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Cercarial Dermatitis (Swimmer's Itch)

Outbreaks of schistosome dermatitis in Alaska have been reported in literature as early as 1940. Swimmer's itch or cercarial dermatitis is global in distribution, and in the U.S., it has most often been detected in the Great Lakes region, especially Michigan, Wisconsin, Illinois, Minnesota, the Dakotas, and Nebraska. This may be due to the proximity of these states to the Mississippi flyaway which is an area for avian hosts. Reports of swimmer's itch have also been received from California, Washington and most Canadian provinces.

In Alaska, reports have been received from Beaver (six miles from the Arctic Circle), Wasilla, Lucille, and Nancy Lakes in the Mat-Su Valley, and recently from Mirror Lake in the Anchorage Municipality and many lakes and gravel pits in the interior.

The life cycle of the human schistosome begins when its eggs are passed in the feces of the primary host: a waterfowl, marshbird, finch, muskrat, vole or mouse. Once they are deposited in water the fully developed larval stage (miracidium) contained in each egg hatches and begins its search for a snail host. Having found a proper snail the miracidia mature into multiple sporocysts. The sporocysts give rise to hundreds of cercariae which leave the host snail to seek a warm-blooded host. If a host is found they attach to skin and penetrate with the aid of histolytic enzymes. In man the cycle dead-ends here, but in other animals a systemic infection occurs leading to maturation of adult trematode flukes. These flukes then lay eggs in the intestinal wall where the ova then penetrate to reach feces and renew the cycle.

Man is, of course, an accidental host. The cercaria penetrate and die beneath the epidermis causing an immediate hypersensitivity response. This response is variable and is apparently dependent on the degree of hypersensitivity induced by previous exposures. The evolution of resulting skin lesions is well documented. "The human host is first aware of a prickling sensation when cercaria penetrate the skin. The tingling lasts up to one hour and is accompanied by a macular eruption. Diffuse erythema or urticaria may occur during this stage. The primary itching subsides and a quiescent period ensues during which the lesions may resolve. After an interval of ten to fifteen hours, a maculopapular eruption occurs accompanied by intensive itching and occasionally by purpuric lesions. This response resolves in about one week. Vesicle formation is not usual after the second and third day. Pustules may form if secondary infection occurs. Residual pigmentation at the site of the lesion may persist for weeks or months. Systemic symptoms are frequent. The lesions are commonly confused with those of a contact dermatitis, poison ivy and insect bites from chiggers or mosquitoes (1)."

When the cercaria are shed from the infected snails, they remain within a few inches or feet of the infected snail unless they are carried great distances by winds or currents. Individual swimmers in warm shallow water near aquatic weeds appear the most likely to become infected. Children are thus at an increased risk of exposure. As snails become more abundant as summer progresses, there is an increased possibility for swimmer's itch.

The prevention or control of swimmer's itch can be accomplished by avoidance of all aquatic activities in areas where swimmer's itch is known, or elimination of the snail host either through the use of molluscicides or removing aquatic vegetation. Treatment of the dermatitis is directed at relieving pruritis and preventing secondary infection.

REFERENCES

1. Oliver L: Schistosome dermatitis: A sensitization phenomenon. *Am J Hyg* 49:290-302. 1949
2. Hoeffler D F: Cercarial dermatitis: Its etiology, epidemiology and clinical aspects. *Arch Environ Health* 29:225-229, 1974