Commensal Pathogens in Respiratory Diseases and in Meningitis

By

Karolinska Institutet
Department of Microbiology, Tumor and Cell Biology

Abstract

The nasopharynx of small children is the normal habitat for three major bacterial pathogens Haemophilus Influenzae, Neisseria meningitidis and Streptococcus pneumoniae associated with a variety of localized and invasive diseases including sepsicaemia and meningitis. Infections caused by these commensal pathogens depend on a number of environmental, host-, as well as microbe specific factors.

The selection of humans as the site for colonization of these organisms is likely influenced by the microbial environment in the upper airways, by nutritional and physical parameters (such as temperature), as well as the host defense environment in this compartment. Some of these factors for human host adaptation will be discussed. We will also discuss factors favoring the invasion from the mucosal environment to deeper tissues, the blood stream, and the brain.

One such predisposing factor is viral infections particularly caused by influenza viruses. Others are the ability of these microbes to sense temperature gradients to modulate their invasive capacity, and the clonal diversity particularly within the pneumococcal community to combat human host defense.