Breast-Feeding the Baby to Barely Breathing: Toxic Shock secondary to Mastitis

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Introduction:

In the first reported cases of toxic shock syndrome (TSS) in the 1970s, menstrual causes were the primary source. With the removal of specific hyper-absorbent tampons and subsequent public education and regulation, the ratio of menstrual cases to non-menstrual has declined, with surgical and post-partum wound infections now making up approximately 50% of all reported toxic shock cases[1,2]. In this case we describe a rare incidence of TSS secondary to mastitis.

Case Description:

A 29 year old female three weeks post-partum after a spontaneous vaginal delivery presented with confusion and right breast pain. 48 hours prior to admission she experienced breast tenderness treated conservatively with doxycycline. The morning of admission she was disoriented and weak. Her vitals on admission were: 104^{O}F, HR 92, BP 103/77, RR 27. She was somnolent but arousable with a tender area of induration on the right breast and palmar erythema with complaints of palmar pruritus. Labs showed a WBC of 14.22, and a lactate of 4.5. She received fluids, broad-spectrum antibiotics and was transferred to the ICU. Approximately four hours later she developed a diffuse, blanching macular rash with petechiae across the upper extremities. Clindamycin was added to her treatment. Repeat labs were consistent with a mild DIC and a troponin of 8. TTE revealed an ejection fraction of 35%. Two abscesses were aspirated in the right breast, and cultures grew methicillin sensitive *Staph aureus.* For 48 hours she remained critical, on multiple vasopressors. Subsequently, her rash disappeared, she improved clinically and was discharged home. A week after discharge she experienced diffuse desquamation of her skin.

Risk Group	Annual Incidence* per 100,000 Persons at Risk (95% CI)
All TSS	**0.52 (0.32–0.77)**
All Males	0.23 (0.10–0.44)
All Females	0.79 (0.48–1.22)
All Menstrual TSS (age 13–54 yr)	**0.69 (0.39–1.16)**
Menstrual age 13–24 yr	1.41 (0.63–2.61)
Menstrual age 25–54 yr	0.43 (0.19–0.82)
All Non-menstrual TSS	**0.32 (0.12–0.67)**
Non-menstrual females ≤24 yr	0.36 (0.12–0.87)
Non-menstrual females >24 yr	0.36 (0.14–0.82)

Abbreviations: CI, Bayesian confidence interval, TSS, toxic shock syndrome; yr, year.
*Annual incidence averaged over all study years, 2000–2003 and estimated by Bayesian statistical methods and Poisson regression.
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Table 5. Average Annual Toxic Shock Syndrome Incidence by Age and Gender Groups During the Period of Most Complete Case Ascertainment, 2000–2003[2].

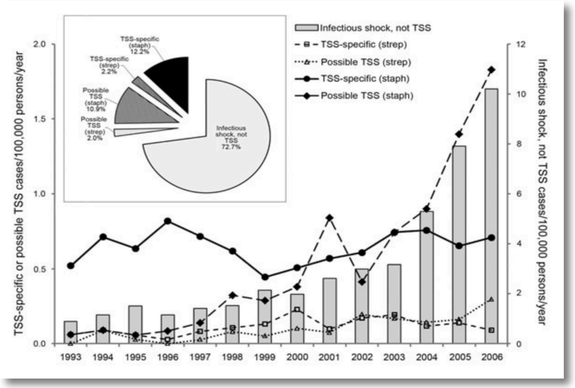

Figure 1. Yearly rates of International Classification of Diseases, Ninth Revision, Clinical Modification–coded infectious shock, Colorado, 1993–2006. Insert: cumulative proportion of cases. TSS, toxic shock syndrome; strep, streptococci; staph, staphylococci [4].

Discussion:

The rate of streptococcal TSS occurs at about 3/100,000 per year and staphylococcal TSS at 0.5/100,000 per year in the USA [3,4]. The mortality rate of streptococcal TSS is roughly 50%, while staphylococcal TSS is approximately 5% [2,3,5]. One review of 51 cases of non-menstrual TSS demonstrated mortality from non-menstrual TSS being significantly higher than menstrual TSS [6], possibly due to under-diagnosis and delayed initiation of treatment. There have been a few case reports of TSS secondary to mastitis [7-9]. In our patient, her initial symptoms progressed to severe shock within less than 48 hours. This was exacerbated by her sudden onset cardiomyopathy, a documented complication of TSS [2,10]. Considering that the rates of non-menstrual TSS have overtaken menstrual TSS in the developed world [1,2,11] awareness of the different non-menstrual etiologies is important for the clinician. This is further compounded by the fact that non-menstrual cases are very likely under-reported [2,3,4], suggesting that the true incidence is much higher. Given the danger posed and rapid acuity of the illness, simply ruling out the presence of a long-standing tampon is not enough to ignore the threat of TSS.

Implications:

1. TSS remains an uncommon but potentially fatal diagnosis, with non-menstrual causes likely going under diagnosed and under treated.
2. Treatment of TSS requires early recognition and treatment; mortality directly linked to initiation of broad-spectrum antibiotics and clindamycin.
3. Clinicians should have a low-threshold for empiric treatment of suspected TSS, particularly in patients without the “classic” history of tampon use.

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