

Project: Ghana Emergency Medicine Collaborative

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TOXIC SHOCK SYNDROME

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TOXIC SHOCK SYNDROME

A. Definition : toxic shock syndrome is the clinical syndrome caused by toxin elaboration from *Staphylococcus aureus* with the following features :

1. Major criteria (all 4 must be present)

a) Fever (temp > 38.9° C or 102° F)

b) Rash : diffuse macular erythroderma

c) Hypotension

1) Systolic BP \leq 90 for adults (or 5th percentile for age for children

2) Orthostatic drop in diastolic BP \geq 15 from lying to sitting

3) Orthostatic syncope or dizziness

d) Desquamation : 1 to 2 weeks after onset of illness, particularly affecting palms and soles

TOXIC SHOCK SYNDROME

2. **Multisystem involvement (3 or more must be met) :**
 - A. **Gastrointestinal : vomiting or diarrhea at onset of illness**
 - B. **Muscular : severe myalgia or CPK ↑ at least twice normal**
 - C. **Mucus membrane hyperemia : vaginal, oropharyngeal, or conjunctival**
 - D. **Renal : pyuria (> 5 WBC/hpf) without UTI, BUN or creatinine 2 x normal**
 - E. **Hepatic : total bili, SGOT, or SGPT 2 x normal**
 - F. **Hematologic : platelets ≤ 100,000/mm³**
 - G. **CNS : disoriented or altered mental status**

TOXIC SHOCK SYNDROME

3. Exclusion of sepsis (negative cultures of blood and CSF), Rocky Mtn. Spotted Fever, leptospirosis, or rubeola (no rise in antibody titer for these)

B. First described in 1978 and case definition developed by CDC in 1980

C. Inciting factors (all basically due to Staph aureus colonization)

Contraceptive sponges

Nasal packing

Postpartum

Skin abscesses

Empyema

Infected burns

Surgical wound infections

Insect bites

Infected abrasions

Septic abortion

Osteomyelitis

Septic bursitis

Fasciitis

Mastitis

TOXIC SHOCK SYNDROME

D. Differential diagnosis

1. Bacterial sepsis (esp. meningococemia) : erythroderma, ↑ CPK not present
2. Erythema multiforme : rash is different, usually not hypotensive
3. RMSF : rash is petechial / purpuric, no mucus membrane hyperemia
4. TEN (toxic epidermal necrolysis) : usually not hypotensive, no ↑ CPK or BUN
5. Leptospirosis : erythroderma not present
6. Kawasaki syndrome (MCLNS) : usually age 2 to 3 yrs, fever present 6 days, no rash, lymphadenopathy present

TOXIC SHOCK SYNDROME

Differential Diagnosis (cont.)

- 7. Scarlet fever : “sandpaper” rash, usually not hypotensive**
- 8. Acute rheumatic fever : no erythroderma**
- 9. Hemolytic uremic syndrome : purpuric rash, usually not hypotensive**
- 10. Rubeola : rash is different, no renal or hepatic problems**
- 11. Severe gastroenteritis : erythroderma absent**

TOXIC SHOCK SYNDROME

E. Complications

- 1. Persistent hypotension with secondary organ damage**
- 2. Respiratory failure : may need intubation / PEEP
(may have ARDS infiltrates on CXR)**
- 3. Renal failure : may need dialysis temporarily**
- 4. Bleeding : from thrombocytopenia**

TOXIC SHOCK SYNDROME

F. Routine procedural steps on suspicion of Dx of TSS :

- 1. O₂ / cardiac monitor**
- 2. Airway management : may need intubation / PEEP**
- 3. Large bore IV' s ; start with LR or NS ; may need 10 to 12 liters in the first 12 hours**
- 4. Remove the inciting focus**
 - a) Remove tampon ; irrigate vagina with betadine**
 - b) Drain abscess or empyema if present**
 - c) Remove any nasal or wound packing and irrigate**

TOXIC SHOCK SYNDROME

F. Routine procedural steps on suspicion of Dx of TSS (cont.)

5. Send ABG, CBC, SMA6, LFT' s, PT, PTT, platelets, calcium, creatinine, U/A
6. Vaginal, blood, throat, urine cultures
7. CXR
8. Foley
9. \pm NG
10. Swan-Ganz cath if still hypotensive despite 5 liters IV fluid
11. Admit to ICU

TOXIC SHOCK SYNDROME

G. Secondary aspects of treatment

1. IV anti-staph antibiotic (however not proven helpful)
2. IV pressors if not responding to fluids
3. IV bicarb if $\text{pH} < 7.2$ despite fluids
4. IV calcium if symptomatically hypocalcemic
5. Dialysis if develops ARF
6. Intubation / PEEP for ARDS (may be set off by initial fluid Rx)
7. IV steroids : probably not indicated

TOXIC SHOCK SYNDROME

H. In-hospital care for TSS

- 1. Monitor WBC, platelets, SMA6, calcium, LFT' s, ABG' s**
 - 2. Monitor fluid status**
 - 3. CXR daily**
 - 4. Daily vagina / wound irrigations**
 - 5. Reculture vagina / wound after clinical improvement**
 - 6. Switch from IV to PO antibiotics when improved**
- I. TSS may recur in 10 % of patients**