

The Streptococcus anginosus group: molecular pathogenicity of invasive infections-review of the literature



Abstract

Streptococcus intermedius, *Streptococcus constellatus*, and *Streptococcus anginosus* constitute the *Streptococcus anginosus* group. These species and subspecies, part of the human flora of the oropharynx and gastrointestinal tract, are clinically related to invasive pyogenic infections and a tendency to form abscesses. Synergy between members of the *S. anginosus* group and oral anaerobes has been described.

The purpose of this study is to review the various virulence factors described in literature that are involved in the pathogenicity of invasive infections due to the members of the *Streptococcus anginosus* group. The repertoire includes a variety of factors: Expression of adhesins for adherence to substrates. A cell surface protein that can bind fibronectin, platelets, fibrin, fibrin clots, and fibrinogen, mostly involved in pathogenesis of infective endocarditis. The presence of a polysaccharide capsule that provides the ability to escape phagocytosis. Production of intermedilysin, a cytolytic toxin specific for human cells that has been proved to involve in liver abscess formation. Production of hydrolytic enzymes that facilitate the local spread through tissues, such as hyaluronidase, deoxyribonuclease, chondroitin sulfatase, and glycosaminoglycan depolymerase. The immunosuppressive and B-cell mitogenic protein P90 that is produced by *S. intermedius* that stimulates suppressor lymphocytes. The superantigen genes *speM*, *ssa*, and *smeZ* that have been reported to be transferred from *Streptococcus pyogenes* to members of the *anginosus* group. The *S. anginosus* group members seem to stimulate less chemotaxis than *Staphylococcus aureus*, a characteristic that facilitates abscess formation. *Streptococcus intermedius* isolated from abscesses seems to express a small protein similar to phenol-soluble modulin $\beta 1$, a well-known staphylococcal virulence factor.

The above mentioned virulence factors differentiate the *Streptococcus anginosus* group members from the other viridans *Streptococci*. Given the aging population, immunosuppression and chronic illness, understanding those mechanisms is crucial in order to prevent and treat the invasive pyogenic infections caused by those species.

Publications

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Biography

Panagiota Xaplanteri has graduated from Medical School, Patras University in 1999 and acquired the medical specialty of Biopathology (Laboratory Medicine) in 2007. She has completed her PhD in 2008 from Medical School, Patras University, Greece and her MSc in Health Care Management, Hellenic Open University in 2018. She has worked in the following positions: Senior Assistant, Department of Microbiology, University General Hospital of Patras, Greece, 2015-today, Part time Assistant Professor, School of Rehabilitation Sciences, University of Patras, Greece, 2019-today, Part time Lecturer/ Assistant Professor, School of Sciences of Health and Care, Technological Educational Institute of Western Greece, Patras, 2007-2019. She has published more than 20 papers.



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