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An Outbreak of Boils Associated with Steambathing, 1996

Boils were prevalent in Alaska in the earliest historical accounts. More recently, an outbreak of boils (furunculosis) was described among village residents in Alaska in 1984.¹ In December 1996, the Alaska Division of Public Health investigated a large outbreak of boils in a village in southwestern Alaska. Community healthcare providers were concerned that transmission was occurring during steambathing.

Background: While many homes in the village of approximately 500 persons had showers, most persons primarily bathed at one of 22 steambaths. A typical steambath consisted of a dressing room and a steam room. In general, men and women steamed separately. In late October 1996, the physician for the village reported that there had been 80 clinic visits for boils during 1996, and that *Staphylococcus aureus* was isolated from purulent material. In early September, village health care providers had initiated a health education campaign where steambath owners were requested to clean their steambaths regularly, and steambath users were requested to sit on a towel while bathing. Six *S. aureus* isolates from boils had been submitted to the U.S. Centers for Disease Control and Prevention (CDC) for further identification by pulsed field gel electrophoresis (PFGE); all had a similar pattern.

Investigation: A village resident cohort study, a case-control study, environmental cultures and further PFGE testing were completed. Persons with ≥ 1 boil (defined as an erythematous, fluctuant skin lesion occurring in a village resident between January 1 and December 12, 1996) were identified by clinic chart review and by door-to-door interviews. Environmental cultures were obtained from 9 of 22 steambaths.

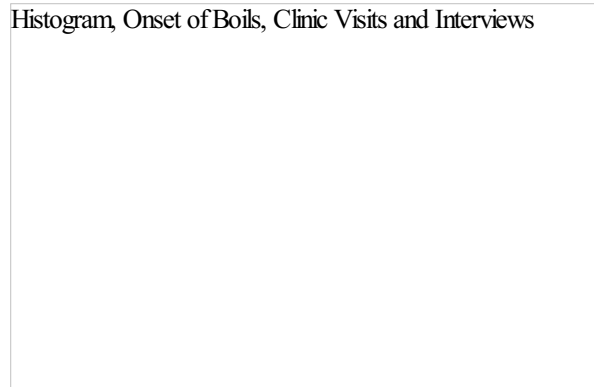
Results: During 1995, five persons had had a clinic visit for a boil. During 1996, 115 persons met the case definition (Figure 1); two persons were hospitalized. Males had a higher attack rate (74/248 [29.8%]) than females (41/211 [19.4%]) (Relative Risk 1.5 [95% confidence interval (CI) 1.1 - 2.2]). The highest age-specific attack rate was among persons aged 25-34 years (32/76 [42.1%]), while the lowest was among persons aged 0-4 years (8/69 [11.6%]). There were no cases among the 23 children < 2 years; only one child < 2 years was known to have steambathed. Of persons with boils, 62/115 (53.9%) had a boil on the buttocks/posterior thigh. Males (60%) were more likely than females (42.5%) to have had a boil located at this site, as were persons ≥ 10 years of age (62.1%) when compared to younger persons (28.6%) Only one (14.3%) of seven persons who did not steambathe had a boil located on the buttocks/posterior thigh.

The case-control study using interview data revealed that boils were associated with steambathing (OR 5.7 [95% CI 2.4-14.4]) and having another household member with a boil (OR 3.5 [95% CI 2.0-6.4]). Among those who steambathed, those who routinely steamed with < 8 persons (OR 0.3 [95% CI 0.1-0.6]), steamed less frequently than daily (OR 0.5 [95% CI 0.3-1.0]), used personal soap instead of shared soap (OR 0.3 [95% CI 0.1-0.6]), or routinely sat on a towel (OR 0.3 [95% CI 0.2-0.6]) were protected from boils.

Following multivariate analysis of general variables, steambathing (OR 8.1 [95% CI 3.3-20.1]), having another household member with a boil (OR 4.6; 95% CI 2.4-8.9), and male sex (OR 2.3; 95% CI 1.3-3.9) remained associated with having a boil. Sitting on a towel and steambathing with < 8 persons were the only protective variables at a statistically significant level.

Using PFGE, CDC tested 18 *S. aureus* isolates from boils from the village during 1996. Fourteen isolates (78%) had the same pattern. Of 93 environmental cultures, one *S. aureus* isolate was obtained from a dressing room bench of a steambath but was not of the majority pattern. Methicillin-resistance was found among isolates from boils.

Histogram, Onset of Boils, Clinic Visits and Interviews



Discussion: Boils resulting from *S. aureus* infection were associated with steambathing in this village and continued to occur. Males, who were less likely to sit on a towel on the steam bench, were more likely to have had a boil than females. Among those who steambathed, sitting on a towel on the steam bench and steambathing with < 8 persons were the only statistically significant protective factors in multivariate analysis. In univariate analysis, steaming with < 8 persons, steaming less than every day, and using personal soap decreased the likelihood of boils.

Outbreaks of furunculosis in Alaska villages have occurred periodically. The outbreak described here was clearly associated with steambathing and the 1984 village outbreak may have been. Ideally, protective practices, including sitting on a towel on the steam bench, using personal soap, steaming with smaller numbers of persons, and regularly cleaning steambaths, should be encouraged so that periodic outbreaks are reduced in size and frequency. Once an outbreak occurs, medical treatment should be limited to incision/drainage and local wound care. Antibiotic use should be restricted to those with severe cellulitis or systemic illness to avoid development of antibiotic resistance.

References

1. Cartter M. Hyperendemic furunculosis in residents of an Alaskan Eskimo village. EIS Regional Conference; 1985: Ann Arbor, Michigan.

(Contributed by Michael G. Landen, MD, MPH. Thanks to Annie Chocknok, CHA; Richard Ascher, MD; and Barbara J. McCumber, FNP)