Volume 2, Issue 11, November 2024 ISSN (E): 2938-3765

MECHANISMS OF INFECTION BY ECHINOCOCOSIS

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Abstract
The main mechanism of human infection is nutritional, contact and household. Human infection occurs through contact with the fur of animals that host helminths (often dogs), when picking berries and herbs, drinking water from contaminated sources, eating vegetables and fruits contaminated with feces of the definitive host (for example, a dog). Susceptibility is universal, however, persons in certain professions or lifestyles associated with animal husbandry (slaughterhouse workers, shepherds, tanners, hunters and others) are at high risk.

Keywords: echinococcus eggs, oncospheres, animal, contaminated, worm.

Introduction

Echinococcus eggs can already get into food and water in different ways and the most common are the following: - through the air from the dried feces of an animal (dogs, wolves, etc.) which, while running through the forest, in the steppe, anywhere without the control of the owner, became infected by eating dead animal infected with echinococcus. If the air is heavily contaminated, then the eggs can immediately enter the respiratory tract (but infection will only occur when mucus and sputum with oncospheres are swallowed when coughing). But, since oncospheres do not tolerate drying well, infection through inhaled air is an extremely rare case (but possible, oncospheres can withstand drying for up to 12 days). If the intestines of a dog or other predator are infected with an adult echinococcus worm, then the animal secretes echinococcus eggs in the feces or crawl out of the anus and end up on its fur or in the external environment; - from dirty hands after interacting with an animal (stroking a dog's fur stained with feces containing echinococcus eggs).

The first route is one of the most common in endemic areas for echinococcus. Therefore, if you were in the southern regions and ate ready-made food that had been left open for some time, then it is possible that dust containing echinococcus eggs would be brought into it by a draft.

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Echinococcus eggs get into the water with animal feces, so drinking untreated water is dangerous in all respects. The second is also possible mainly in endemic areas, where the eggs of echinococcus can get on the fur of street dogs or domestic dogs that are free-ranging and can eat a dead, sick animal or roll around and get dirty in the feces of another dog or wolf. Echinococcus eggs can also become airborne on a pet's fur in areas where a large number of animals defecate and contain Echinococcus eggs in their feces. So, if your domestic dog does not run through the forests, does not eat carrion, does not communicate with its street brethren, and is regularly treated and washed, then there is no more chance of contracting echinococcus from it than if you do not have a pet. But you shouldn't completely give up paying attention to your dog.

Brief development cycle of echinococcus in animals: In the definitive host (dogs, wolves and others), the embryo enters the body by eating the internal organs of an intermediate host (hares, squirrels, pigs and others) infected with echinococcus. A sexually mature individual develops on the mucosa of the small intestine and produces eggs. The segments with mature eggs tear off from the body and come out with feces. They have mobility. Eggs persist in the external environment for a long time, depending on conditions. Adults parasitize for about 5-6 months, sometimes up to 12 months. Brief development cycle of echinococcus in humans: Through the mouth, the eggs enter the intestine of an intermediate host (for example, a person), where an embryo emerges from the oncosphere, which is absorbed into the blood and through the portal vein system enters the liver, and sometimes the lungs. Here the stage of larval development occurs in the form of a single-chamber bladder (larvocyst) with a diameter of up to 5 cm. The wall of the bladder consists of an outer chitinous and inner germinal membrane. The cavity is filled with liquid. They can form inside the mother's bladder. daughter and grandchild bubbles. The total weight of the bubbles can reach several tens of kg and 6-10 liters of liquid. On the inner membrane of the bladder, brood capsules are formed for the development of inverted scolex. Scolexes can separate from the capsules and float freely in the cyst fluid. Pathological effect of echinococcus in the human body. The main effect is associated with the formation of specific echinococcal cysts in any organ, but most often it is the liver (up to 80%) and lungs (up to 20%). This can be either one cyst or multiple echinococcosis.

Echinococci have:

1) a sensitizing effect (the development of an immediate or delayed allergic reaction, and if the cysts rupture - up to anaphylactic shock);

2) mechanical action - an echinococcal cyst, growing, leads to a significant disruption of the function of the affected organ, and subsequently to organ atrophy.

The outcome may be fibrosis, in the lungs - pneumosclerosis. The timing of cyst formation varies depending on the number of oncospheres and the initial state of the human body. On average, about 2 weeks pass from the moment of invasion (swallowing of oncospheres) until the formation of a vesicular structure of the larvae; after several months (4.5-5 months), the cyst has a diameter of up to 5 mm, and then grows over the years. Large cysts up to several liters in volume form over decades (20 years or more).

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Diagnostics Early diagnosis of the disease is often makes a difficult task, which is due to the lack of a clear symptoms, especially in the early period, when located the location of the cyst deep in the organ.

Laboratory research methods for echinococcus goats are nonspecific and provide only auxiliary information formation to clarify the diagnosis. First of all this applies to eosinophilia, occurring in 18–83% observations; some authors note a characteristic for patients with echinococcosis, an increase in the number of leukocytes total blood plasma protein.

The amount of lymphocytes blood products are usually reduced, and the content of all classes immunoglobulins – increased. It's interesting that the pain

Most patients have III(B) blood group. Immunological Chinese methods in the diagnosis of echinococcosis are of great, almost decisive, importance. Common

until recently, one of the first immunological ski tests, Casoni's reaction, has lost relevance in connection with low information content and side effects lactic reactions, sometimes quite severe. The most informative in recent years are considered latex agglutination reactions (RLAs) and indirect hemagglutination (RNGA), enzyme-linked immunosorbent assay (ELISA,

They have virtually no contraindications and are applicable to detect echinococcosis and relapses diseases through repeated implementation.

When using several immunonological tests, their diagnostic effectiveness exceeds 80%. However, the initial availability hydatid cyst should be suspected, let alone then the doctor will refer the patient to determine the specific reactions.

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