Typing of *Streptococcus milleri* group by molecular and biochemical methods

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**Background:** Streptococci detected in various regions of the body as normal flora are Gram positive diplococci, non-sporing and non-motile bacteria. Streptococci can be classified according to biochemical and antigenic properties and the ability to produce hemolysis on blood agar. The diameter of beta hemolytic streptococci colonies are generally greater than 0.5 mm and these are called pyogen; on the other hand bacteria whose colonies are smaller than 0.5 mm (pin-point) are called Streptococcus milleri group in Europe and Streptococcus anginosus group in America. *Streptococcus milleri* group are classified into three species; *Streptococcus anginosus*, *Streptococcus intermedius*, *Streptococcus constellatus*. *S. milleri* group bacteria are genetically related to non-hemolytic streptococci.

**Methods & Materials:** 100 streptococci strains were isolated from throat samples and also from other body sites such as abscess, blood and pustules. VP, CAMP tests, esculin and urease hydrolysis, sugar fermentation tests and Niven’s arginin hydrolysis test were carried out for pin-point colonies and species identification was carried out according to Clinical and Laboratory Standards Institute (CLSI) criteria.

**Results:** All isolates were VP positive, PYR negative and did not hydrolyse hippurat; two strains were urease positive. All strains was found to be susceptible to vancomycin, ceftriaxone, cefepime, cefotaxime, levofloxacin, linezolid antibiotics. 16% of strains (10 *S.anginosus*, 4 *S.constellatus*) were found to be resistant to erythromycin. 6% of the strains (5 *S.anginosus*, 3 *S.constellatus*) were resistant to clindamycin and 5% (3 *S.constellatus* ve 2 *S.anginosus*) of the strains were found to be resistant to tetracycline. According to PCR results of 100 isolates, 56 were identified as *S.anginosus* and 8 were identified as *S.intermedius*.

**Conclusion:** It was determined that biochemical identification scheme is not satisfactory for *Streptococcus milleri* group. No emergence antibiotic resistance was determined. However, MIC should be investigated for strains isolated from sterile body parts. Commercially available biochemical kits are inadequate and identification should be supported with molecular methods. This study is thought to be a backbone for other studies in the future.

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