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Immunosuppression and infection

While chemotherapeutic or immunosuppressive therapies have been considered as the therapeutic cornerstone for several clinical conditions such as cancer, autoimmune diseases and transplant rejection, these drugs are also known to increase the risk of infectious complications. While this is an important safety concern when prescribing immunosuppressive therapies to such patients, several human diseases show a natural immunosuppression that is also linked to a high risk of developing infectious complications. For instance, sepsis is one of the biggest causes of deaths in intensive care units and mortality is associated with both a hyperinflammatory cytokine-mediated disease phase and a protracted innate immune cell-driven immunosuppressive phase. Death associated with an immunosuppressive phase in sepsis, similar to HIV patients, is typically due to infectious complications with opportunistic pathogens. Similarly, in stroke patients, while a large proportion of immediate death is due to cerebral infarction and neurological complications, the most common post-stroke complication is that of infection, especially pneumonia, and which is equally responsible for the high morbidity and mortality observed in these patients. We have also recently shown that mechanical ventilation is linked with substantial innate immunosuppression and is likely linked to a high incidence of ventilator-associated pneumonia observed in these patients. This talk will address to mechanisms associated with some of these aetiologies and show how biomarker-directed research aiming to recognize early infections and preventive immune-based strategies could help to minimize the risk of infection and decrease morbidity and mortality in these aetiologies.

Biography

Samir Kumar Singh is a Certified Medical Doctor with a Doctorate in Pathology and a Master's degree in Laboratory Animals. He is a Full-Time Research Professor of Molecular Pathology at the Faculty of Medicine, University of Antwerp, Belgium and is affiliated to the Vaccine and Infectious Disease Institute, Belgium. He has published a well-cited body of work on molecular pathology of cancer and neurodegeneration involving patient studies and mouse modelling. He serves on several review and editorial boards and international consortia. Since 2012, his group is engaged in studying the pathomechanism of hospital acquired pneumonia especially ventilator-associated pneumonia (VAP) and has developed several authentic rat and mouse VAP as well as acute and chronic pneumonia models to study disease pathogenesis and for bio-marker discovery as well as high-throughput *in vitro* screens for new antimicrobial targets.

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