

Rat Lungworm Expands into North America

[Announcer] This program is presented by the Centers for Disease Control and Prevention.

[Sarah Gregory] Using quantitative PCR analysis and DNA sequencing, the authors provide evidence for the presence of the rat lungworm in Oklahoma and identified a potentially novel rat host. The results indicate a geographic range expansion for this medically and ecologically relevant parasite in North America.

Today I'm talking with Emily York, integrated pest management specialist at the Sam Noble Museum of Natural History, about her article on the rat lungworm expansion in North America. Welcome Emily.

[Emily York] Hi! Thank you for having me.

[Sarah Gregory] So, what is rat lungworm?

[Emily York] The rat lungworm is a small parasitic roundworm that relies on rats to complete their life cycle. Adults are 15 to 33 millimeters in length, with females being larger than males. The rat lungworm was first described from rats in China in 1935. This parasite requires two different hosts to complete its life cycle: an intermediate host, one in which the parasite grows, and a definitive host, one in which the parasite reaches sexual maturity and completes its life cycle. Intermediate hosts include snails, slugs, and mollusks, whereas definitive hosts are rodents.

[Sarah Gregory] How do people get infected with this rat lungworm?

[Emily York] People become infected with the rat lungworm through unintentional consumption of the third stage larva found in the intermediate hosts. There has also been some evidence that suggests individuals may become infected through the consumption of larva on unwashed fruits and vegetables.

[Sarah Gregory] Okay! So, what are some of the signs and symptoms of an infection in people?

[Emily York] The rat lungworm is one of the major causes of eosinophilic meningitis in humans. Some symptoms of eosinophilic meningitis include fever, headache, nausea, vomiting, and localized paralysis. Diagnosis of infection by the parasite is often difficult and relies on the consumption of an infected host by the individual. In some cases, a sample of the cerebral spinal fluid maybe screened for the presence of the parasite. There are additional screening tests that hold promise, but these are still being developed.

[Sarah Gregory] What are the geographic areas where it's found?

[Emily York] The rat lungworm has been documented in over 30 countries worldwide. However, it's primarily found in tropical and subtropical regions. Some localities include the southeast United States, Hawaii, Southeast Asia, Australia, Micronesia, Polynesia, and Sumatra.

[Sarah Gregory] So, is it new to the United States?

[Emily York] Although the parasite was first documented in the Hawaiian Islands in the 1960s, it was not found in the continental United States until late 1980s. Since then, it has been reported occasionally in the U.S., with documentation of the parasite increasing in frequency in recent years.

[Sarah Gregory] What are some factors in the distribution of it and what can be done to contain it?

[Emily York] Some important factors influencing the spread of this pathogen include the relative availability of host species and optimal abiotic factors, such as temperature and precipitation. Because this particular parasite uses a variety of species as hosts, more research is needed to determine the range of animal species that may be suitable hosts. In addition, recent work has revealed that global climate change may significantly influence the global distribution of this parasite and should be taken into consideration.

[Sarah Gregory] You found that host species show manifestations of illness from the rat lungworm. Is that helpful in containing the problem or does it make it more problematic?

[Emily York] In general, manifestation of illness in normal hosts, for example, rats, may not be a reliable or efficient method for screening the parasite in large host populations. However, if the parasite infects an accidental or dead-end host, this is more likely to cause obvious signs of illness, and this is important to note, and may be an effective strategy for detecting the spread of the parasite early on.

[Sarah Gregory] How big a public health problem is this?

[Emily York] This pathogen potentially poses a significant health problem. With no current effective treatment, possibility of range expansion by the rat lungworm, in combination with increased consumption of raw or undercooked food, will increase the likelihood of infections. As public awareness of the rat lungworm increases, we stand a better chance at preventing human infection.

[Sarah Gregory] Can people prevent themselves from getting it?

[Emily York] The best method for preventing infection is by not eating any raw or undercooked meat and thoroughly washing all fresh produce.

[Sarah Gregory] You can read the entire July 2015 article, *Geographic Range Expansion for Rat Lungworm in North America*, online at cdc.gov/eid.

I'm Sarah Gregory for Emerging Infectious Diseases.

[Announcer] For the most accurate health information, visit www.cdc.gov or call 1-800-CDC-INFO.