

ABSTRACT

Description of *Trichobilharzia regenti* as a new species of nasal bird schistosome in 1998 was only the first step in our knowledge of this extraordinary parasite. Natural definitive hosts of *T. regenti* are anseriform birds, but infective larvae – cercariae – are able to penetrate also into mammalian hosts including humans. There they are causative agents of hypersensitive skin immune reaction called cercarial dermatitis or swimmer's itch.

Contrary to other schistosomes, miracidia of *T. regenti* hatch directly inside the definitive host tissue. Schistosomula migrate through the nervous system of vertebrates and, together with adult worms, they have predominantly extravascular localization in definitive hosts. Adult worms have a short lifespan and low degree of sexual dimorphism, connected with lower dependence of adult females on long-term contact with males.

During the life cycle, *T. regenti* can be found within three different environments (freshwater, tissue of intermediate molluscan host and tissue of vertebrate host). Each of the seven developmental stages has a different role in the life cycle which corresponds with different organization of various organ systems.

The introductory part of the thesis is focused entirely on ontogenetic changes of surface ultrastructure and body musculature of particular stages of *T. regenti* and other (especially human) schistosomes. The attached publications are then concentrated on tegumental transformation of schistosomula *in vitro*, changes in arrangement of body musculature during *T. regenti* life cycle and localization of dominant antigenic structures on the surface and in the body of cercariae, schistosomula and adult worms of *T. regenti*.

Due to close taxonomical relationship and similar life cycle, many characteristics of surface tegument and body musculature of *T. regenti* resemble those of human schistosomes. Mechanism of gradual transformation of the cercarial head organ to the oral sucker of schistosomula, or presence of radial muscle fibers in cercarial body and subsequent increase of their number in schistosomula and adult worms have newly been described for *T. regenti*. Based on photodocumentation from accessible articles, the above mentioned changes of muscle organization concern not only *T. regenti*, but presumably also the entire family Schistosomatidae.

The most apparent differences between the teguments of human schistosomes and *T. regenti* can be found in adult worms. While in human schistosomes the male tegument has usually more complicated topography compared to females, both genders of *T. regenti* show similar tegumental ultrastructure.