

Menstrual toxic shock syndrome

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A 23-year-old woman presented to the emergency department with fever, headache, myalgia and frequent episodes of watery diarrhea since the previous day. Her temperature was 39.3°C, her heart rate was 132 beats/min and her blood pressure was 81/37 mm Hg. She had a decreased level of consciousness. Laboratory investigations showed a white blood cell count of 15.3 (normal 3.0 – 8.5) $\times 10^9/L$, a platelet count of 140 (normal 150 – 361) $\times 10^9/L$, a C-reactive protein level of 174 (normal 0 – 4) mg/L, an alanine aminotransferase level of 152 (normal 4 – 35) U/L and a creatinine level of 250 (normal 53 – 106) $\mu\text{mol/L}$. We suspected a food-borne source of infection because the patient had eaten food past its expiry date a few days before symptom onset, and we could not find any other apparent sources of infection. We started empiric treatment for suspected sepsis with meropenem, aggressive fluid resuscitation and blood pressure support with norepinephrine.

After admission, we discovered that the patient had started menstruating 3 days before admission and had been using a tampon for about 12 hours. We performed a vaginal culture. Shortly after admission, a diffuse, light red rash appeared on her neck and arms (Figure 1A); her skin examination had been normal when she was admitted. Her platelet count transiently decreased to $70 \times 10^9/L$ but repeat blood work showed other abnormalities resolving. Her blood pressure stabilized and we stopped norepinephrine on day 3. Blood and stool cultures were negative, but vaginal culture grew *Staphylococcus aureus* that produced toxic shock syndrome (TSS) toxin 1. Desquamation appeared on the patient's fingers, palms and soles on day 7 (Figure 1B and 1C). We diagnosed menstrual TSS. On day 4 of admission, we changed the meropenem to cefazolin (1.5 g every 6 h), to which *S. aureus* was sensitive, and continued treatment for a week. The patient made a full recovery and was discharged on day 13.

Toxic shock syndrome is caused by specific toxin-producing strains of *S. aureus* and is characterized by fever, hypotension and multiple organ dysfunction, as well as rash with desquamation during recovery.¹ It is associated with staphylococcal infections occurring during menstruation, but can also be associated with surgery, childbirth and burns. In the early stages of TSS, empirical antibiotic therapy is often started because TSS can be difficult to differentiate from sepsis. However, if TSS is confirmed, a change to antibiotics sensitive to the organism, or clindamycin, which inhibits toxin production by blocking proteases, should be considered.² Menstrual TSS is a subset of TSS, defined as TSS occurring within 4 days of menstruation onset.² The incidence of menstrual TSS is estimated at 0.5 to 1.0 per 100 000 population,³ which is about half of the reported cases of TSS.

References

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Figure 1: Photographs of a 23-year-old woman with menstrual toxic shock syndrome. (A) Three days after disease onset, a disseminated, light red rash appeared on both upper limbs. (B, C) Desquamation on the patient's fingers and palm appeared after her condition had improved.

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