DISTRIBUTION AND DIAGNOSTICS OF SARCOCYSTOSIS IN ANIMALS AND HUMAN (review)

Prus M., doctor of veterinary science, professor

Zvorygina V., post-graduate student, zvorygina90@mail.ru

National University of Life and Environmental Sciences of Ukraine

Kyiv

An analysis of published data on distribution and diagnostics of sarcocystosis in definitive and intermediate hosts, including humans is presented in the article. Tasks of follow own research is scheduled.

Key words: *sarcocystosis, intermediate host, definitive host, distribution, diagnostics, zoonosis.*

The first reports on sarcocystosis were madeby Miescher in 1843. He found white thread-like cysts in striated muscleof house mouse. However, the parasite has not received a scientific name and for the next 20 years, these cysts were called Meischer's tubules. In 1865, similar patterns were found in the muscles of the pig, but only 34 years after for their identification the name Sarcocystis meischeriana was propossed. Later, when intramuscular cysts were found in the body of the new owner, new names of species have been proposed. During this period, scientists debated to which Subkingdom sarcocyst should relate: the simplest or fungi. Only over 124 years, in 1967, by electron microscopy in sarcocystic bradyzoites organelles, similar to those in single-celled protozoa Toxoplasma and Eimeria, were found.

Sarcocystosis - a zoonotic parasitic disease caused by small intracellular protozoa of the genus Sarcocystis. More than 120 species of unicellular organisms of the genus are known nowadays. It is known that sarcocystis is heteroxenous parasite, which develops with the participation of two hosts: the definitive - carnivorous and humans and intermediate - domestic and wild herbivores and omnivores animals.

In the enterocytes of intestine of definitive host parasite reproduces sexually. Furthermore, this phase ends with the formation of oocysts, which contain 2 sporocysts with 4 sporozoites in them. Sporozoites are ultimately excreted in faeces

into the environment, which allows to establish the diagnosis of sarcocystosis after examination of feaces.

Intermediate hosts become infected with ingestion of infective forms - oocysts or sporocysts. In vascular endothelial cells of intermediate host asexual reproduction occurs. Merozoites are liberated from the mature schizonts and produce a second generation of endothelial schizonts in capillaries from several organs. Merozoites from this second generation subsequently invade the muscle fibers and develop into the typical sarcocysts.

Inside the intermediate host sarcocysts can be detected only during autopsies or veterinary-sanitary examination of carcase. Most sarcocysts in humans were found in skeletal muscles and heart, but they were also found in the muscles of the larynx, pharynx, esophagus. S. bovihominis was detected microscopically in the muscles of cattle, while S. suihominis - macroscopically in the muscles of pigs. Sarcocysts in muscle of these species can be detected by microscopy of histological sections stained with hematoxylin and eosin. Sarcocysts have excellent physical characteristics such as total size, presence or absence of barriers and ultrastructure of walls that help to identify the species. However, these features may vary depending on the age of sarcocysts, the type of host cells and methods of fixation. The walls are positive painted with Schiff-iodine acid. Thus, 24 types of walls for 62 species were identified.

Molecular diagnostics has been used to identify the species.

Conclusions.

The question of intravital diagnostics of sarcocystosis in intermediate hosts remains open. In our opinion, this is a key point in the epizootic process. In our work, we plan to address this issue.

References

1. A nout break of acute eosinophilic myositis attributed to humain Sarcocystis parasitism. [M. K. Arness, J. D. Brown, J. P. Dubey, R. C. Neafie,

D. E. Granstrom]. American Journal of Tropical Medicine and Hygiene. – 1999. – 61 (4) :P. 548–553.

2. Dahlgren S. S. Phylogenetic relationships between Sarcocystis species from reindeer and other Sarcocystidae deduced from 12ss rRNA genesequences / S. S. Dahlgren, R. Gouveia-Oliveira, B. Gjerde. – Veterinary Parasitology. – 2008.– 151(1): P. 27–35.

3. Ongoing outbreak of an acute muscular Sarcocystis-like illness among travellers returning from Tioman Island, Malaysia. [D. H. Esposito, D. O. Freedman, A. Neumayr, P. Parola]. Eurosurveillance. – 2011–2012. – 8: 17(45).

4. Fayer R. Sarcocystis spp. in humain infections / Clinical Microbiology Reviews. – 2004. – 17(4): P. 894–902.

5. Prakas P. Protozoan parasites from genus Sarcocystis and their investigation in Lithuania/ P. Prakas, D. Butkausas. – Ekologija – 2012. – 58 (1): P. 45–58.

6. Phylogenetic analysis of Sarcocystis nesbitti (Coccidia: Sarcocystidae) suggests a snake as its probable definitive host. [M. Tian, Y. Chen, L. Wu, B. M. Rosenthal, X. Liu, Y. He, D. B. Dunams, L. Cui, Z. Yang]. Veterinary Parasitology. – 2012. – 183 (3-4): P. 373 – 376.