

ART in the diagnosis of tissue helminthiasis. *Dirofilariasis*

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Dirofilariasis - a disease caused by the parasitization of the nematode *Dirofilaria repens* in the subcutaneous tissue of various parts of the body, mucous membranes and conjunctiva of the eyes, in the genitals (scrotum, testicle, etc.), mammary glands, internal membranes of tissues and organs of the human abdominal cavity. This is tissue helminthiasis, characterized by slow development and long-term chronic course.

Human infection is transmitted through the bites of blood-sucking mosquitoes of the genera *Aedes*, *Culex* and *Anopheles*. The source of mosquito infection is infested domestic dogs, as well as cats, less often wild carnivores (wolves, foxes, etc.). The transmission of invasion to humans is carried out by a mosquito infected with invasive *dirofilaria* larvae (L 3).

The problem of *dirofilariasis* is caused by the wide circulation of the pathogen in the natural environment and the lack of proper measures to identify and deworm infected animals. - obligate definitive owners (domestic dogs and cats). The true incidence of *dirofilariasis* in humans is unknown, since its official registration is not conducted. Due to the lack of awareness of doctors, *dirofilariasis* passes under various diagnoses of nonparasitic etiology. Since 2003, *dirofilariasis* is for the first time included in SanPiN 3.2.1333-03 "Prevention of parasitic diseases on the territory of the Russian Federation."

The causative agent of *dirofilariasis* belongs to the class of roundworms *Nematoda*, order *Spirurida*, suborder *Filariata*, family. *Filariidae*, genus *Dirofilaria*.

The pathogens of the invasion *D. repens* and *D. immitis*, which are widespread in Russia, are obligate parasites of the carnivorous families of the Canine and Feline, *D. ursi* - brown bear and Amur tiger. Sexually mature females of *D. repens* have a body length of 135-150 mm, *D. immitis* - 180-300 mm, *D. ursi* - 120-225 mm, males, respectively - fifty-58 mm, 100-110 mm, 51-85 mm.

Epidemiology of *dirofilariasis*

Dirofilariae develop with a double change of hosts. Sexually mature fertilized females reproduce into the blood of a definitive host of *microfilariae*, which, without changing morphologically, circulate in the circulatory system for up to 2.5 years or until they reach a blood-sucking insect, while first *microfilariae* enter the mosquito's intestines with blood, then they migrate to the body cavity and develop to the invasive stage (L 3) in the Malpighian vessels. The L 3 larvae are concentrated in the head region and lower lip of the insect, with subsequent bloodsucking, they actively penetrate the skin of the animal and continue to develop until the sexually mature stage.

Epidemic process

A person is not a source of invasion, since due to the small number and lack of simultaneous parasitization of males and females in the same person, females remain unfertilized and do not reproduce *microfilariae* in the blood, but completely exclude the possibility

microfilariaemia is not allowed. Dirofilariasis is detected among persons of various age groups- from 3 to 75 years old. The maximum number of patients is at the age of 30-39 years old, however, there were significant differences in age-related morbidity (except for the clear minimum in group 1-9 years) is not observed. Females predominate among those infested (64.6%). As a rule, one specimen of the pathogen is detected in patients (99.7%): this is a developing unfertilized female.

Usually, a person is invaded during agricultural work, during outdoor recreation - summer cottage, fishing, hunting, tourism and in other places where there are significant populations of mosquitoes and infected animals. The frequency of mosquito attacks on a person depends on the degree of their activity and number, as well as the connection of mosquitoes with a person's home. If settlements are within the flight range of mosquitoes from their breeding sites, then the probability of an attack by a natural population of mosquitoes on humans and domestic dogs increases sharply, which increases the possibility of transmitting the invasion to humans and their involvement in the epidemic process. If in 1956-1995 biennium In general, in the Russian Federation and the CHG countries, the invasion of *D.repens* was detected in 91 people, then in 1996-2001 biennium only in the Russian Federation, 152 cases of dirofilariasis were detected, mainly in residents of endemic territories in the south of the country.

Dirofilariasis is characterized by focal spread. Foci of invasion with local transmission in the temperate zone up to 55-57 deg. with. NS. identified in residents of Moscow, Ryazan, Tambov, Tula, Voronezh, Lipetsk, Chelyabinsk, Novosibirsk, Tyumen regions, in the Altai Territory, the Republics of Bashkortostan, Mari El and Tatarstan. The source of invasion for the infection of mosquitoes in the synanthropic focus is domestic dogs infested with dirofilariae, less often- cats, in a natural hearth - representatives of this. Felidae and Canidae.

Infection of humans and animals occurs during the period of activity of various mosquito species from May to September, with minor fluctuations depending on the geographical area. The increase in the number of stray animals, their mass migration in nature and settlements, the process of urbanization and climate warming contribute to an increase in the transmission of dirofilariasis from wild carnivores to domestic animals and humans. The prevalence of dirofilariasis in urban dogs, for example, in Rostov-on-Don, ranges from 3.6 to 30.0% in individual outbreaks (the service dog breeding school of the Ministry of Internal Affairs of the Russian Federation, a shelter for stray dogs, etc.). The invasion of dogs is also noted in the Volgograd, Voronezh, Lipetsk, Samara, Moscow and other regions, as well as in the Krasnodar, Stavropol and Altai territories, the Republics of Kabardino-Balkaria, North Ossetia, Chechnya, etc.

The highest incidence of dirofilaria larvae was found in mosquitoes of the genus *Aedes* (31%) and *Culex* (17%), in species of the genus *Anopheles* - 2.5%.

In the conditions of a city apartment, the transmission of invasion in the presence of a sick dog or cat can be carried out year-round "basement"

mosquitoes of the genus *Culex* (*C. p. molestus*).

Potential epidemic vectors of dirofilariasis mosquito danger confirmed as specific entomological research by opening mosquitoes in order to detect dirofilaria larvae in them. In the spring-summer period, the risk increases significantly

infection of people with dirofilariasis. Due to migration processes, favorable socio-ecological prerequisites arise for an increase in the rate of the epizootic process. In the Lower and Middle Volga regions, it reaches 16% and is characterized by a year-round incidence of dogs with pronounced seasonal epizootic additives in April-June and October-November.

Diagnosis of dirofilariasis is mainly based on a comprehensive analysis of epizootological data. Epidemiological data are important in the diagnosis of dirofilariasis. Staying in a territory endemic for dirofilariasis during the season of mosquito activity in the presence of specific symptoms and clinical manifestations of the disease can help the doctor suspect dirofilariasis and, after surgical removal of the helminth, confirm the diagnosis by morphological examination and identification of the pathogen.

In the preoperative diagnosis of dirofilariasis, ultrasound is used. Methods for the diagnosis of dirofilariasis using PCR, ELISA, etc. are being developed and applied.

The clinical diagnosis is based on clinical manifestations, which, for example, with subcutaneous dirofilariasis, are very diverse and associated with the localization of dirofilaria - from damage to the organ of vision to damage to the genitals. A person gets to various specialists and he is treated not for dirofilariasis, but according to clinical signs.

About 50% of all reported cases are dirofilariasis with the localization of the pathogen under the skin of the eyelids, in the mucous membrane and under the conjunctiva, less often in the eyeball. Adults are identified - females, less often males. With ocular dirofilariasis, the eyelids, conjunctiva, anterior chamber, sclera, orbit are affected. With lesions of the skin of the eyebrows and eyelids, Quincke-type edema develops, associated with the parasitization of the female / male dirofilariae in the subcutaneous tissue. The eyelids are sharply swollen, pasty, inactive, close the eyes, sometimes there is itching of varying intensity and lacrimation from moderate to very severe, pain at rest and on palpation. Some patients experience a sensation of a foreign body in the eye, wiggling in the area of compaction and protrusion of the eye. Characterized by hyperemia of the skin of the eyelids, ptosis and blepharospasm.

Dense nodules form under the skin, granulomas or lesions of the skin and subcutaneous connective tissue occur in different parts of the human body. The first symptom of the disease- painful swelling in which itching and burning of varying degrees of intensity is felt. Some patients note "special" sensations immediately after an infectious mosquito bite, expressed in an unusual feeling of bloating and very strong prolonged itching at the site of the bite.

A characteristic symptom of dirofilariasis is the migration of the pathogen - displacement of the seal or the helminth itself under the skin, which is noted in 10-40% are infested. The distance that the dirofilaria moves is several tens of centimeters, the speed of movement- up to 30 cm in 1-2 days.

Increased migration occurs when the skin is exposed to UHF currents during physiotherapy, as well as after warming up with compresses or warming ointments.

A specific sign of dirofilariasis is the sensation of movement

and the crawling of a living "worm" inside a lump, tumor or subcutaneous node. In many patients, the invasion has a recurrent course with phases of remission and exacerbation of the process. If the helminth is not removed in time, an abscess may develop at the site of its localization.

According to our center, the number of patients in whom dirofillariasis was detected during testing increased sharply, per 100 people 4-5 have this infection.

Symptoms are different and depend on the localization. Localization of the process in 40% of cases- cardiovascular system, 25% - intestines, 15% pancreas, 10% thyroid gland, 10% subcutaneous lumps, 5% - subcutaneous lumps in the mammary glands.

In case of damage to the cardiovascular system, complaints are mainly about a violation of the heart rhythm, more often bradycardia, poorly amenable to correction with drugs, a rash with itching is often noted, which appears at regular intervals.

Clinical examples

1. In 2008, a 54-year-old patient came to our center with complaints: general weakness, interruptions in the region of the heart, bradycardia (pulse 40-50, while taking medications), increased blood sugar. Cardiologists offered the patient the installation of a pacemaker. Testing using the ART method revealed: dirofillaria in the myocardium, in the pancreas, dwarf tapeworm in the intestine, herpes viruses, Epstein-Barr virus in the pancreas, high mental stress.

Were recommended: nemozol, drainage preparations of the company "ONOM", drugs for the correction of mental stress. Frequency therapy was prescribed, under the control of blood pressure. After 2 months, at the second appointment, the pulse- 70, blood pressure and blood sugar stabilized.

The patient has been under observation for 2 years: she is in good condition, active, pulse 74, out of 5 previously taken heart medications she is taking one, an operation to install a pacemaker is not offered.

2. The patient, 43 years old, complained of a rash on the face in the form of small papules, periodically appearing every 3-4 weeks, accompanied by itching, which was not removed by antihistamines. She independently took antiparasitic therapy, cleansed the body. During testing, a toxic load of 2 tbsp., Caused by parasites, was revealed. In the additional list of frequencies, trematodes of dirofillariae of lymph and blood were well tested.

Prescribed BRT in temporal modulation for the identified parasites with the drug nemosol in the 2nd container of the device, with the recording of a complex bioresonance drug once a week with the recording on crumbs. The patient took this drug before the next procedure. In addition, drainage preparations and homeopathy were prescribed. After the 5th procedure, the skin cleared up, the swelling subsided, lost weight, and the skin color improved. The patient has been observed for 3 years, the rash has not recurred.

3. In September 2010, parents with a 1.5-year-old child applied with complaints about

the appearance of erosion on the cheek, increasing in size. From the anamnesis, we were vacationing in northern Africa, where someone bit the child on the cheek, a spot appeared, which quickly increased in size, and did not cause much concern to the child. On examination: a spot 5 cm in diameter, with clear boundaries, in the center - a weeping seal. There was a slight rise in temperature, lymph nodes are not enlarged. During the diagnosis, dirofilariae and interstitial nematode frequencies were found. Prescribed only frequency therapy, the stain disappeared within a week.

4. In 2009, a 35-year-old female patient presented with a subcutaneous induration of the right mammary gland measuring 2 x 3 cm. The patient constantly went to rest in southern countries. On one of the trips, she noted the appearance of itching and rashes on the skin. She took antihistamines, the itching subsided, then the rash disappeared.

The patient's complaints were of rapid fatigue, decreased working capacity, lump in the chest.

Found out a seal in the right breast a month ago, was referred to an oncologist. The oncologist recommended a diagnostic puncture of the tumor. The patient got scared and turned to our center.

Diagnostics using the ART method showed the presence of dirofilariae in the subcutaneous lump of the breast.

Recommended: EPT with dirofilaria frequencies, ONOM preparations, wormwood tincture - 1 teaspoon of chopped grass per 0.5 l of boiling water. Took 1 tablespoon every 2 hours during the day, in total - 7 days

In the course of treatment, the tumor shrank in the eyes and after 10 treatment sessions the tumor disappeared.

At the consultation with the oncologist, the patient was found to have no tumor, which was confirmed by mammography.

Conclusions:

1. In connection with the growth of infection with dirofilariae and the appearance on this the background of various symptom complexes, diagnostics using the ART method makes it possible to identify the cause of the disease.

2. The use of frequency therapy makes it possible to more effectively getting rid of tissue parasites.

3. In cases of infection with tissue helminths, the appointment allopathic antiparasitic drugs are ineffective.

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