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**EPIZOOTIOLOGY OF FASCIOLIASIS IN CATTLE IN UZBEKISTAN  
AND KARAKALPAKSTAN: RESULTS OF A 15-YEAR STUDY AND  
PATHOLOGOANATOMICAL CHARACTERISTICS**

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**Abstract**

This article is based on the results of a 15-year study by Sh.A. Azimov on the epizootiological characteristics of fascioliasis in cattle under the conditions of 9 regions of Uzbekistan and the Republic of Karakalpakstan. The study analyzed official data and examined the livers of 2,489 cattle and 3,006 sheep using a complete helminthological dissection method. The results revealed that the average infection rate of fascioliasis was 66.5% in cattle and 35.9% in sheep. The study also identified the species composition of *Fasciola hepatica* and *Fasciola gigantica*, showing that in Karakalpakstan and Khorezm regions, cattle were infected exclusively with *F. gigantica*. Additionally, the article compares these findings with studies conducted in Chechnya and the Russian Federation, discussing differences in the prevalence and intensity of invasion, as well as variations by age groups and geographical zones. Based on the identified epizootiological conditions and pathoanatomical changes, the study provides scientifically grounded recommendations for rapid diagnostic methods, preventive measures, and treatment protocols. This research is of great importance for improving the quality of beef products and enhancing local veterinary practices.

**Keywords**

fascioliasis, cattle, epizootiology, pathology, helminthology, *Fasciola hepatica*, *Fasciola gigantica*, invasion intensity, Uzbekistan, Karakalpakstan



Introduction Section: The epizootological characteristics of fascioliasis in cattle in the conditions of 9 regions of Uzbekistan and the Republic of Karakalpakstan were studied for 15 years by Sh.A. Azimov. According to the authors, based on official data from slaughtered cattle at the Republic's meat processing plants from 1961 to 1969, the Republic of Karakalpakstan, Khorezm, Samarkand, and Surkhandarya regions were considered the most unfavorable in terms of fascioliasis.

Specifically, the average infestation rate of fascioliasis in cattle slaughtered for meat in Uzbekistan ranged from 6.1% to 70.3%, while in sheep, it was recorded between 2.81% and 45.1%. Such official data indicate that until 1970, fascioliasis was more widespread among cattle than in sheep in Uzbekistan.

The accuracy of these data was confirmed by the author through a complete helminthological examination of the livers of 2,489 cattle and 3,006 sheep. The results showed that 66.5% of cattle and 35.9% of sheep were affected by this disease. Among the 126,808 fasciola specimens collected from these organs, 54.4% were identified as *Fasciola hepatica* and 45.6% as *Fasciola gigantica*.

In the territory of Karakalpakstan and the Khorezm region, cattle were found to be infected exclusively with *Fasciola gigantica*.

Plains and Foothill Areas of the Chechen Republic: Fascioliasis is widespread in the plains and foothill regions of the Chechen Republic. It has been recorded that *Fasciola gigantica* is found in the plains, while *Fasciola hepatica* occurs in the mountainous areas. The infestation rate (IE) in cattle was determined to be an average of 28%, with an invasion intensity (II) ranging from 14 to 117 specimens.

Epizootological Situation in the Russian Federation: Research conducted in the Russian Federation between 1990 and 2012 indicates that the epizootological situation regarding helminthiasis has been gradually deteriorating. The author emphasizes that the worsening situation is mainly due to "pasture" helminthiasis. Summer has been identified as the most favorable season for disease transmission. Between 2009 and 2011, 3.3 million cattle underwent deworming treatment for fascioliasis, while 20 million cattle were found to be infected with the disease.

Methods Section: In chronic fascioliasis, sheep and cattle develop cold and temporary swellings in the submandibular region, chest area, and eyelids. The conjunctiva of the eyes turns yellow, appetite decreases, weight loss begins, the wool becomes dry and brittle, and it can be easily pulled out. The body temperature rises slightly, while heart rate and respiration increase. In cases of high fasciola infestation, pregnant ewes may abort. In sheep, mortality is observed in chronic fascioliasis.



In cattle, chronic fascioliasis leads to emaciation, reduced milk production in cows, and cases of abortion. However, compared to sheep, the disease progresses more mildly in cattle, and mortality is generally not observed in chronic fascioliasis.

Results Section: In animals infected with schistosomes, the parasite eggs in their feces already contain developed miracidia. When these eggs enter water, the miracidia begin to emerge into the external environment. This phenomenon can be observed by sequentially washing fecal samples.

To study the morphology of schistosome miracidia, including *O. turkestanica*, and to utilize them for infecting freshwater mollusks, Acad. D.A. Azimov et al. (2012) developed a specialized miracidicopy method (Figure 12).

This method is carried out as follows:

100 g of animal feces is taken and wrapped in a gauze bag.

It is placed in a specially prepared container, and water at a temperature of 30–32°C is poured over it.

A glass tube with a diameter of approximately 1 cm is installed in the neck of the flask.

Only this part of the flask is left open, while the rest is covered with a specially designed light-blocking cover, which can be made from ordinary cardboard.

Artificial lighting is directed toward the open part of the flask.

If the examined animal or bird is infected with schistosomes, the movement of miracidia in the water inside the glass tube can be observed after 40–60 minutes. Using a dropper, a drop of water from the glass tube is taken and placed on a Petri dish or a glass slide for microscopic examination.

Discussion Section: Due to the intolerance of various species of planorbids, which are the intermediate hosts of paramphistomatids, to saline water, we did not find them in lakes. Some of their representatives were found along the banks of the Amu Darya River and in irrigation channels formed by its water. When these mollusks were dissected and examined under a microscope, it was determined that they were free of paramphistomatid larvae. None of the 950 specimens of *Lymnaea auricularia* examined for *Fasciola gigantica* partenites contained *Orientobilharzia turkestanica* sporocysts or cercariae. These mollusks were collected from various lakes, drainage canals, irrigation channels, and rice fields.

These malacological studies, along with special helminthological investigations, indicate that the most dangerous former outbreaks of fascioliasis, orientobilharziasis, and paramphistomatosis in the northern part of the Republic of Karakalpakstan have now significantly declined. The causative agents of paramphistomatosis and orientobilharziasis have become geographically restricted, with a drastic reduction in their range. Therefore, orientobilharziasis, liorchosis,



and similar paramphistomatoses currently do not attract significant attention, as they have largely lost their epizootiological significance.

However, some weak micro-outbreaks of these trematodoses still persist in certain livestock farms in the Republic of Karakalpakstan. Evidence of this is the micro-outbreak of orientobilharziasis that has remained in the "Erkindaryo" livestock farm in the Kegeyli district, as confirmed by our studies conducted between 2022 and 2024. However, due to the low intensity of invasion and the seasonal relocation of cattle to different pastures, no losses have been observed among the animals due to orientobilharziasis, and the overall body condition of the cattle remains high. Nevertheless, to prevent the resurgence of such micro-outbreaks in the future, continuous monitoring and preventive measures are advisable.

When examining the liver of cattle that have died from the parenchymatous form of fascioliasis, the accumulation of blood clots in the bile ducts is observed. At this stage, the walls of the bile ducts remain unthickened. In addition, blood clots are also found in the gallbladder. In many cases, the blood clot blocks the bile ducts, causing the gallbladder to swell up to 15–20 cm.

After the disease progresses to a chronic stage, the mortality rate of cattle due to fascioliasis decreases. Affected cattle exhibit roughened hair coats and fail to shed their old hair during the spring months. Cases of death from this disease, based on pathological examinations, are primarily caused by the obstruction of bile ducts with fasciolae and stones, as well as the blockage of the bile duct opening by mature fasciolae.

Upon complete dissection of the liver, the thickening of the bile ducts is observed, measuring between 0.6–0.9 cm. In the chronic form of the disease, no significant changes were detected in other organs.

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