Information for Physicians on Invasive Group A Streptococcal Necrotizing Fasciitis, Necrotizing Myositis and Toxic Shock Syndrome

Manitoba Health
Public Health

COMMUNICABLE DISEASE CONTROL

Diagnosis

To ensure prompt management of cases and contacts of streptococcal invasive disease; and to contribute to knowledge concerning trends in the incidence, severity, incubation period, transmission and secondary attack rate; laboratories and physicians must report cases of streptococcal invasive disease to the Director of Communicable Disease Control. The reporting procedure is as follows:

A) **Laboratories**

Laboratories must report all positive cultures of Group A Streptococcal (GAS) organisms from blood, CSF, surgical tissue specimens, and other normally sterile body fluids.

B) **Physicians**

Physicians must report the following two categories of disease:

1. **GAS Necrotizing Fasciitis (NF) and Necrotizing Myositis (NM)**, also known as "flesh-eating disease," as defined by the presence of both of the following:
   - laboratory diagnosis of GAS organisms from the affected area
   - necrosis of fascia/muscle at the affected area

   NF/NM alone is a less severe infection than STSS, with a mortality rate of about 20%. However, it may progress to STSS.

2. **Streptococcal Toxic Shock Syndrome (STSS)** as defined by isolation of GAS organisms, hypotension (systolic BP ≤90 mm Hg in adults or <5th percentile for age in children), and two or more of the following:
   - renal impairment (creatinine 177 umol/L)
   - coagulopathy (platelet count ≤l00 x 10^9 or disseminated intravascular coagulation)
   - liver function abnormality (AST, ALT or total bilirubin levels ≥2 times the upper limit of normal for age)
   - adult respiratory distress syndrome (ARDS)
   - generalized erythematous macular rash that may desquamate

   STSS is the most serious manifestation of streptococcal invasive disease. It comprises a primary site of GAS infection together with the rapid onset of shock and multi-organ failure. Toxic shock syndrome due to *Staphylococcus aureus* infection has a similar clinical picture. The most common primary site of invasive GAS infections is soft tissue but pneumonia, septic arthritis and primary bacteremia may also occur. The mortality rate is up to 80% and survivors are often left with severe long-term disability.

Clinical Features

The manifestations preceding the onset of STSS, NF or NM can be vague and may include:

- pain of unusual severity
- generalized macular rash
- swelling
- bullae
- fever, chills
- nausea, vomiting, diarrhea
- flu-like symptoms
- malaise
- generalized muscle aches
- joint pain

Symptoms may progress to include hypotension, adult respiratory distress syndrome (ARDS), renal impairment or failure, and rapid onset of multi-organ failure.

Patients with STSS do **not** usually have a preceding illness such as symptoms of pharyngitis.

Inquiries about **preceding insults** may reveal a history of blunt or penetrating trauma, surgery, breaks in the skin or mucous membranes (sores, scratches, eczema, blisters, chicken pox, etc.).

Predisposing Factors

The development of invasive GAS disease appears to be facilitated by the presence of specific virulent strains and predisposing host factors, including older age and chronic health stresses such as HIV infection, cancer, cardiovascular disease, respiratory disease and alcohol abuse. However, the disease can occur in otherwise healthy children, adolescents and adults.

Treatment

Preventing death and improving the outcome depends on prompt and appropriate surgical intervention and antimicrobial therapy. Experts currently recommend:

- Penicillin 3 million Units q6h IV, **AND** Clindamycin 600 mg q8h IV

GAS has remained very sensitive to penicillin but experimental evidence suggests that the use of clindamycin may improve mortality through more efficient bacterial killing and inhibition of toxin synthesis. Ampicillin can be used as an alternative to intravenous penicillin when it is not available.

Information regarding new potential treatment regimens currently under study that may be beneficial for persons with invasive disease, such as intravenous immune globulin (IVIG), may be obtained from an infectious disease specialist.

References

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