

Features Of Helminth Infections In Clinical Pediatrics: Issues Of Diagnosis, Therapy, Prevention

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Abstract. The article shows the relevance of helminthiasis in pediatrics, the difficulties of diagnosis, modern approaches to therapy and prevention. The role of albendazole in the treatment of helminthiasis in children has been noted.

Keywords: Helminthiasis, pediatrics, diagnostics, therapy, prevention.

Introduction

The most widespread are helminth infections of the digestive organs; 80% of those affected are children. According to the World Bank, economic damage from intestinal helminthiasis ranks fourth among the costs of treating all diseases (Loboda A.M., 2011; Bodnya E.I., 2019). An insidious feature of helminthiasis is the extreme diversity of clinical manifestations - from asymptomatic (subclinical) to severe manifestations with a fatal outcome.

Materials And Methods

In the classification of helminths, roundworms (nematodes) are distinguished: pinworms, roundworms, etc.; tapeworms (cestodes): causative agents of taeniasis, taeniarinchosis, diphyllbothriasis, etc.; flukes (trematodes): cat fluke, liver fluke, etc. Based on the characteristics of their life cycle, they can be divided into geohelminths (for the development of eggs and larvae they need to stay in the soil) and biohelminths (the development of the parasite occurs with the participation of not only the definitive host, but also an intermediate one). According to their localization in the human body, helminths are classified into intestinal and extraintestinal, with tissue helminths being distinguished separately.

Results And Discussion

Today, 342 species of helminths are known that can cause disease in humans, while about 30 species are found in Ukraine. Particularly relevant helminthiasis in humans include: trematodosis - opisthorchiasis, fascioliasis; cestodiasis - diphyllbothriasis, hymenolepiasis, taeniasis, echinococcosis; nematodes - ascariasis, enterobiasis, hookworm, trichinosis, dracunculiasis, trichocephalosis. The most common is enterobiasis - 90% of cases, ascariasis - 7.4%, trichocephalosis - 1.5% (Bodnya E.I. et al., 2012).

Infection of humans with helminths can occur in various ways: food - as a result of ingestion of helminth eggs with unwashed vegetables, fruits, etc., as well as through consumption of meat of intermediate hosts containing helminth larvae; aquatic - when drinking water from reservoirs that contain helminth larvae; through the skin; through the placenta; The larvae of some helminths also enter the body through the bites of blood-sucking insects.

Among the reasons for the high prevalence of helminthiasis, it is necessary to emphasize the sanitary conditions of people's living, keeping animals, growing and preserving plants, increased migration - an intensive influx of people from regions unfavorable with regard to parasitosis. Children are the most vulnerable category of the population in relation to parasitic infestations. One of the reasons for this is knowledge of the world around us "through the mouth" and a lower level of compliance with sanitary and hygienic standards.

The pathological impact of helminths on the child's health is diverse. Among the mechanisms of action of helminths on the child's body, mechanical factors, competition for nutrients with the macroorganism, and allergization play an important role. Helminths cause mechanical damage to tissues, contribute to the penetration of infection into the body and the development of the inflammatory process, and can induce

general intoxication, anemia, hypovitaminosis, digestive dysfunction and sensitization of the body with the subsequent formation of allergic reactions. Helminths cause intestinal dysbiosis, inhibit normal intestinal microflora and weaken the local immunity of the digestive tract. Against the background of helminth infections, children more often suffer from acute intestinal and respiratory diseases.

It is well known that helminths cause severe allergization. Antigens of helminths are divided into exo- and endogenous. Exogenous antigens are secreted by the parasite during its life in the mature and larval stages and enter the host's body, constantly sensitizing it and causing the development of allergic reactions. Endogenous antigens are formed and act on the human body after the death and disintegration of the parasite. The most common manifestations of sensitization are such manifestations as eosinophilia, skin itching, various types of skin rashes, bronchospasm, and the formation of pulmonary infiltrates. The indirect influence of parasitosis on the course of allergic diseases is confirmed in numerous studies indicating that deworming leads to a decrease in bronchial hyperreactivity, a decrease in allergic inflammation and clinical manifestations of allergies.

During their life cycle, many helminths (*Ascaris*, *Toxocara*, *Echinococcus*, *Cysticercus*, *Trichinella*, etc.) go through the larval stage, while migrating larvae, or, as they are called, larval migrants, can damage organs and tissues - visceral membranes, brain, eyes, lungs, nervous system, parenchymal organs.

The oncogenicity of parasites cannot be ignored: according to many authors, more than 40 species of parasites are carcinogenic.

Even long-term parasitism may not be accompanied by a clear clinical picture that allows one to suspect helminthiasis. At the same time, the presence of helminths in a child's body leads to various changes in health. The doctor should always remember that the clinical manifestations of helminthiasis are largely nonspecific and have different masks of infectious and non-infectious diseases, which significantly complicates their diagnosis, especially early, complicates the course of diseases already existing in children and contributes to their chronicity.

A common clinical syndrome during helminth infestation, especially in the case of localization of parasites in the intestines, is dysfunction of the digestive tract: unstable stool, abdominal pain syndrome, flatulence, nausea, decreased appetite, possible disturbance of night sleep, bruxism (teeth grinding), irritability, moodiness, aggressiveness - iness, etc. Enterobiasis and ascariasis are characterized by irritation of the anus, perineum and external genitalia. The clinical picture of the initial period of many helminthiasis is due to sensitization of the body; various local and general allergic reactions develop.

A far from complete list of the pathological effects of parasites on the body is as follows: signs of chronic intoxication, immune dysfunction, allergization of the body, dyspeptic disorders, pulmonary syndrome, lymphadenopathy, myalgia, iron deficiency anemia, carcinogenesis, blockage of the bile ducts and pancreatic ducts, focus in the liver and pancreas, intestinal obstruction, appendicitis, intestinal perforation, peritonitis, etc.

Considering that enterobiasis is one of the most common helminth infections from the group of nematodes (in some children's groups up to 100% of children are infected with pinworms), special attention should always be given to it. The causative agent is the pinworm, which parasitizes the lower part of the small intestine, the cecum and the initial part of the colon. Pinworms do not exceed 1 cm in length; usually one end of this worm is pointed (hence the name) and the other is rounded; live pinworms can crawl or wriggle. Female pinworms migrate to the rectum, actively emerge from the anus and lay eggs in its circumference, which become mature after 4–6 hours. The lifespan of a female helminth is 3–4 weeks. Pinworms are nocturnal: it is at night that females emerge into the rectum and onto the skin around the anus, causing discomfort and itching, lay eggs in the folds of the skin and die.

The source of the pathogen is a sick person. Infection occurs when eggs enter the intestines through the mouth or nose. Most often, self-infection of the patient occurs: when scratching the perianal area, the fingers become contaminated, and eggs from the fingers are carried into the mouth. The period from infection to the appearance of symptoms for enterobiasis is 12–14 days: this is the time during which pinworms reach sexual maturity.

Conclusion

Today, albendazole is a broad-spectrum anthelmintic drug with a high safety profile, which is recommended by WHO for controlling the incidence of helminthiasis. For the purpose of prevention, taking into account the possibility of infection by several types of helminths at once, the preventive dosage is defined as a single dose of albendazole (Vormila) for 3 consecutive days in a dose corresponding to the age and body weight of the child, or for adults - 1 tablet once per day and night 3 days in a row. If helminths are detected or suspected in one of the family members, it is necessary to treat all family members.

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