S093

1-hour Symposium

Sepsis update

Bacterial toxins in sepsis

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The superantigenic toxins of *Staphylococcus aureus* and *Streptococcus pyogenes* have fascinated immunologists and microbiologists for two decades, yet their impact on human disease is poorly understood.

Staphylococcal toxic shock syndrome (TSS), originally described in relation to suppurative non-invasive TSST-1-producing *S. aureus* infection, has markedly declined in frequency since the late 1970's; based on passive surveillance, cases of non-menstrual staphylococcal TSS are now almost as common as menstrual cases. In the UK, TSST1 remains the superantigen most likely to be associated with TSS, and the overwhelming majority of TSS cases are associated with MSSA strains. Strain-related toxin production and the response to TSST-1 can all be evaluated in superantigen-sensitive models of disease, and can inform our understanding of this uncommon condition. The extent to which superantigens influence carriage and transmission of *S. aureus* infection is however unknown.

Active surveillance of invasive *S. pyogenes* infection and toxic shock has allowed us to identify surges in disease and mortality that can be directly attributed to the emergence of *S. pyogenes* clades that possess phages encoding superantigens. This is paralleled by the emergence of novel clades associated with scarlet fever that also possess specific phages that encode superantigens. Whether the superantigens themselves promote the success of these emergent clades remains in question; certainly preclinical research points to an impact on successful nasopharyngeal carriage, however population factors such as immunity and antimicrobial resistance may be additionally important.

In contrast to the staphylococcal TSS, streptococcal toxic shock syndrome (STSS) is invariably associated with severe invasive group A streptococcal disease. As a consequence, the condition is associated with high mortality and diagnosed more frequently due to overlap with features of septic shock, providing better opportunity to study the disease and its treatment in patients. New evidence to support the use of adjuvant clindamycin and intravenous immunoglobulin, as well as potential benefits of infusions of antimicrobials will be discussed.