

TOXIC SHOCK SYNDROME, NON-STREPTOCOCCAL: Notes about the Disease

Simply stated, “non-streptococcal” toxic shock syndrome (TSS) is synonymous with TSS caused by *Staphylococcus aureus*. Clinically, it resembles streptococcal TSS with fever, hypotension, thrombocytopenia, and renal involvement, but there are several differences. A sunburn-like rash followed by desquamation is commonly seen with staphylococcal TSS, but is only occasionally seen in TSS caused by the streptococcus. Also, streptococcal TSS has a substantially higher case-fatality ratio than staph TSS, as the former is all too often accompanied by sepsis and/or severe tissue necrosis.

Epidemiologically, there are even more marked differences. First described in 1978 in a series of pre-teen and teenage children, staphylococcal TSS didn’t attract much attention until, a year or so later, cases started occurring among menstruating women using highly absorbent tampons (Rely®). Removal of this product from the market coincided with a marked decrease in the number of menstrual-associated cases of staphylococcal TSS. Although some menstrual *Staph aureus* TSS cases do continue to occur, the majority of cases currently seen are non-menstrual and as likely to occur in males as females. The risk factors of non-menstrual cases resemble those for streptococcal TSS (e.g., wound infections, osteomyelitis, burns, etc.).

The pathogenesis of staphylococcal TSS is believed to involve a particular type of toxin (TSS toxin 1 (TSST-1)) called a “superantigen.” Superantigens of various sorts are associated with several other diseases (e.g., Kawasaki syndrome, scarlet fever). A detailed discussion of their mechanisms of action is beyond the scope of this paper, but they might be thought of as non-selectively and excessively stimulating the immune system, particularly the T-cell response.¹

What is the role of Public Health in the prevention of staphylococcal TSS? Aside from surveillance, it includes the education of the public on the importance of early treatment should signs and symptoms of TSS develop and—because menstrual TSS has a significant (perhaps ~30%) recurrence rate—an emphasis on the fact that women who have ever had menstrual TSS should never use tampons again.²

1. R. LaRocque, “Staphylococcal Toxic Shock Syndrome: A Superantigen-Mediated Disease,” South Dakota State University Joint Infectious Disease Conference, 7 November 2001, <http://biomicro.sdstate.edu/WangX/Micr425/Pathogenesis/superantigenTSST.pdf>.
2. NC Issa and RL Thompson, “Staphylococcal Toxic Shock Syndrome: Suspicion and Prevention Are Keys to Control,” *Postgrad Med* 110 (2001): 55, www.postgradmed.com/issues/2001/10_01/issa.htm.