# ETIOLOGY OF HELMINTHIASES AND THE PATHOLOGIES THEY CAUSE

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**Abstract**

Parasitic diseases are among the most widespread human diseases. Currently , of the 1415 known pathogens that cause human diases, 353 are protozoan and helminthic parasites. Predictions made in the late 20th century that most parasitic diseases would come under control have not been realized. The purpose of this article is to highlight the etiological factors and transmission mechanism of helminth infections, to describe their clinical and photological effects on human health, and to substantiate effective diagnostic and preventive approaches used for the detection and control of helminthiases.

**Keywords:** Etiology of helminthiases, pathology, parasitic diseases, prevention**.**

## Introduction

The widespread occurrence of parasitic diseases has been recorded in all regions of the world,affecting approximately 4.3 billion people. According to expert estimates by the World Health Organization (WHO) helminthiases rank third among infectious and parasitic diseases in term of the total number of patients worldwide. Approximately 2 billions people across the globe are infected with helminths.

Helminth infections cause significant harm to human health and the global economy. Intestinal helminthiasis ranks fourth among the leading causes of

morbidity and injury worldwide, following diarrhea, tuberculosis and ischemic heart disease.

In individuals with mild infestations, the rate of morbidity and mortality from helminthiases remains low. However, an estimated 135.000 deaths occur annually worldwide due to helminth infections. Similar trends have been observed in Russia, where in recent years the incidence of helminth infections has increased: toxocariasis has grow by 64% annually over five years, and echinococcosis has increased several times over**.**

The etiology of helminthiases includes the causes and contributin factors that lead to helminth infections. These diseases develop as a result of infestation by parasitic worms. There are three main groups of medically important helminths: nematodes(raundworms), tremotodes(flukes), and cestodes (tapeworms).

**Nematodes (raundworms)**

Representative species include Ascaris, Enterobius, Trichuris, Ancylostoma and Stronggyloides. Most nematodes inhabit te intestine their eggs are excreted in feces , enter the external environment, and re-infect the most orally. The human roundworm (Ascaris lumbricoides) is acommon parasite found worldwide. It develops without changing its host, and the adult worms live and reproduce in the small intestine. A single female Ascaris can lay 200.000-300.000 eggs per day. Adults live for about one year, feeding on nutrients consumed by their host, and possibly on the intestinal mucosa. Ascaris infection causes a disease known as ascariasis. The pathogenic effect is due to toxic substances produced during metabolism that are absorbet in to the bloodstream, leading to intoxication. Symptoms include heatache, dizziness, fatigue,irritability,decreased memory,and reduced work capcity. When many worms accumulate, they can form intestinal blockages. Migrating larvae may pass throught the lungs, causing bronchitis or

ascariasis pneumonia, which may present with a fever up to 39-40 C. In such cases Ascaris larvae may be detected in sputum samples.

**Trematodes (Flukes)**

Examples of trematodes include Opisthorchis, Fasciola, Schistosoma. They often use aquatic mollusks as intermediate hosts and parasitize the liver , bile ducts, or blood vessels. Diseases caused by Schistosoma species are collectively known as schistosomiasis.Schistosomiasis is one of the most prevalent helminth infections in Africa, Asia and South Amerika. Schistosoma haematobium parasitizes the urinary and genital systems, while Schistosoma mansoni and schistosoma live in intestinal blood vessels. In Asia, urinary schistosomiasisis most common , while in south America, intestinal schistosomiasis predominates. Studies show that 50-70% of the population of Brazil is infected with intestinal schistosomiasis. Diagnosis is made by examining urine and stool samples for parasite eggs. Schistosomiasis is a severe chronic disease that can cause long-term disability and, if untreated, may be fatal**.**

**Cestodes (Tapeworms)**

Examples of cestodes include Taenia saginata ( beef tapeworm) and Taenia solium (pork tapeworm). These are long , unarmed worms that live in the human small intestine, causing teniarhynchiasis. Infection usually occurs through contaminated clothing or bedding that contains the eggs of the beef tapeworm. The parasite's kife cycle involves alternation of hots, with the adult tapeworm living only in the human intestine. Mature proglottids of Taenia saginata can exit the anus independently. Symptoms of teniarhychiasis include changes in appetite and abdominal pain as general clinic signs.

**Materials and Methods**

1.Preventive measures. Personal hygiene washing hands before meals and after using the toilet, keeping nails clean, food hygiene washing fruits and vegetables thoroughly properly cooking meat and fish. Drinking water hygiene using only boiled or filtered water. Heath education teaching children in schools and kindergardens about hygiene habits. 2. Anthelmitic therapy Modern medicine uses several effective drugs against helminths, such as:Albendazole-broad-spectrum, effective against many types of worms. Mebendazole – used for ascariasis, enterobiasis, trechocephalosis. 3. Biologic and environmental methods Improving sanitation and hygiene in populated areas .regular deworming and vaccination of domestic animals.cleaning and protecting forests, pastures and water saurces from fecal contamination.4. Modern scientific approaches. Immunoprophylaxis: vaccines agains certain helminth species are being developed. Nanotechnology -based medicines :targeted delivery of drugs increases treatment efficiency. Studying helminth DNA to develop new methods of therapy. We will mainly focus on the parasitological methods of studying helminthiasis. These are main diagnostic techniques used to detect helminths**. Microscopic examination** of feces – to identify helminth eggs and larvae**. Duodenal intubation** used to detect parasites in the bile ducts. Blood analysis to determine the level of eosinophilia. **Serologic methods** detected of antibodies against helminth antigens. **Molecular methods** (PCR) idendification of parasite species based on genetic material (DNA, RNA)

**Conclusion**

Helminth infections caused by nematodes primarily damage the intestinal system, although some species migrate through the blood , liver,muscles and lungs, resulting in systemic intoxication,allergic reactions, and anemia. Diagnosis is based on stool examination anal(scotch) tape test, or serologic methods. Treatment mainly relies on benzimidazole-group drugs. Prevention requires strict adherence to personal and public hygiene, avoiding consumtion of raw or undercooked meat, and

ensuring that all meat used for food has undergone veterinary and sanitary inspection. In regions where hookworm is endemic, mass deworming campaigns should be conducted regularly. Human feces must be disinfected before agricultural use to prevent the spread of infection.

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