

Abstract

BACKGROUND:

Previous studies suggest that humans can acquire immunity to reinfection with schistosomes, most probably due to immunologic mechanisms acquired after exposure to dying schistosome worms.

METHODOLOGY/PRINCIPAL FINDINGS:

We followed longitudinally two cohorts of adult males occupationally exposed to *Schistosoma mansoni* by washing cars (120 men) or harvesting sand (53 men) in Lake Victoria. Men were treated with praziquantel each time *S. mansoni* infection was detected. In car washers, a significant increase in resistance to reinfection, as measured by the number of cars washed between cure and reinfection, was observed after the car washers had experienced, on average, seven cures. In the car washers who developed resistance, the level of schistosome-specific IgE increased between baseline and the time at which development of resistance was first evidenced. In the sand harvesters, a significant increase in resistance, as measured by the number of days worked in the lake between cure and reinfection, was observed after only two cures. History of exposure to *S. mansoni* differed between the two cohorts, with the majority of sand harvesters being lifelong residents of a village endemic for *S. mansoni* and the majority of car washers having little exposure to the lake before they began washing cars. Immune responses at study entry were indicative of more recent infections in car washers and more chronic infections in sand harvesters.

CONCLUSIONS/SIGNIFICANCE:

Resistance to reinfection with *S. mansoni* can be acquired or augmented by adults after multiple rounds of reinfection and cure, but the rate at which resistance is acquired by this means depends on immunologic status and history of exposure to *S. mansoni* infection.