

Chapter 1 : Streptococcus Lab | StrepLab | Other Streptococci Form | CDC

This chapter focuses on Streptococcus and some other related cocci. Organisms of the genus Streptococcus are characterized by their capacity to produce chains of cocci of varying lengths. The 40 species of Streptococcus that are included in Bergey's Manual are divided into six categories.

Dengue Vaccine Streptococci A large group of Gram-positive cocci distributed widely in men and animals, mostly forming part of normal flora, but some species responsible for some major infections. The medically significant streptococci may be conveniently divided on the basis of either hemolysin on blood agar complete hemolysins "beta, partial hemolysins "alpha. No hemolysins "gamma or by the presence or absence of a group specific carbohydrate antigen i. Normal habitat is the human upper respiratory tract and skin. Spread by airborne droplets and by contact. Survival in dust may be important. Epidemiological typing of strains based on M and T proteins useful in outbreaks. Diseases Infection of upper respiratory tract Skin and soft tissue pharyngitis, cellulitis, erysipelas, lymphadenitis. Toxic manifestation includes scarlet fever. Acute glomerulonephritis and Rheumatic fever Pyogenic infection Sample collection: Streptococcus species are non-motile, non-sporing coccus. Gram-positive cocci, cells often in pairs and chains 2. Antibiotic sensitivity test Indirect methods: It is important in the investigation of post streptococcal diseases. Estimation of DNAAs B antibody: Gram-positive coccus characteristically appearing in pairs in Gram films. Requires blood or serum for growth. Capable of aerobic and anaerobic respiration; growth may be enhanced in CO₂. Pneumonia Capsular type III frequently associated with pneumonia , Septicemia, Meningitis, Bacteraemia, Endocarditis, paricarditi, Otitis and related infection in children. Transmission via droplet spread. Sputum for microscopy and culture. Blood for culture 3. Gram-positive cocci, diplococcus, capsulated 2. Susceptible to bile and optochin. Polysaccharide capsule can be demonstrated by appropriate staining techniques. They are antigenic and in the presence of specific antiserum appear to swell quellung reaction. Antibiotic sensitivity test Enterococcus: Formerly classified in the genus Streptococcus with which they share many characteristics; there are currently 15 species of which two, E. Gram-positive cocci, cells often in pairs and chains; more ovate-appearance than streptococci. Non-fastidious; capable of aerobic and anaerobic respiration. Antibiotic sensitivity test Viridans Streptococci: There are several species of alpha-hemolytic streptococci. Most species are commensals in the mouth. Several species are capable of causing bacterial endocarditis. Load this website on your mobile.

The streptococci and enterococci are Gram-positive cocci that occur singly, in pairs, or in chains of varying lengths. Each coccus is less than 2 Åµm in diameter and can appear as spherical or ovoid.

This article has been cited by other articles in PMC. Abstract Background Streptococcus spp. The remaining PNC include a few minor pathogens and a large nonpathogenic group. Improved methods are needed for the accurate identification and differentiation of PNC. A total of PNC were collected from cows with intramammary infection and conclusively identified by 16S rRNA sequencing as reference method. Nine phenotypic microbiological tests alpha-hemolysis, CAMP reaction, esculin hydrolysis, growth on kanamycin esculin azide agar and on sodium chloride agar, inulin fermentation, hippurate hydrolysis, leucine aminopeptidase and pyrrolidonyl peptidase activity , multiplex PCR for the three major pathogens target genes for Strep. Results The probability that a strain of Strep. Applying the multiplex PCR, all strains of the three major pathogens were correctly identified and no false positive results occurred. Correct identification was observed for all strains of Strep. In the case of Strep. Conclusions The results of the present study show that reliable identification of the clinically most relevant PNC Strep. Mastitis, Cattle, Streptococci, Identification, Mass spectroscopy Background Bovine mastitis is a worldwide problem in the dairy industry. It is a disease of major economic importance, causing reduced milk quality, loss in production and increased use of drugs and veterinary services worldwide [1]. One important group of bacteria associated with bovine intramammary infection IMI includes Streptococcus Strep. The large group of PNC includes pathogenetic and apathogenetic bacteria. Pathogenic PNC are involved in clinical and subclinical mastitis and are typically observed in large dairy herds [4 , 5]. While, in the case of Strep. A recent publication, however, suggests that Strep. Intramammary infections with the major PNC pathogens, Strep. Good antimicrobial susceptibility in vitro for penicillin is reported for these major pathogens [14 , 15]. However, practitioners often report unsatisfactory success rates for the treatment of mastitis caused by Strep. Lack of accurate bacteriological diagnosis and frustration about treatment results may lead to increased use of last resort antibiotics personal communication by practitioners. As this aspect becomes more and more important and restricted use of antibiotics in the food producing industry is demanded by the consumers and legal authorities, fast and cost-effective analysis methods are needed for the identification of organisms causing IMI in order to allow for targeted treatment and optimized use of antibiotics in dairy cows [16 , 17]. Traditionally, mastitis pathogens have been identified by classical phenotypic microbiological procedures [4 , 10]. Various diagnostic improvements toward the identification of PNC have been made during the last years. A multiplex PCR method has been made commercially available, which appears to provide superior results as compared to common phenotypic tests and allows for identification of a broad spectrum of pathogens causing IMI within a few hours [18]. This method is based on analysis of the protein composition of bacteria resulting in mass spectra which may be considered as fingerprints of the cells. This method is considered to be reliable for identification of bacteria at the species level [19 - 21]. Ninety-seven were randomly selected from isolates from the study of Moret-Stalder et al. These strains were isolated during a representative epidemiological study on the prevalence of Staphylococcus aureus in Switzerland. All cows were sampled twice in randomly selected farms. Besides the staphylococci described in that publication, PNC were isolated from these milk samples and investigated in detail in the study of Wyder et al. The remaining 54 strains comprising Strep. A total of 58 Strep. All strains had been identified prior to the present study by 16S rRNA sequencing combined with phylogenetic evaluation reference method. All strains of the Viridans streptococci VS group in the present study and those used in Wyder et al. Microbiological analyses The strains under study were tested with 9 classical phenotypic tests [4 , 25]. They were evaluated after 24 h and 48 h for type of hemolysis, morphology, catalase activity and Christie-Atkins-Munch-Petersen CAMP reaction as described in Wyder et al. Hundred-and-eleven isolates including 25 Strep. The obtained lysates were then diluted 1: Table 1 Oligonucleotides used as primers for multiplex PCR in the present study Bacterium target gene protein.

Chapter 3 : The streptococci and related cocci | Veterian Key

Anaerobic gram-positive cocci and microaerophilic streptococci can be isolated from 25% to 50% of cases of endometritis, pyoderma, pelvic abscess, Bartholin glands abscess, postsurgical infections of the pelvis, and pelvic inflammatory disease.

Pathogenesis[edit] Peptostreptococcus species are commensal organisms in humans, living predominantly in the mouth, skin, gastrointestinal , vagina and urinary tracts , and are members of the gut microbiota. Under immunosuppressed or traumatic conditions these organisms can become pathogenic , as well as septicemic , harming their host. Peptostreptococcus can cause brain, liver, breast, and lung abscesses , as well as generalized necrotizing soft tissue infections. They participate in mixed anaerobic infections , a term which is used to describe infections that are caused by multiple bacteria that do not require or may even be harmed by oxygen. Anaerobic gram-positive cocci such as Peptostreptococcus are the second most frequently recovered anaerobes and account for approximately one quarter of anaerobic isolates found. Most often Anaerobic gram-positive cocci are usually recovered mixed in with other anaerobic or aerobic bacteria from various infections at different sites of the human body. This contributes to the difficulty of isolating Peptostreptococcus organisms. Peptostreptococcus is the only genus among anaerobic gram-positive cocci that is encountered in clinical infections. As such, Peptostreptococcus species are viewed as being clinically significant anaerobic cocci. Other similar clinically significant anaerobic cocci include Veillonella species gram-negative cocci , and microaerophilic streptococci aerotolerant. Anaerobic gram-positive cocci include various clinically significant species of the genus Peptostreptococcus. The species of anaerobic gram-positive cocci isolated most commonly include Peptostreptococcus magnus, Peptostreptococcus asaccharolyticus, Peptostreptococcus anaerobius, Peptostreptococcus prevotii, and Peptostreptococcus micros. Anaerobic gram-positive cocci that produce large amounts of lactic acid during the process of carbohydrate fermentation were reclassified as Streptococcus parvulus and Streptococcus morbillorum from Peptococcus or Peptostreptococcus. Most of these organisms are anaerobic, but some are microaerophilic. Due to a large amount of new research done on the human microbe and more information on bacteria, many species of bacteria have been renamed and re-classified. Based on DNA homology and whole-cell polypeptide-pattern study findings supported by phenotypic characteristics, the DNA homology group of microaerobic streptococci that was formerly known as Streptococcus anginosus or Streptococcus milleri is now composed of three distinct species: *S. anginosus*, *Streptococcus constellatus*, and *Streptococcus intermedius*. The microaerobic species *S. morbillorum* was transferred into the genus *Gemella*. A new species within the genus Peptostreptococcus is *Peptostreptococcus hydrogenalis*; it contains the indole-positive, saccharolytic strains of the genus. Adequate therapy must be taken against infections, or it could result in clinical failures. Peptostreptococci are often overlooked and they are very difficult to isolate, appropriate specimen collection is required. Peptostreptococci grow slowly which makes them increasingly resistant to antimicrobials. When anaerobic and facultative cocci were recovered most of the infection were polymicrobial. Most patients from whom microaerophilic streptococci were recovered in pure culture had abscesses e. *Magnus* is the most commonly isolated anaerobic cocci and is often recovered in pure culture. Other common peptostreptococci in the different infectious sites are *P. anaerobius* which occurs in oral infections; *P. micros* in respiratory tract infection. Bacterial synergy, the presence of which is determined by mutual induction of sepsis enhancement, increased mortality, increased abscess inducement, and enhancement of the growth of the bacterial components in mixed infections, is found between anaerobic gram-positive cocci and their aerobic and anaerobic counterparts. The ability of anaerobic gram-positive cocci and microaerophilic streptococci to produce capsular material is an important virulence mechanism, but other factors may also influence the interaction of these organisms in mixed infections. In general, Peptostreptococcus species, particularly *P. magnus*, have been recovered more often from subcutaneous and soft tissue abscesses and diabetes-related foot ulcers than from intra-abdominal infections. Peptostreptococcus infections occur more often in chronic infections. Peptostreptococcus infections are most commonly found in patients who have had or have chronic

infections. Occasionally found in other places such as abdomen, lymph nodes , bile, and eyes. All ages are susceptible to peptostreptococcus infections, however children are more likely to get head and neck infections. Anaerobic gram-positive cocci and microaerophilic streptococci are generally found mixed with other aerobic and anaerobic bacteria that originate from the mucosal surface adjacent to the infected site or that have been inoculated into the infected site. Anaerobic gram-positive cocci and microaerophilic streptococci are part of the normal skin microbiota, so it is hard to avoid contamination by these bacteria when obtaining specimens. Also isolated from sinuses, teeth and mastoid. Anaerobic gram-positive cocci and microaerophilic streptococci are often recovered in these infections. When peptostreptococci and other anaerobes predominate, aggressive treatment of acute infection can prevent chronic infection. This includes streptococcus species, and staphylococcus aureus. Bacteremia and endocarditis[edit] Peptostreptococci can cause fatal endocarditis, paravalvular abscess, and pericarditis. The most frequent source of bacteremia due to Peptostreptococcus are infections of the oropharynx , lower respiratory tract, female genital tract, abdomen, skin, and soft tissues. Recent gynecological surgery, immunosuppression , dental procedures, infections of the female genital tract, abdominal and soft tissue along with gastrointestinal surgery are predisposing factors for bacteremia due to peptostreptococcus. It is difficult to obtain appropriate culture specimens. It requires a direct lung puncture, or the use of trans-tracheal aspiration. Found in abscesses of the liver, spleen, and abdomen. Like in upper respiratory tract and dental infections, anaerobic gram-positive cocci are recovered mixed with other bacteria. In this case they are mixed with organisms of intestinal origin such as E coli, bacteroides fragilis group, and clostridium species. P magnus and P prevotii are the predominant bone and joint isolates. Management of these infections requires prolonged courses of antimicrobials and is enhanced by removal of the foreign material.

Chapter 4 : Peptostreptococcus - Wikipedia

Although the frequency at which these newly described gram-positive cocci occur in human infections is unknown, it is fairly certain that they are significant pathogens for humans.

Pathology[edit] The organisms are most abundant in the mouth, and one member of the group, *S.* Others may be involved in other mouth or gingival infections as pericoronitis. If they are introduced into the bloodstream, they have the potential of causing endocarditis, in particular in individuals with damaged heart valves. They are the most common causes of subacute bacterial endocarditis. Viridans streptococci are identified in cases of neonatal infections. This mechanism underlies their ability to cause subacute valvular heart disease following their introduction into the bloodstream.

e. Identification[edit] Phenotypic and biochemical identification. Identification of VGS to the species level can be difficult, and phenotypic identification is not always accurate. Lack of alpha hemolysis does not seem to correlate with the clinical outcome or severity of disease; no enzymatic or toxigenic effect has ever been documented as a by-product of alpha hemolysis. The VGS are a group of catalase-negative, Gram-positive cocci with a chaining morphology on microscopic examination. They are leucine aminopeptidase positive, pyrrolidonylamidase negative, and do not grow in 6. They differ from pneumococci in that they are optochin resistant and are not bile soluble. However, Richter et al. The authors also found that optochin disk testing did not perform as well as bile solubility testing for identification; in a survey of 1, isolates tested, bile solubility testing had higher sensitivity and specificity for differentiation of VGS from pneumococci. The isolates lacking beta-hemolysis are generally those grouped with the VGS. There is some evidence implicating beta-hemolytic *S.* Isolates of the *S.* Members of the group are universally positive for three biochemical reactions: These are very useful for the differentiation of this group from other VGS. The use of invalid species names has also been a particular problem with the *S.* Isolates in this group are negative for acetoin production, arginine, esculin, and mannitol and are sorbitol fermentation negative. As the organism is closely related to *S.* Bile solubility is a more specific test for *S.* The genetically heterogeneous *S.* Some taxonomists have lumped the *S.* Isolates in the *S.* Like members of the *S.* Species from this group that have been isolated from human infection include *S.* Members of the *S.* They do not hydrolyze arginine but are positive for acetoin production, esculin hydrolysis, and mannitol and sorbitol fermentation. Automated biochemical methods for identification. For the VGS, the use of automated systems for identification has historically been reported as problematic, and this theme applies to multiple automated methodologies. One of the major factors affecting the quality of the identifications generated is that the systems may not have all species represented in their databases. Among the most problematic identifications whether incorrectly identified or unresolved were the VGS; *S.* Ninety-one percent of the streptococcal isolates showed agreement between the Phoenix and the reference method. Of the 12 *S.* However, these procedures are not practical for clinical laboratories to use for identification of these organisms. Other sequence-based identification systems have subsequently been introduced for VGS species level identification. In light of the high degree of 16S rRNA gene sequence similarity, sequencing of alternative gene targets for reliable identification to the species level has been explored. One promising target, *rnpB*, was explored by Innings et al. Of the 43 species analyzed, all were identified to species level, except for 2 isolates: One other successful approach is sequence analysis of the manganese-dependent superoxide dismutase gene, described by Poyart et al. This technique was used to accurately differentiate over 29 streptococcal species, including 16 VGS species, with clear differentiation of *S.* Other techniques that have been used, with various degrees of success, are sequence analysis of the 16SS intergenic spacer region, d-alanine-d-alanine ligase gene sequencing, and hyaluronate lyase gene sequencing. In Baron S; et al. Univ of Texas Medical Branch.

Chapter 5 : Streptococci, staphylococci and micrococci | Pocket Dentistry

Other Streptococci and Catalase-negative, Gram-positive Cocci Testing Request Form Recommend on Facebook Tweet Share Compartir If your isolate is eligible for CDC typing or other characterization, please complete the form

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below in as much detail as possible.

Chapter 6 : Streptococcus “Strep” VS Staphylococcus “Staph”: How do they differ? | MRSAid

The genus streptococcus is comprised of many species of Gram positive cocci arranged in chains. They are distinguished from the other major genus of Gram-positive cocci - Staphylococcus by their cellular arrangement and their inability to produce the enzyme catalase.

Chapter 7 : Streptococcal Infections | Strep Throat | MedlinePlus

Viridans streptococci have the ability to synthesize extracellular polysaccharides. In doing so, they provide a habitat for other bacteria and contribute to the development of caries. In doing so, they provide a habitat for other bacteria and contribute to the development of caries.

Chapter 8 : Viridans streptococci - Wikipedia

Streptococci are gram-positive aerobic organisms that cause many disorders, including pharyngitis, pneumonia, wound and skin infections, sepsis, and endocarditis. Symptoms vary with the organ infected. Sequelae of infections due to group A beta-hemolytic streptococci may include rheumatic fever and.

Chapter 9 : Streptococci “ MedicoFem

Philosophy for dealing with the miscellaneous catalase-negative, gram-positive cocci. The clinical significance and impact on patient care of characterization of a clinical isolate should guide formulation of a strategy for dealing with the miscellaneous catalase-negative, gram-positive cocci.