

INVASIVE GROUP A STREPTOCOCCAL DISEASE, 1996

BACKGROUND

Streptococcal infections were a common cause of morbidity and mortality in the early and mid-19th century. This situation changed in the late 19th century when severe cases became much less common and case fatality rates dropped from approximately 30% to less than 1%. Since recognition of the streptococcal toxic shock syndrome in 1987, reports of severe invasive disease due to *Streptococcus pyogenes*, also known as Lancefield group A streptococcus (GAS), have appeared with increasing frequency in the medical literature. Theories to account for the apparent increase in incidence and severity have involved possible changes in susceptibility of the population as well as changes in the virulence of the organism itself. Following a cluster of cases of severe invasive GAS disease in 1993, the Acute Communicable Disease Control Unit (ACDC) requested reporting of invasive GAS disease by hospitals and health-care providers to better characterize the epidemiology of these infections in LAC.

METHODS

Invasive group A streptococcal (GAS) disease is defined as infection associated with the isolation of GAS from a normally sterile site and includes three overlapping clinical syndromes: (1) streptococcal toxic shock syndrome (STSS), characterized by early shock and multiorgan system failure; (2) necrotizing fasciitis (NF), characterized by necrosis of subcutaneous soft tissue and skin together with signs of severe systemic disease; and (3) a group of infections characterized by isolation of GAS from a normally sterile site in patients not meeting the criteria for STSS or NF, including bacteremia with no focus and focal infections (e.g., meningitis, pneumonia, peritonitis, osteomyelitis, septic arthritis, cellulitis, and surgical wound infection) with or without bacteremia.¹

In September 1995, the Communicable Disease Active Surveillance Project (CDAS) began active surveillance for several infectious diseases of public health importance, including invasive GAS disease, in virtually all acute care hospitals and laboratories in LAC. In July 1996 the CDAS Project was scaled back to cover approximately 60% of laboratories and hospitals in LAC; since that time, invasive GAS surveillance has consisted of a combination of passive reporting by health-care providers and active surveillance, principally laboratory-based, through the CDAS Project.

RESULTS

In 1996, 175 cases of invasive GAS disease were reported, for a crude incidence rate of 2.0 cases per 100,000 population. This compares with 83 cases in 1994 and 103 cases in 1995. The addition of active surveillance in late 1995 most likely contributed to the observed differences in numbers of reported cases. Of 80 cases for which outcome was known, there were 17 deaths, for an estimated case fatality rate of 21%. The frequency of cases of STSS and NF for 1994-1996 are shown in Table 2.

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**Table 2. Frequency of STSS and/or NF in Invasive GAS Cases
Los Angeles County, 1994-1996**

Year	STSS	NF
1994	29	18
1995	16	17
1996	9	13

Focus of Infection: The majority (61%) were reported as bacteremia without another focus of infection (Table 3). Clinical presentations for other cases included skin/soft tissue infection, surgical site infection, septic arthritis, osteomyelitis, and meningitis. Streptococcal pharyngitis was the apparent focus of infection for only one invasive GAS case. Ten cases were culture-positive from two or more sites.

**Table 3. Focus of Infection of Invasive GAS Disease Cases
Los Angeles County, 1996 (N=175)**

Focus of Infection*	No.	Percent
Bacteremia without other focus	107	61
Septic arthritis/osteomyelitis	19	10
Skin/soft tissue infection	36	21
Pneumonia	8	5
Meningitis	4	2
Surgical site infection	2	2
Other	5	3

*Some cases had more than one focus of infection.

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Seasonality: Cases occurred throughout the year but were more frequent during the winter, spring, and early summer months (Figure 2). The pronounced late winter, early spring seasonality associated with streptococcal pharyngitis was not observed.

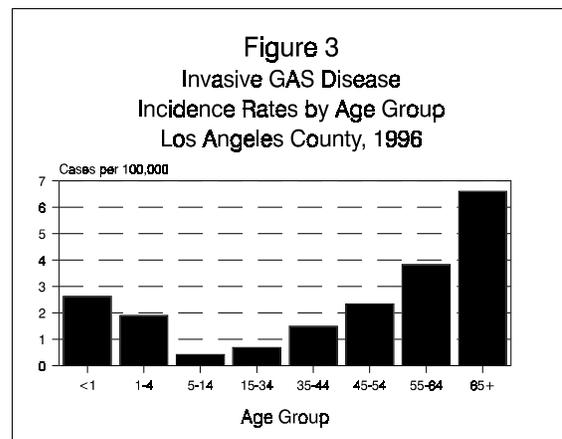
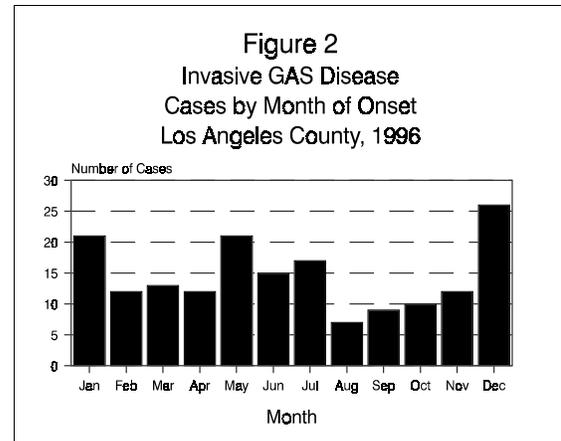
Age, Gender, Race/Ethnicity: The mean age of invasive GAS cases was 51 years (range one month to 95 years). A bimodal age distribution was observed, with higher incidence rates occurring in young children and older adults. The highest incidence rate (6.2 cases per 100,000) occurred in adults 65 years and older (Figure 3). The male-to-female rate ratio was 1.4:1. Race/ethnicity data were incomplete for cases reported only by laboratories. Of 127 (73%) cases for which race/ethnicity was known, 11 (9%) were Asian, 13 (10%) were Black, 46 (36%) were Hispanic, and 57 (45%) were non-Hispanic White, approximating the racial/ethnic distribution for LAC as a whole.

Necrotizing Fasciitis: Thirteen cases met the case definition for necrotizing fasciitis. Nine were male and four were female. The mean age of NF cases was 41 years (range 1 to 64 years). Two patients with necrotizing fasciitis were also diagnosed with streptococcal TSS.

Streptococcal TSS: There were nine cases of streptococcal TSS. Three were male and six were female. The mean age was 35 years (range 1 to 74 years).

COMMENTS

These data are subject to several limitations. Data regarding race, clinical manifestations, and outcome tend to be incomplete in reports originating from laboratories. In general, hospital record review was conducted only for cases of necrotizing fasciitis and streptococcal TSS. As a result, it is likely that the number of deaths and the occurrence of nonbacteremic clinical manifestations are substantially underestimated. Calculated case fatality rates, however, may be higher than expected given that outcome information more likely may be recorded on cases that expire. Review of hospital records of all reported invasive GAS would have provided more complete data. Finally, meaningful year-to-year comparisons cannot be made because of variations in surveillance methodology between 1994 and 1996. Nonetheless, our calculated incidence rate of 2 cases per



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100,000 population approximates the incidence of 4-5 cases per 100,000 reported in the literature.^{2,3}

REFERENCES

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