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EDITORIAL COMMENTARY

Toxic Shock Syndrome: A Diagnostic and Therapeutic Challenge!

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Toxic shock syndrome (TSS) is a severe, acute life-threatening disease affecting primarily healthy children. It is caused by exotoxins (superantigens), mainly produced by *Staphylococcus aureus* (TSST-1) and group-A beta-hemolytic streptococci (pyrogenic exotoxins A, B, or both) [1]. These exotoxins are superantigens capable of initiating non-specific, polyclonal T-cell activation and an uncontrolled immune response leading to cytokine storm. This is responsible for the clinical manifestations of TSS—high-grade fever, erythroderma, gastrointestinal symptoms, and capillary leak—that can result in hypotension with consequent multiorgan failure [1]. Children are generally more susceptible to TSS as they lack protective antibodies against the causative toxins [2].

The diagnosis is based mainly on clinical manifestations, with some laboratory parameters suggesting organ dysfunction without alternative etiologies [3]. Unfortunately, no specific diagnostic test can discriminate TSS from diseases with similar clinical features; common differentials include sepsis/septic shock, Kawasaki disease, drug reactions, COVID-19 multisystem inflammatory syndrome in children, meningococcal infection, rickettsial infections, leptospirosis, dengue fever, and enteric fever [4, 5]. As surveillance case definitions have stringent diagnostic criteria for high specificity, they should not be used clinically to rule out TSS. There is a need for a high index of suspicion for the diagnosis and initiation of treatment.

There have been limited reports of the condition from LMICs, including India, even though staphylococcal and streptococcal infections are common [6]. The study by Angurana et al. reporting the profile and outcome of 63 children admitted over a 10-y period with probable TSS admitted to the pediatric intensive care unit, adds to the literature [7]. It would have been desirable to have the total number of admissions to the PICU over this period to assess the frequency of TSS. The key differences compared to previously published series include the demonstration of organisms in a smaller proportion, more frequent use of IVIG and clindamycin, and a higher mortality. There is a lack of robust evidence to support the use of IVIG in TSS, particularly staphylococcal TSS [3, 8]. A systematic review, that included 5 studies (only one randomized trial), where most of participants were adults, has suggested a survival benefit with IVIG in clindamycin-treated patients with streptococcal TSS [8]. The use of IVIG may be considered in patients with severe staphylococcal TSS who are unresponsive to other therapeutic measures. A possible explanation for the higher mortality in the current report [7] may be related to the higher severity of illness (only patients admitted to the PICU have been included). Even though majority of the children had underlying skin and soft tissue infections (44.5%), there is a lack of information about the measures for source control.

The study by Angurana et al. sensitizes us towards this disease in a developing country setting and the need for a high index of suspicion as up to 40%–45% of patients may not display an infectious focus, and up to 50% of children may not fit the stringent diagnostic criteria [3, 7]. Finally, more clarity is needed regarding the use of IVIG in TSS.

Declarations

Conflict of Interest None.

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