DEPARTMENT OF HEALTH



Schistosomiasis Transcript

MINNESOTA CENTER OF EXCELLENCE IN NEWCOMER HEALTH MICROLEARNING SERIES

Hello, I'm Dr. Andrea Shahum. I'm an infectious disease physician, and I work at Infectious Disease & Travel Clinic with HealthPartners in Minnesota. Welcome to our Microlearning series presented by the Minnesota Center of Excellence in Newcomer Health. This series is designated to help health care providers, clinical teams, and public health workers better understand best practices for refugee health.

Today's training will give an overview of schistosomiasis. The learning objectives for this microlearning are to review schistosomiasis infection, symptoms, epidemiology, provide screening recommendations, and discuss diagnosis and treatment.

What is schistosomiasis? Schistosomiasis, also known as bilharzia or "snail fever," is a parasitic disease caused by trematode worms. There are five primary species affecting humans: *Schistosoma mansoni, haematobium, japonicum, intercalatum,* and *mekongi.* For transmission to occur, a person needs to have contact with freshwater containing infected snails.

Infection occurs when larvae penetrate the skin and migrate to the circulatory system. Adult worms travel to a species-specific anatomic location such as the venous system of the bowel or bladder where they lay eggs. Eggs are then passed through urine and stool. Symptoms of infection are mainly caused by the body's reaction to trapped eggs. The clinical presentation depends on specific anatomic location, primarily the intestinal or urogenital tracts.

Acute schistosomiasis is a hypersensitivity response to maturing *Schistosoma*, which typically occurs after a first-time infection in non-immune individuals such as travelers, not newcomers. It can present in two different forms. The first is a transient dermatitis rash or "swimmer's itch" which occurs within 24 hours of water exposure. The second form is Katayama fever, which is a systemic hypersensitivity reaction and occurs approximately three to 12 weeks after exposure. This syndrome may present with high fever, eosinophilia, angioedema, abdominal pain, diarrhea, hepatosplenomegaly, and lymphadenopathy.

Chronic schistosomiasis is a late stage of infection caused by eggs trapped in the host's tissues leading to chronic granulomatous inflammation and fibrosis. Chronic schistosomiasis mainly occurs among people who live or lived in endemic areas. There are two major forms. The first is **intestinal** which is caused by *Schistosoma mansoni, mekongi,* and *intercalatum,* and can present with abdominal pain; diarrhea; hematochezia; colon abnormalities; but also hepatic fibrosis, which might lead to portal hypertension and splenomegaly. The second form is **genitourinary** which is caused by *Schistosoma haematobium.* It presents with hematuria, bladder calcification, it can also cause lesions of the female genital tract. Among males it may presents with epididymitis or hematospermia. In both cases it can lead or result in infertility.

Infection is prevalent in tropical and subtropical regions, particularly in sub-Saharan Africa where the majority of cases occur, followed by the Middle East, Southeast Asia, and parts of South America.

Diagnosis methods include serology, microscopy, and tissue biopsy. Commercially available serologic tests have variable specificity depending on the antigen used. They may also cross-react with other helminth infections. Serology does not distinguish between past and current infections and may not identify an acute infection as it takes approximately six to eight weeks for antibodies to develop. Microscopic detection of eggs in stools or urine is the gold standard, but several specimens are needed to detect eggs. Tissue biopsy allows direct visualization of granulomas surrounding eggs in organ tissue. The decision of where to obtain tissue from for a biopsy is guided by a patient's symptoms.

Serology testing is recommended for asymptomatic persons from sub-Saharan Africa who did not receive overseas presumptive treatment prior to U.S. arrival. Asymptomatic testing is also recommended for persons from any endemic regions prior to organ donation. Persons from any endemic region with symptoms of chronic infection or eosinophilia should be tested for *Schistosoma* antibodies together with microscopy of the stool or urine, or tissue biopsy depending on symptoms.

Praziquantel is the treatment of choice for schistosomiasis, but it's only effective against mature adult worms; therefore, treatment should be given at least four to eight weeks following exposure, once infection is well established and the worms have fully matured. Praziquantel is active against all *Schistosoma* species, but dosing is species specific. Cure rates are between 60-90%. Therefore, if patient has persistent symptoms or eosinophilia, further investigation or repeat treatment may be necessary.

Praziquantel can be used in pregnancy and during breastfeeding. Regarding the pediatric population, unless an infant has direct skin-to-fresh water contact, infection is relatively unlikely, and therefore testing is not recommended. However, if an infant tests positive for *Schistosoma* antibodies, the result should be interpreted in consultation with CDC experts. Praziquantel can be used in children as young as 1 year of age. Tablets may be crushed or disintegrated and mixed with food or liquid.

Thank you for listening to today's training. Please refer to the supplemental information document posted on the COE website and visit the CDC website to learn more about schistosomiasis.

Minnesota Department of Health Center of Excellence in Newcomer Health PO Box 64975 St. Paul, MN 55164-0975 651-201-5414 <u>MNCOENewcomerHealth@state.mn.us</u> www.health.state.mn.us

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