

STREPTOCOCCAL INFECTION, GROUP A, INVASIVE: Notes about the Disease

When most people think of “strep,” it is in relation to pharyngitis (“strep throat”), impetigo, or some other everyday manifestation of disease caused by the group A streptococcus (GAS), *Streptococcus pyogenes*. Older adults can recall when rheumatic fever and glomerulonephritis—the “non-suppurative” expressions of GAS infection—were far more common than nowadays. This complex bacterium is capable of elaborating a variety of toxins and other virulence factors, and multiple serotypes (Lancefield M protein types) exist. Invasive GAS infections are far more deadly than the more common non-invasive forms and include septicemia, puerperal sepsis, pneumonia, necrotizing fasciitis, and streptococcal toxic shock syndrome.

Historically, various types of GAS disease have waxed and waned over the decades (e.g., rheumatic fever; severe scarlet fever). Vacillation over time and place has also been true of invasive GAS disease, which had been quiescent in the United States and Europe until the mid-1980s when morbidity began to increase, concomitant with an increasing prevalence of streptococcal M proteins 1 and 3. North Carolina was not spared from this.¹

Two forms of invasive GAS disease are particularly severe. **Necrotizing fasciitis**, which can be caused by bacteria other than GAS (e.g., *Vibrio vulnificus*, *Clostridium perfringens*), usually starts at a site of trauma and progresses rapidly from a painful erythematous area to a petechial, vesicular lesion with subcutaneous necrosis possibly extending into skeletal muscle tissue; case-fatality ratios can exceed 20%. The news media seem to delight in calling the cause of this disease “flesh-eating bacteria.” Notwithstanding, it is almost certainly the severity rather than the frequency of these infections that have made them so newsworthy.

Streptococcal toxic shock syndrome (TSS) should be distinguished from TSS caused by the *Staphylococcus*. Like necrotizing fasciitis, it commonly begins at the site of seemingly minor trauma and progresses rapidly as the patient becomes febrile. The site usually suddenly becomes quite painful and hypotension ensues. Case-fatality ratios with this form of invasive GAS disease can exceed 50%.

The public health community needs to actively collaborate with clinicians in spearheading and coordinating GAS surveillance activities. Educating the public on primary and secondary preventive measures for GAS infections is also an important public health task.

1. Centers for Disease Control and Prevention. [Epidemiologic Notes and Reports: Nursing Home Outbreaks of Invasive Group A Streptococcal Infections—Illinois, Kansas, North Carolina, and Texas]. *MMWR* 1990;39:[577-9], www.cdc.gov/mmwr/preview/mmwrhtml/00001735.htm.