

Research article

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A study on cercarial dermatitis in Khuzestan province, south western Iran

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Abstract

Background: Cercarial dermatitis' or swimmer's itch' is an itchy inflammatory response to the penetration of the skin by non-human schistosome parasites. In the hot season, (May to September) in Khuzestan province in the south west of Iran, swimming in canals and agriculture activities in swampy areas are common. This survey was made on people from villages north of Ahwaz city in south west Iran, to estimate cercarial dermatitis in this region.

Methods: 2000 people were observed for clinical signs of cercarial dermatitis. Also 2000 *Lymnaea gedrosiana* snails were collected from agriculture canals and examined for animal schistosome cercariae during 1998–2000.

Results: From this survey 1.1% of people had pruritic maculopapular rash on their feet, hands or other parts of body. From the total of examined snails, 2.4% were found to be infected with bird schistosome cercariae including *Trichobilharzia* species.

Conclusion: Cercarial dermatitis could be a health problem in this area. This is the first report of cercarial dermatitis from this region of Iran.

Background

Cercarial dermatitis is a parasitic disease that has worldwide distribution. Dermatitis caused by the cercariae of animal schistosomes has been reported from many countries in Europe and America [1-6]. Furthermore, an examination of *Lymnaea stagnalis* snails in Germany showed a constant low prevalence of *Trichobilharzia* cercariae [7].

Khuzestan province in the south west of Iran, has very hot (>50°C) weather from May to September. The people of this area swim in the rivers and agriculture canals during summer to reduce their body temperature. At the same

time various fresh water snails, including *Lymnaea gedrosiana* are observed to be abundant in the these canals. In this respect, the author observed many snails in agriculture canals in this region during a previous research project entitled "Faunistic survey on cercariae of fresh water snails" [8]. It must be mentioned, the domestic and wild ducks are common in this region.

The purpose of the present study was to determine the animal schistosome cercariae in *Lymnaea* snails and human cercarial dermatitis in this rural area of south western Iran.

Methods

The rural area to the north of Ahwaz city including, Bamdezh and Mazreeh districts were chosen for this study, because there are many canals in this region.

Cercarial dermatitis detection

To detect human case(s) of cercarial dermatitis, During 1998–2000 the field team visited the 2000 people in a home to home intervention and asked for the presence of itching and maculopapular rash or eruption on the body especially hands or feet during 1998–2000. Clinical symptoms were recorded. This study was approved by Ethic Committee of Tehran University of Medical sciences.

Cercariae detection from *Lymnaea gedrosiana*

To detect snails infected with animal schistosome cercariae, 2000 *Lymnaea gedrosiana* snails were collected and transferred to Ahwaz health research centre. To obtain cercariae, *Lymnaea* snails were examined for shedding cercariae by using artificial light or leaving over night or by crushing methods by removing the snails and crushing them against a glass plate. Cercariae were collected and fixed in 5% hot formaldehyde and cleared in lactophenol or stained with azocarmine. Cercariae were identified by systematic key references [9].

Results

From the people examined in this survey for cercarial dermatitis 22 persons (1.1%) were found to have dermatitis symptoms. Dermatitis was observed as a macular or papular rash on the hands or feet. The symptoms were abundant in children (figure 1). These symptoms appeared on the author's hand after handling infected snails in the laboratory.

From the total of *Lymnaea* snails which were examined for animal schistosome cercariae, 48 (2.1%) were found to be infected with brevifurcate-apharyngeate distome cercariae, *Trichobilharzia* sp. (Figure 2).

Discussion

Trichobilharzia spp cause cercarial dermatitis as a result of their penetration into the skin [10]. There are no readily available and easy tests for cercarial dermatitis. Diagnosis is based on a history of exposure to water that may be contaminated with cercariae. Cercarial dermatitis has been reported from Caspian Sea region in the north of Iran [11]. In the summer season, Khuzestan province in the south west of Iran is very hot. For this reason, people especially children swim and play in the rivers or canals which are used for agriculture purposes. In addition many young children work on the agricultural farms without any protection on their hands or feet areas where animal schistosome cercariae can readily penetrate the skin. The



Figure 1
Maculopapular rash on hands and feet in cercarial dermatitis.

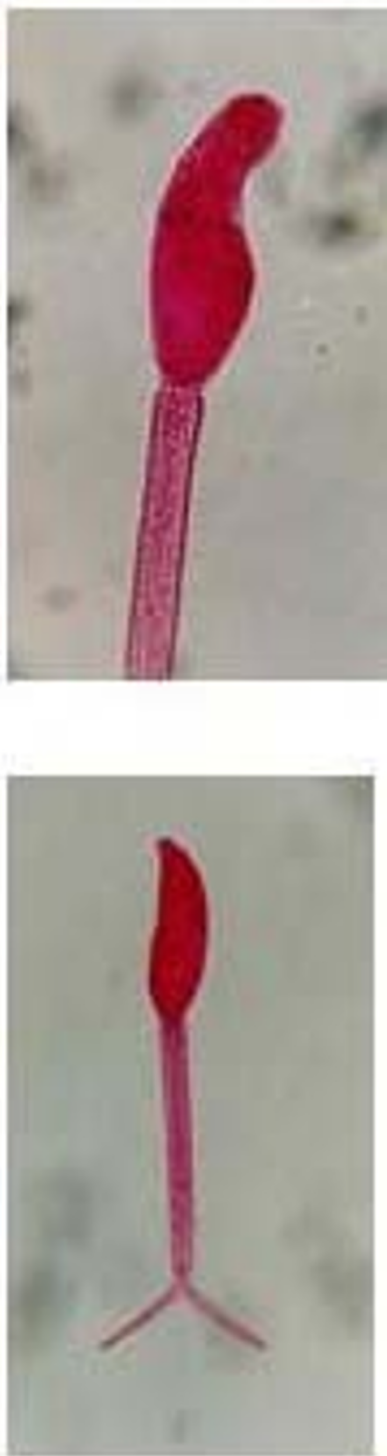


Figure 2
Cercaria of *Trichobilharzia* species

majority of cercarial dermatitis cases were observed as maculopapular rashes in the children. According to their claims, a burning sensation appeared after water drops had dried on their skin and they had itchy sensation on the skin. Symptoms started with erythema (reddening of the skin), itching and several hours later maculopapular rashes appeared. Most frequently cases occur in July to August due to shedding cercariae and people bathing. The people use saline water for the treatment of itching and dermatitis. Although, they claimed, their itching had reduced by saline water; however these patients were referred to physicians for treatment with cortisone cream. Cortisone (steroid) skin preparations decreased local swelling and itching. People were satisfied by the reducing itching or disappearance of rashes. Minutes after handling cercariae infested water, the author experienced a prickling sensation or itchiness on his hand, after several hours erythema and urticaria developed.

Lymnaea gedrosiana snails are abundant in the canals and living in different ecological habitats. They were observed at the oxygenated marginal water surface of canals. Various cercariae species including, xiphidiocercariae, strigeid cercariae, echinostome cercariae, and animal schistosome cercariae were obtained from *Lymnaea gedrosiana* in the health research laboratory by shedding or crushing methods. Cercariae of animal schistosomes could be confused with strigeid cercariae, however, the former lack a pharynx. These cercariae belonged to non-human schistosome especially bird schistosomes including, *Trichobilharzia* spp. This bird schistosome was, with its total body length of approx. 700–800 μm , large and was easy to distinguish with the naked eye. Good features for recognition were the bifurcated tail, eyespots, flame cells and arrangement of penetration glands [4]. Two eyespots were found in the body; the pharynx and oral sucker were fused together into a head organ; the intestinal system was reduced. The cercariae were strongly positively phototactic, i.e. they swimed towards a light source and congregated there.

The simultaneous occurrence of three phenomena, bathing habits, colonization by *Lymnaea*, and settlement of many duck colonies combined with long hours of sunshine in the summer, are responsible for most of the foci of cercarial dermatitis. Control of this condition is difficult, requiring strict maintenance of bodies of water and if necessary the use of molluscicides such as niclosamide. The use of praziquantel in baits for treating the definitive hosts appears to interrupt the natural cycle of avian schistosomatidae [12].

Conclusions

In brief, due to presence of infected snails and bathing of swimmers, cercarial dermatitis in the Khuzestan people especially children is noted in the hot summer season.

Competing interests

None declared.

Authors' contributions

AF: Parasitologist and Principle investigator

ME: Pathologist

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