



BOVINE CYSTICERCOSIS AND ITS PREVENTION

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Abstract. *This article discusses bovine cysticercosis and its preventive measures. Cysticercosis is a common parasitic disease in cattle, primarily caused by the parasite Taenia saginata. Due to its widespread occurrence and the threat it poses to human health, the disease causes significant economic losses in the livestock industry. The paper provides both theoretical and practical information on the epizootiology, pathogenesis, clinical symptoms, diagnostic methods, and preventive measures related to the disease. Furthermore, based on statistical data and practical observations from different regions of Uzbekistan, the article offers recommendations for preventing the disease.*

Keywords: *Bovine cysticercosis, Taenia saginata, prevention, treatment, epizootiology, veterinary science, parasitology, zoonotic disease, meat inspection, cysticerci, disease prevention.*

Introduction. Today, ensuring animal health, early detection of diseases, and implementation of preventive measures remain some of the most pressing issues in the field of veterinary medicine. Among zoonotic diseases, parasitic infections—particularly Cysticercosis bovis (bovine cysticercosis)—pose serious threats to both animal and human health. This disease not only affects the general



health of cattle but also significantly reduces their productivity and adversely impacts the quality of meat, which has considerable economic importance.

Bovine cysticercosis is a parasitic disease caused by the larval stage (cysticercus) of *Taenia saginata*, a tapeworm that inhabits the human intestine. The larvae develop in the bodies of cattle, primarily settling in muscle tissues. Since the parasite is transmitted through humans, and given its zoonotic nature, it is directly linked to public health. People become infected by consuming meat products contaminated with the parasite, especially when the meat is undercooked or insufficiently processed.

This article analyzes the etiology, epizootiology, clinical signs, diagnostic methods, treatment strategies, and—most importantly—the preventive measures related to bovine cysticercosis. Practical experience and statistical data are used to identify the factors contributing to the disease's spread and to propose effective prevention strategies.

Materials and methods. In this scientific study, both theoretical and practical approaches were used to collect data regarding the distribution, diagnostic methods, and prevention of bovine cysticercosis. Practical observations were conducted based on veterinary-sanitary inspections.

The research methodology included the following components:

- At slaughterhouses, the external and internal muscle tissues of cattle—particularly the tongue, heart, thigh, and neck muscles—were incised and examined.
- The general condition and history of each animal were carefully recorded.
- The collected data were statistically analyzed and conclusions were drawn accordingly.

Materials were collected based on scientific literature, previous research findings, and medical and veterinary protocols, followed by comparative analysis.



Research Object and Study Area. The study was conducted in 2024 using cattle from slaughterhouses and farms located in the Khanka district and surrounding areas of Khorezm region. Specifically, the research involved:

- 1 private meat processing plant;
- 2 large-scale farming enterprises;
- 1 veterinary laboratory.

A total of 85 head of cattle were examined. During slaughter, muscle tissues were inspected for signs of cysticercosis. Factors such as the age, sex, and feeding conditions of each animal were also taken into account.

The selected areas were densely populated and characterized by active cattle farming, making them epidemiologically significant zones for this type of investigation.

Results and Discussion. During the practical investigation, 85 cattle were subjected to medical and veterinary examinations. According to the results, no cases of cysticercosis were identified. On one hand, this suggests that certain hygiene and sanitary standards are being observed in local livestock management. However, despite these favorable findings, the risk of cysticercosis in the region cannot be entirely dismissed.

This is supported by data from local medical institutions, which report recent cases of cysticercosis in humans. The analysis indicates that the primary source of infection may not be the cattle themselves but rather human-related factors and practices. For instance, many residents purchase meat from unregulated sources or consume meat from animals slaughtered outside officially recognized facilities. In such cases, the lack of veterinary-sanitary control significantly increases the risk of cysticercosis.

Furthermore, it is common among the local population to consume undercooked or even raw meat products, such as minced meat (e.g., qiyma) or



kebabs. This practice facilitates the ingestion of *Taenia saginata* eggs, thereby contributing to the development of the disease in humans.

These findings demonstrate that even in the absence of detected cases among livestock, poor hygiene practices and improper dietary habits among the population remain key contributors to the transmission of cysticercosis.

1. General information about bovine cysticercosis

Bovine cysticercosis (*Cysticercosis bovis*) is a parasitic disease caused by the larval stage of the tapeworm *Taenia saginata* in cattle. It belongs to the group of biohelminth infections and holds significant importance in both animal health and veterinary-sanitary contexts. The parasite enters the animal's body orally, primarily through contaminated feed or water. Humans serve as the definitive host of the parasite, where the adult tapeworm resides in the intestine.

The life cycle of the parasite involves two hosts:

- Intermediate host – cattle, where the larval stage (cysticercus) develops;
- Definitive host – human, who harbors the mature, adult stage (tapeworm) in the intestine.

Cattle become infected by consuming feed or water contaminated with the parasite's eggs, which are excreted into the environment through human feces. Once inside the bovine host, the eggs hatch in the intestine, and the released larvae enter the bloodstream, eventually settling in muscle tissues. Within 60–70 days, the larvae develop into *Cysticercus bovis*, the infective larval form.

The most common locations of larval development include:

- Cardiac muscles (heart)
- Tongue
- Shoulder muscles
- Limb muscles

A high number of cysticerci in muscle tissue can lead to discomfort in movement, weakness, and in severe cases, death of the animal. Moreover, bovine



cysticercosis is considered a sanitary hazard, as it can be transmitted to humans through consumption of infected meat.

Favorable Conditions for Disease Transmission:

- Poor sanitation and hygiene practices
- Pastures contaminated with human feces
- Slaughtering of cattle without proper quality inspection
- Consumption of undercooked or raw meat

2. Epizootiology and pathogenesis of the disease

Epizootiology. **Bovine cysticercosis** is widespread and occurs in almost all regions of the world. It is especially prevalent in areas where **hygienic conditions are poor**, the **population is dense**, and **livestock farming is well developed**. In Uzbekistan, this disease is also observed in certain regions on a regular basis. The widespread nature of the disease is largely due to **poor public hygiene**, **consumption of inadequately cooked meat**, and **non-compliance with veterinary-sanitary regulations**.

The following factors are considered epizootiologically significant:

- **Pastures and feed contaminated with human feces**
- **Unclean communal slaughtering sites**
- **Transmission from infected animals to healthy ones**
- **Use of water contaminated with feces**

In rural areas, **open field latrines** are often located near grazing lands, making it easy for parasite eggs to contaminate the environment. As a result, cattle grazing in such areas can easily become infected.

Pathogenesis. After the **eggs of** *Taenia saginata* are ingested by cattle, they hatch in the intestines and release the **oncosphere (larva)**. The larva penetrates the **intestinal wall**, enters the **bloodstream**, and is carried to various **muscle tissues** of the body. The most commonly affected areas include:

- **Heart muscles**



- **Tongue**
- **Intercostal muscles**
- **Thigh and shoulder muscles**

In the muscle tissues, the larvae develop into the **cysticercus bovis** stage and become encapsulated. If the number of cysticerci is high, they may cause **inflammation and swelling** in muscle tissues, deteriorating the general condition of the animal. In such cases, the following clinical signs may be observed:

- **Loss of appetite**
- **Lethargy or reduced movement**
- **Increased body temperature (occasionally)**
- **In severe cases, impaired cardiac function**

Typically, the clinical signs are mild or absent. However, in cases of **heavy infestation**, the animal becomes noticeably weaker and may suffer from **growth retardation**. The most dangerous cases are those with **no visible symptoms (latent infections)**, which can only be diagnosed during **postmortem meat inspection** at slaughter.

3. Clinical Signs and diagnostic methods

Clinical signs. Bovine cysticercosis often progresses in a latent (asymptomatic) form. Clinical signs of this disease become apparent only in cases of heavy infestations or when the animal's immune system is weakened. Since the larvae (cysticerci) are located in the muscle tissues, their presence may not be immediately visible from the outside.

However, in some cases, the following signs may be observed:

- Decreased appetite
- Fatigue and general weakness
- Slight increase in body temperature
- Discomfort during movement, pain when hitting hard surfaces
- Difficulty walking or lameness



- In severe cases, heart failure due to swelling of the heart muscles

When the larvae are located in the tongue, shoulder, or thigh muscles, they can be detected by palpation (manual examination).

Diagnostic methods. Bovine cysticercosis is usually not diagnosed based on clinical signs, but rather through veterinary-sanitary inspections carried out during slaughter. Diagnosis can be made using the following methods:

1. Visual inspection during slaughter – the tongue, heart, pelvic muscles, shoulder, and hind leg muscles are cut and examined for the presence of larvae.
2. Palpation – swelling may be felt in the tongue or other muscle tissues.
3. Serological methods – detection of antibodies against the parasite in the blood (rarely used).
4. Molecular biological methods – identification based on DNA (used for scientific or laboratory research purposes).
5. Veterinary-sanitary expertise – special examinations conducted by professionals at meat markets or slaughterhouses.

Since the disease can only be diagnosed post-mortem, in many cases there is a delay in detection, which increases the risk of transmission to humans.

4. Prevention and Treatment Measures

Preventive measures. The primary goal in preventing bovine cysticercosis is to interrupt the life cycle of the parasite. In other words, it is necessary to prevent the eggs excreted by humans from entering the bodies of cattle. The following preventive measures must be strictly implemented:

1. Observance of sanitary and hygiene rules:
 - Do not build open toilets near pastures;
 - Prevent human feces from contaminating the environment;
 - Conduct public awareness campaigns.
2. Protection of pastures:



- Inspect pastures and disinfect contaminated areas;
 - Maintain and protect clean water sources.
3. Strengthening veterinary control:
- All cattle must undergo veterinary-sanitary examination before slaughter;
4. Public awareness and education campaigns:
- Warn about the necessity of thoroughly cooking meat before consumption;
 - Promote hygiene practices in schools and farming communities.
5. Regular veterinary inspections of cattle:
- Conduct scheduled examinations of livestock owned by the public;
 - Isolate and slaughter infected animals following specific procedures.

Treatment measures. Since the cysticercus stage of the parasite develops in the tissues of cattle, treatment is not commonly practiced. The larvae form capsules within muscle tissues, and currently, there are no effective pharmacological methods to eliminate them. Therefore, the main focus is on prevention.

However, for *Taenia saginata* infections in humans, the following medications are used:

- Praziquantel
- Niclosamide
- Albendazole

These medications eliminate the parasite in humans, but they are not used for treating livestock. Meat from cattle infected with cysticercosis is either reprocessed under veterinary supervision or destroyed.

5. Conclusion and recommendations

Bovine cysticercosis is one of the parasitic diseases in animal husbandry that not only causes significant economic losses but also poses a risk to human health. Due to the parasite's complex life cycle and often asymptomatic progression, the



disease may not be detected in a timely manner. Such situations, especially in cases of unsupervised slaughter or lack of hygiene compliance, can lead to serious consequences.

Based on the theoretical and practical information presented in this article, the following conclusions and recommendations can be made:

Conclusion:

- Cysticercosis is a zoonotic disease, meaning it can be transmitted from animals to humans;
- It is usually detected during slaughter, which increases the risk of late diagnosis;
- The disease can be prevented through strict hygiene and veterinary control measures;
- Treatment is not commonly applied to livestock; prevention remains the primary focus.

Recommendations:

1. Carry out preventive disinfection work at least twice a year in agricultural areas;
2. Make veterinary inspection mandatory before slaughtering every cattle;
3. Strengthen public awareness campaigns throughout the year on hygiene and the risks of parasitic infections;
4. Expand the operation of specialized laboratories and introduce modern diagnostic methods into practice;
5. Take strict control over the food safety system and combat illegal meat sales.

By implementing the above measures, it is possible to reduce the spread of bovine cysticercosis and protect public health.

References:

1. Qo‘ldoshov, O. O., Zarifov, H. R., Qadirberganov, B. G., & Aslonova, M. A. (n.d.). Poisoning of Sheep with Phytotoxins in Pasture Conditions,



- Veterinary-Sanitary Assessment of the Meat of Poisoned Sheep, and Measures for Its Neutralization.
2. Erimov, S. F., Erimov, F. F., & Jumaniyozova, J. M. (2024, November). Equine Gastrophilosis under Arid Climate Conditions of the Republic of Karakalpakstan. <https://doi.org/10.5281/zenodo.14222297>. In International Scientific and Practical Conference (Vol. 1, No. 1, pp. 110–116).
 3. Shakilov, U. N., Erimov, S. F., & O'ktamov, A. A. (2024, November). Effect of Anthelmintic Drugs on Gastrophilosis Pathogens. <https://doi.org/10.5281/zenodo.14220032>. In International Scientific and Practical Conference (Vol. 1, No. 1, pp. 84–88).
 4. Erimov, S. F. (2024). Impact of Ecological Factors on the Agents of Equine Gastrophilosis. *Education, Science and Innovative Ideas in the World*, 56(5), 186–191.
 5. Erimov, S. F. (2024). Effect of Anthelmintic Drugs on the Agents of Gastrophilosis. *Education, Science and Innovative Ideas in the World*, 56(5), 181–185.
 6. Erimov, S. F., Erimov, F. F., & Djumaniyazova, J. M. (2024). Gastrophilosis: A Dangerous Entomosis in Horses (*Equus ferus caballus*). *Ideas of Education, Science, and Innovation in the World*, 56(5), 174–178.
 7. Erimov, S., Erimov, F., & Jumaniyozova, J. (2024). Gastrophilosis in Horses (*Equus ferus caballus*) – A Dangerous Entomosis. *Theoretical Aspects of the Formation of Pedagogical Sciences*, 3(19), 127–133. Retrieved from <https://inlibrary.uz/index.php/tafps/article/view/51422>
 8. Erimov, S., Erimov, F., & Jumaniyozova, J. (2024). Equine Gastrophilosis under Dry Climate Conditions in the Republic of Karakalpakstan. In *International Conference on Medicine, Science, and Education* (Vol. 1, No. 10, pp. 63–70).



9. Farkhodovich, E. S., & Arislanbek o'gli, A. I. (2023). Epizootology of Orientobilharziosis in Sheep in the Aral Sea Region. Intent Research Scientific Journal, 2(10), 106–114.
10. Equine Gastrophilosis in the Republic of Karakalpakstan under Arid Climate Conditions. (2024). International Conference on Medicine, Science, and Education, 1(10), 63–70.
<https://universalconference.us/universalconference/index.php/icmse/article/view/2924>