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Pseudomonas Dermatitis-Hot Tub Party Ends In Lumps and Bumps

On November 12, 1982 an Anchorage physician requested assistance in the diagnosis of illness in a 22-year-old woman who had developed subcutaneous nodules of her fingers and toes, followed by a generalized follicular dermatitis. Two days prior to onset of her symptoms, she had participated in a hot tub party. Another participant also was seen by the physician for generalized follicular lesions; the two patients described several other cases. *Pseudomonas* dermatitis was suspected. Cultures were recommended. An epidemiologic investigation was initiated, and 15 of 17 participants at the hot tub party were contacted. The referring physician participated in the investigation.

Investigation revealed that 11 of 17 participants at a hot tub party November 5-6 developed folliculitis or otitis externa. Onset of illness occurred within 36-72 hours of immersion in the tub. In six cases, inflammation of Montgomery's follicles of the breast was prominent. Four patients reported chills and malaise. Among them was the 22-year-old woman whose subcutaneous nodules were consistent with *pseudomonas* sepsis. This patient was not febrile and had a normal white blood cell count and differential and a single negative blood culture. She developed approximately 50 skin lesions; *Pseudomonas aeruginosa* was cultured from several.

At 2:00 p.m., November 5, the rented hot tub was towed to an Anchorage front yard. Groups of 1-6 sat in the tub, sipped champagne, and enjoyed the relaxing waters. At 10:00 p.m. the drain of the tub became loose and tap water was added, cooling the tub substantially. While the tub had been approximately 104°F before 10:00 p.m., by 2:30 a.m. the temperature had fallen to 90°F. Showering and shampooing after leaving the tub did not seem to offer protection from development of dermatitis. Both total duration in the tub and presence in the tub after 10:00 p.m. were associated with development of rash. The woman who developed subcutaneous nodules and extensive folliculitis spent the longest time, 2½ hours, in the tub.

Cultures were taken from drains, from wood splinters obtained from the tub's cedar lining, and from water thawed out of tubes in the tub. *Pseudomonas* grew from all cultures. The tub's owner stated that he had monitored chlorine levels four times during the party (all prior to 10:30 p.m.) and that levels were in accordance with recommendations (1.0 ppm free chlorine). The owner reported that another group which had rented the tub previously had reported rashes among participants.

Folliculitis in association with hot tubs is not a new phenomenon. Approximately 300 outbreaks were identified in a nationwide poll of state and local health departments. The appearance of illness consistent with *pseudomonas* sepsis is novel. It is believed that once *pseudomonas* contaminates a wooden hot tub eradication is impossible. Chlorination can, at best, limit overgrowth of organisms. Under conditions of optimal pH, temperature, and chlorine level, illness is unlikely to occur following immersion, but optimal conditions are unlikely to occur under usual conditions of use. Because of the risk of infection and inability to effectively decontaminate wooden tubs, commercial use of wood-lined hot tubs has been banned by the State of Oregon. Tubing lined with plastic or urethane do not appear to present similar risks. The association of dermatitis with privately owned and operated hot tubs has not been well examined.

(Reported by John Kleeman, M.D., Anchorage; Bob Pratt, Division of Environmental Health, Municipality of Anchorage; Rose Tanaka, South Central Regional Lab; Ilika Geistauts, South Central Regional Lab)