

Human Intestinal Parasites: Soil-transmitted Helminthiasis

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Editorial

In developing countries, parasitic infections caused by intestinal helminths and protozoan parasites are among the most common infections in humans. In developed countries, protozoan parasites are more common than helminths in causing gastrointestinal infections. In endemic countries, intestinal parasites cause significant morbidity and mortality [1].

Helminths are multicellular worms. The most common helminths in the human gut are nematodes (roundworms), cestodes (tapeworms), and trematodes (flatworms). Helminths cannot normally multiply in the human body. Protozoan parasites with a single cell can multiply within the human body. Intestinal helminthic parasites, also known as geohelminths and soil-transmitted helminths, are divided into four species: *Ascaris lumbricoides* (roundworm), *Trichiuris trichiuria* (whipworm), *Ancylostoma duodenale*, and *Necator americanicus* (hookworms). These infections are most common in developing countries' tropical and subtropical regions, where adequate water and sanitation facilities are lacking [2]. According to recent estimates, *A. lumbricoides* can infect over a billion people, *T. trichiuria* 795 million, and hookworms 740 million.

Other types of intestinal helminths are not common. Intestinal helminths are rarely fatal. Instead, the disease burden is related to less mortality than to the host's chronic and insidious effects on health and nutritional status [3]. In addition to their health consequences, intestinal helminth infections impair children's physical and mental development, impede educational achievement, and impede economic development.

The most common intestinal protozoan parasites are: *Giardia intestinalis*, *Entamoeba histolytica*, *Cyclospora cayetanensis*, and *Cryptosporidium* spp. The diseases caused by these intestinal protozoan parasites are known as giardiasis, amoebiasis, cyclosporiasis, and cryptosporidiosis respectively, and they are associated with diarrhea. *G. intestinalis* is the most prevalent parasitic cause of diarrhoea in the developed world, and this infection is also very common in developing countries.

Parasitic infections, caused by intestinal helminths and protozoan parasites, are among the most prevalent infections in humans in developing countries. In developed countries, protozoan parasites more commonly cause gastrointestinal infections compared to helminths. Intestinal parasites cause a significant morbidity and mortality in endemic countries.

Helminths are worms with many cells. Nematodes (roundworms), cestodes (tapeworms), and trematodes (flatworms) are among the most common helminths that inhabit the human gut [4]. Usually, helminths cannot multiply in the human body. Protozoan parasites that have only one cell can multiply inside the human body. There are four species of intestinal helminthic parasites, also known as geohelminths and soil-transmitted helminths: *Ascaris lumbricoides* (roundworm), *Trichiuris trichiuria* (whipworm), *Ancylostoma duodenale*, and *Necator americanicus* (hookworms). These infections are

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most prevalent in tropical and subtropical regions of the developing world where adequate water and sanitation facilities are lacking. Recent estimates suggest that *A. lumbricoides* can infect over a billion, *T. trichiuria* 795 million, and hookworms 740 million people. Other species of intestinal helminths are not widely prevalent. Intestinal helminths rarely cause death. Instead, the burden of disease is related to less mortality than to the chronic and insidious effects on health and nutritional status of the host. In addition to their health effects, intestinal helminth infections also impair physical and mental growth of children, thwart educational achievement, and hinder economic development.

The World Health Organization (WHO) estimates that approximately 50 million people worldwide suffer from invasive amoebic infection each year, resulting in 40-100 thousand deaths annually. Cryptosporidiosis is becoming most prevalent in both developed and developing countries among patients with AIDS and among children aged less than five years. Several outbreaks of diarrhoeal disease caused by *C. cayetanensis* have been reported during the last decade. Spread of these protozoan parasites in developing countries mostly occurs through faecal contamination as a result of poor sewage and poor quality of water. Food and water-borne outbreaks of these protozoan parasites have occurred, and the infectious cyst form of the parasites is relatively resistant to chlorine. Other species of protozoan parasites can also be found in the human gut, but they are not pathogenic, except *Microsporidia* sp.

Over the last several years, new approaches to the diagnosis, treatment, and prevention of intestinal protozoan parasites. However, the diagnosis and treatment of intestinal helminth infections have not been changed much, and the traditional microscopic method can be used for their diagnosis. Antigen-detection tests are now commercially available for the diagnosis of all three major intestinal protozoan parasites [5]. Diagnosis of *E. histolytica* cannot be done any longer by microscopy, since this parasite is morphologically similar to the non-pathogenic parasite *E. dispar*. *E. histolytica*-specific antigen-detection test is now commercially available from TechLab, Blacksburg, Virginia, for the detection of *E. histolytica* antigen in stool specimens.

Conflicts of Interest

None.

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