cat
Characteristically, Streptococcus agalactiae is catalase-negative, meaning it does not produce the enzyme catalase. This enzyme allows the bacterium to convert hydrogen peroxide to water and oxygen. This characteristic helps distinguish Streptococci from catalase-positive Staphylococci.

Pyrrolidonyl Arylamidase (PYR) Negative
Negative Pyro
Streptococcus agalactiae does not have activity of the enzyme pyrrolidonyl arylamidase. Thus, it produces a negative test that results in an orange or yellow color of the reagent. Streptococcus agalactiae is known to be pyrrolidonyl arylamidase-negative and serves as a negative control in this test.

Polysaccharide Capsule
Polly-sack Capsule
An important virulence factor of this organism is its capsule, composed of polysaccharides. These bacterial capsules surround the bacterial cell and enhance the bacteria's ability to cause disease.

Hippurate Positive (+)
Positive Hippie-pirate
The hippurate hydrolysis test is used to detect a bacteria's ability to hydrolyze hippurate into glycine and benzoic acid. This test serves as a presumptive identification test for Gardnerella vaginalis, Campylobacter jejuni, Listeria monocytogenes, and group B streptococci.

Produces CAMP Factor
Camping-tent
A CAMP test is frequently used to identify group B streptococci based on their formation of CAMP factor. CAMP factor enlarges the area of hemolysis formed by beta-hemolysin from Staphylococcus aureus.

Enlarges Area of Hemolysis by S. aureus
Staff of Oreos
A CAMP test is frequently used to identify group B streptococci based on their formation of CAMP factor. CAMP factor enlarges the area of hemolysis formed by beta-hemolysin from Staphylococcus aureus.

Disease

Mainly in Babies
Baby
S. agalactiae is commonly transferred to neonates during passage through the birth canal and can cause serious infections in infants, including pneumonia, meningitis, and sepsis.

Meningitis
Men-in-tights
GBS infection in newborns can cause inflammation of the meninges. However, S. agalactiae neonatal meningitis typically does not present with the characteristic sign of a stiff neck. Instead, infants typically present with nonspecific symptoms of fever, vomiting, and irritability. Hearing loss can be a long-term sequela.

Pneumonia
Nude-Mona
This organism can invade the alveolar and pulmonary epithelial cells of infants when inhaled during vaginal delivery. Newborns are especially susceptible to infection due to the lack of alveolar macrophages.

Sepsis
Sepsis-snake
This organism is a major cause of bacterial sepsis in newborns. Early onset sepsis is typically accompanied by pneumonia, while onset after seven days is accompanied more often by meningitis.

Colonizes Vagina
Vagina-violet
S. agalactiae is a member of the GI normal flora in some people and can spread to secondary sites, including the vagina in approximately 20% of individuals. Colonization of the vagina is important clinically because it can be transferred to neonates during passage through the birth canal and cause serious infections.

Treatment

Screen Pregnant Women at 35-37 Weeks
Screen-door and Pregnant-woman with 35 -37
Pregnant individuals are routinely screened for the presence of S. agalactiae (GBS) in the vagina at 35-37 weeks. Individuals with positive cultures can receive intrapartum prophylactic treatment with IV penicillin during delivery.

Penicillin
Pencil-villain
Individuals with positive cultures can receive intrapartum prophylactic treatment with IV penicillin during delivery.