



EPIZOOTIC ANALYSIS OF THE PREVALENCE OF TREMATODOSES

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ABSTRACT	KEYWORDS
This article presents information collected in the literature on the distribution of trematode infections in animals in Central Asia, Russia, Europe, Africa, and America. Also carried out was an analysis of the economic damage caused by this parasitic disease.	trematode, trematodosis, helminthiasis, fasciolosis, dicroceliosis, paramphistomatosis, calicophorosis, and gastrotilax.

Introduction:

Much attention is paid to better meeting the population's demand for fully valuable food products, including milk, meat, and other livestock raw materials, turning livestock into a more profitable industry, and increasing the population's standard of living.

Parasitic diseases of animals, to some extent, prevent the effective solution of these problems.

The purpose of the study:

Analysis of literature data on liver and gastrointestinal trematodes and paramphistomatosis from helminths, which are widespread among large and small horned animals, and reaching appropriate conclusions.

Literature data:

According to the World Health Organization as well as the International Epizootic Bureau, among the parasitic pathologies of animals and humans worldwide, the invasion of trematodes (fasciolosis,

dicroseliosis, schistosomiasis, opisthorchiasis, and clonorchosis) is included among the global biological risk diseases for livestock and the Earth's population [45].

The economic damage from cattle trematodes is characterized by a decrease in the milk and meat productivity of animals, forced slaughter, impaired liver function, gastrointestinal consumption, abortion, deterioration of the breed nature, and some decrease in the quality and energetic value of milk and meat products [19].

As a result of research conducted by industry experts with the participation of the Australian International Center for the Protection of Animal Health (ACIAR), up to 30.0 percent economic damage and weight losses of up to 41 kg were found in regions with a high level of fasciolosis, up to 10.0 percent of calves were poorly obtained, and the liver was Male animals were found to have a loss of 109 US dollars from one start and 80 US dollars for cows. From 2000, on the basis of "recommendations for the fight against fasciolosis", explanatory work was carried out on the population, and animal owners, that is, farmers, began to benefit from 76 US dollars from one head of cattle. However, even to this day, work to combat fasciolosis in the Australian region remains an urgent problem [50].

In the next twenty years, serological methods such as RNGA, IFA, and PTSR will be widely used in the Russian Federation and other countries for the early detection of animal helminthiasis [18; 21].

Young cattle, sheep, and goats raised in pastures in areas with unhealthy paramphistomatosis have been observed to die at a rate of 50–100 percent [28].

In the Republic of Udmurtia, 2.28 percent to 18.4 percent of cattle examined by helminthological rupture in 2001–2012 had fasciolosis (*F. hepatica*), which has been identified as having suffered [24]. Initially, damage to young animals by paramphistomatosis leads to the simultaneous strong zazarization of animals under one year old to paramphistomatosis in swampy areas around the canal with green grass in unhealthy climates. As animals age, the number of trematodes also increases. High levels of damage have been observed in animals over 3 years of age [26].

The age of acute paramphistomatosis was observed in livestock up to 2 years of age and in sheep from 2 years of age in adults [13].

In 14 of the 19 districts of the Russian Federation checked for paramphistomatosis in the districts of the Perm Territory, this disease was recorded. According to the results of coproovoscopy, the extensibility of the invasion was 17.9 percent, i.e., 23.3 percent, when examined by helminthological rupture. In some farms, it was higher than 50 percent, while in another it was 412 copies compared to the number of animal heads [20, 22].

In Dagestan, lesions in calves under one year old with paramphistomatosis were at 31.5 percent, 1-2 years old at 65 percent, 2-8 years old and older at 74.2 percent, and II-61.3 to 463.5 copies per animal. While damage from paramphistomatosis was observed throughout the year in adult cattle in the plains and foothill zones, paramphistom eggs were first observed in calves in August. IE was 12.1 percent, II15,5. By March of the following year, IE had reached 38.8 percent and II had reached 37.5 copies [4]. Four types of ruminant animal paramphistomatosis have been identified in the Kaliningrad region, including *Liorchis scotiae*, *Paramphistom cervi*, *Paramfistom ichikawai*, and *Paramfistom petrowi*. The disease has spread throughout all regions and has been observed to be more common around rivers, lakes, and other bodies of water. Invasion extensibility averaged 27 percent in cattle and 38–90 percent in some climates. It was up to 50 percent in Los Angeles and Colorado and 45 to 98 percent in Deer [26].

These are *Calicophoron calicophorum* and *Paramphistomum cervi*, as two types of cattle paramphistomatosis in Georgia are described. The average infestation with parapsilosis was 14 percent; in some plots, it was 46–95 percent. IE high pointers were vomited in animals older than three years [29].

According to the results of coprological examination of cattle in the regions of the Russian Federation for gel'minthoses, fasciolosis was 29.1 percent, paramphistomatosis 35.7 percent, dicroseliosis 6.3 percent, and strongylatosis 49.5 percent [27].

In the Nizhegorod region, cattle infestation with trematodes of several species at once was 29.3 percent. In particular, cattle were found to parasitize dicroselia and paramphistomes by 14.2 percent, *Fasciola* and dicroselia by 9.6 percent, triplets by 3.7 percent, and 1.8 percent in animals [17].

Recent studies in the UK show that F. found that the rate of distribution of hepatica among cattle herds was 70.0 to 80.0 percent [51].

In the Belarusian state, high levels of invasions of large and small horned animals with fasciolosis were observed in 2005–2009 in the Vitebsk region, reaching up to 30.75 percent, while in the Minsk region, fasciolosis was recorded at the lowest level. According to this, studies carried out in 2005–2008 in 208 farms in 52 districts of Belarus that produced cattle in the Vitebsk region at a maximum rate of 30.75 percent and in the Minsk region at a minimum of 2.24 percent *fasciola* (*F. hepatica*) showed that the damage with them would be equal to 12.97 percent of the average invasion extensibility of the invasion. In recent years, there has been a decrease in fasciolosis invasion. Infestation of animals with *Fasciola* larvae occurs in the second half of summer and autumn. In this country, it has been found that 56.8 percent of lotions are damaged by the causative agent of paraphassiolopsosis [48].

The distribution of fasciolosis among cattle has been identified in each of them, dividing the territories around the two largest rivers—the Lena and Angora rivers—into two zones—the Prilene and Priangare zones. In Priangere, the invasion extensibility was 4.6 percent, while the invasion intensity was 1 to 56 copies, while in Prilene these figures were proportionally 44.5% and 2 to 186 copies. It has been established that the maximum possible damage from the causative agent of fasciolosis will last from August to the end of September [31].

According to the analysis of the Tyumen region veterinary report, fasciolosis of large horned animals was recorded in 59 farms at 65 points in 1992–1997; the most frequent occurrence of the invasion was in the territories of settlements on the banks of the Tura and Pyshma rivers [34].

There is information that in the Republic of Tatarstan, lesions of large-horned moles with fasciolosis accounted for 26.9%, dicroselia accounted for 35.4%, gastrointestinal strongylates accounted for 46.7%, and moniesisia accounted for 13.4%, as well as information that in 1993–1997, lesions of animals with helminths decreased by 10–30% [7]. The study of 590 head of cattle in the central Caucasus with *Fasciola* and other trematodes found that 27% of them were damaged by several trematodes at the same time. In particular, with *Fasciola hepatica* (6 percent) and *Fasciola gigantica* + *Paramphistomum bilan* (10 percent), In such mixtinvasia, it is noted that the invasia-intensivity of some trematodes is somewhat reduced [32].

According to the author's note, in special studies carried out on the territory of the Republic of Karakalpakstan for 1989, 2000, and 2001, paramphistomatoma of three types in cattle (*P. ichikawai*, *C. salicophorum*, and *G. crumenifera*) reported that 16.0% of cattle had gastrotilyaxosis, 12.1% had paramphistomosis, and 9.2% had calicophosis. At the same time, in the literature data of 2000, 4.6%

of cattle in the Aral Sea region and 2.6% of sheep were shown to have suffered from paramphistomatosis (*G. crumenifer*) [15, 16].

As a result of the study of the activity of the V-System in cattle with spontaneous damage to *Fasciola*, it turned out that the decrease in V-lymphocytes leads to a decrease in the amount of total immunoglobulin. As a result of the use of immunostimulants at that time, it was observed that this pointer was significantly increased. Starting from the use of the drug forvet as an immunostimulant, the body compensates for secondary immunodeficiency, that is, immunodeficiency caused by helminth and antigelminthic drugs, in a timely manner [44].

As a result of fasciolosis damage by large horned animals, the body's immune properties decreased: decreased T and V lymphocytes, decreased IgL and IgA due to the amount of IgM, as well as the activity of Asat, Alat, and alkaline phosphatase were observed. Alternatively, a decrease in the amount of protein and biogenic elements—calcium, phosphorus, zinc, iron, copper, and manganese—was observed in the blood plasma. All this in combination causes immunodeficiency in the body of animals. The authors found that in the case of fasciolosis, it was recommended to use antigelminthic drugs in combination with immunostimulants at the same time as an early immunodiagnostic analysis. The activities carried out allow cows to maintain milk productivity of 23.4–37.3 percent [49].

In historical sources, due to the widespread spread of fasciolosis caused by *hepatica*, many deaths of farm animals have been observed in some European countries. In Czechoslovakia, for example, it was recorded that up to 25.0 percent of cattle died as a result of fasciolosis, and in Bulgaria, up to 50.0 percent of sheep did. 1 million in Hungary; close to the deaths of cattle and sheep from fasciolosis were recorded. In some states in the southern and eastern regions of the Asian region, fasciolosis is common, and in France, fasciolosis (*F. hepatica*) was described in historical sources as the cause of 1 million sheep deaths as a result of their once observed epizootia, since the method of treating fasciolosis was not developed during that period [14; 35]. Sheep fasciolosis is also widespread in the Republic of Dagestan, which is characterized by a decrease in the body mass and amount of wool in sheep due to insufficient breeding.

The biological development of fasciolosis is directly related to the external environment and their intermediate hosts, freshwater mollusks, and the parasite spends most of the development period outside the main host organism. Therefore, environmental factors of the external environment include the landscape (geographic area). *Fasciola* has its own positive or negative impact on the development of eggs, larvae, and mollusks. [1;2; 3]

According to Iraqi researchers, when the analysis of fasciolosis among sheep was done by the seasons of the year, the following opinion was reached: It has been found that in autumn the extensibility of invasion is 14.4 percent, in winter it is 12.3 percent, in spring it is 13.0 percent, and in summer it is 7.6 percent [41].

In all regions of the Russian Federation, except for the Northern Districts of the Irkutsk region, fasciolosis is common among cattle, and the extensibility of the invasion in the region is on average 23.5%, and the intensity of the invasion is an average of 25.0 copies per head account. The highest level of invasion extensibility was observed in cattle aged 8-12 years, with invasion extensibility accounting for 61.0 percent. At the moment, the age under one year old was 7.6 percent in calves and bodies. It is noted that the highest pointer falls in the autumn and winter months when the invasion extensibility is analyzed by the seasons of the year [30].

In the plains and foothills of the Chechen Republic, fasciolosis is common, and in the plains regions *F. gigantea* is common, while in mountainous areas *F. hepatica* has been reported to have been common. Cattle were found to be damaged by fasciolosis; that is, IE averaged 28 percent and II was 14–117 copies [40].

According to the results of research in the Russian Federation in 1990–2012, it was noticed that the etiopathological situation of helminths is gradually deteriorating. The author noted that the epizootic condition is increasing mainly due to helminthiasis pasture." The most favorable period for the spread of the disease is the summer season. In 2009–2011, 3.3 million head of cattle were helminthized against fasciolosis, and 20 million head of cattle were identified as having fasciolosis [10, 11].

The researcher [5] noted that in the conditions of the Vologda region, cattle infestation with fasciolosis and paramphistomosis was 60.0–29.0 percent. Invasion extensibility averaged 56 percent throughout the year. The author states that calves born this year have been affected by the moment they go out to pasture [6].

In the plains and foothills of the Republic of Dagestan, the invasion extensibility of fasciolosis was from 3.3 percent to 20.0 percent (II 3–56 copies), and in dicroeliosis, IE, from 46.6 percent to 50.0 percent (II 78–3100 copies) [8].

In the Kabardino-Balkarian Republic, the incidence of dicroeliosis was 28.3 percent on average, and in 11 districts of the Chechen Republic, it was 32.8 percent on average [23].

In the foothill regions of the North Caucasus, the ruminant animals *F. hepatica* and *D. lesions* with lanceatum were observed throughout the year, with invasion extensibility reaching its peak in the autumn season at 39.0 and 34.0 percent [46, 47].

By analyzing liver fasciolosis in relation to the age of animals, it was found that up to 80.0 percent of cattle are affected in farms in the Republic of Bashkortostan. The authors noted that the animal observed an increase in the level of damage with increasing age. In animals released to pasture in the first year, the damage was 27.7%, while in animals raised in pasture 3–4 times, it was 54.1% [9].

On the Asian continent, fasciolosis is common among farm animals on the territory of all states; it is even found in rabbits and elephants. This disease is common in South, Southeast, and East Asia. In Iran, fasciolosis was observed between 4.0 percent and 75.0 percent, and in East Pakistan and some areas of Indonesia, up to 90.0 percent. Since fasciolosis is common among large and small horned animals in the Middle East, including Turkey, keeping animals in some areas was considered harmful. In 1989, an epidemic of fasciolosis was recorded in Iran; ten thousand inhabitants were affected, of whom four thousand were children. Based on studies carried out by coprological examination in large horned animals, fasciolosis was found in 18.8% of animals in India, 25.76% in sheep, and 20.22% in goats. Throughout the country, fasciolosis is common in Indonesia, where it on average reaches 10.0–50.0 percent and, in some regions, up to 90 percent. The challenge to it was most often observed among bumblebees and cattle. Among farm animals in Morocco, fasciolosis occurs on average at 17.1–23.8 percent. In Egypt, however, fasciolosis was observed in 50.0–80.0 percent of animals, and 1.3 percent of camels in this state had the disease. In some regions of Sudan, the invasion extensibility of fasciolosis is 20.0–80.0 percent; in Kenya, 4.2 percent. In Ethiopia, animals suffer from fasciolosis at a rate of up to 60 percent; about half of them die. In North America, among helminthiases, fasciolosis and echinococcosis are the most common. In the U.S. states of Oregon and Washington, fasciolosis occurs in cattle, black deer, and salmon. In this state, a fasciolosis meeting was detected in 16.0% of the grazing lamas. In Kansas State, cattle were infested with fascioles up to 45.0 percent. In the north-

west of the United States, it was noted that the intensity indicator of fasciolas corresponded to 5-70 copies of the parasite and was found in 9 of the 12 countries of South America [35].

In the Republic of Udmurtia, 2.28 percent to 18.4 percent of cattle examined by helminthological rupture in 2001–2012 had fasciolosis (*F. hepatica*), which has been identified as having suffered [25]. According to the analysis of studies carried out by our scientists in various biogeographies of Uzbekistan, 186 species of trematodes were found to parasitize vertebrates. Of these, 30 species have been identified in the fish class, 14 species in the amphibian class, 2 species in the reptilian class, 113 species in the bird class, and 27 species of trematodes in the mammalian class [36; 43].

Pair hooves are trematodes of the following Artiodactyla representatives: *Fasciola hepatica* (L., 1758), *F. gigantica* (Cobbold, 1856), *Dicrocoelium dendriticum* (Rudolphi, 1819), *Paramphistomum ichikawai* (Fukui, 1922), *Liorchis scotiae* (Willmott, 1950); Liorchi The above 14 species are: 11 species in cattle (*Bos taurus*) from trematodes, 10 species in sheep (*Ovis aries*), 8 species in goats (*Capra hircus*), 2 species in domestic pigs (*Sus scrofa domestica*), 3 species in wild boar (*Sus scrofa*), and 5 species of parasites identified in representatives of the family of deer (*Cervidae*) from wild herbivorous mammals [42].

To determine the degree of invasions in a given territory, the geographical location of this territory (landscape climatic conditions), the presence of all zoonoses and an epizootic chain for the spread of the disease (definitive, intermediate, additional Masters), the result of the activities carried out by the veterinary service to liquidate the invasion, and the effectiveness of the work are taken into account [38].

According to the results of studies carried out in cattle farms of Samarkand region and Syrdarya region, located in the central part of the Republic of Uzbekistan and in the north-eastern part of the Republic, 58.8% of cattle raised in the conditions of Samarkand region and 46.4% of cattle examined in Syrdarya region found fasciolosis; the degree of damage of these cattle with paramphistomatoses was 66.4

In each dairy cow with liver trematodes, there is an average decrease in milk productivity by 20–30 percent, a decrease in child throw, resistance to other diseases, and a delay in the duration of the burn [33].

F. from the liver trematodes of cattle with forced slaughter in the conditions of the Samarkand region. The invasion extensivity of *gigantisa* averaged 66.0 percent, while *F. hepatica*, on the other hand, accounted for 92.3 percent, while cattle raised in togliosenoses had their own NV-Batida. *F. gigantisa* accounted for 36.6 percent, while *F. hepatica* accounted for 96.3 percent [37].

In several biocenoses in the irrigated regions of the Samarkand region, all cattle and sheep that were constantly caught in the summer, autumn months, and early winter of 2007 belong to the highlighted 3 types of liver and 3 types of stomach intestine in Trematodes (*F. gigantica*, *F. hepatica*, and *D. it*). It has been established that the lanceatum and *Calicophoron colicophorum*, *Gastrothylax crumeniferi*, and *Liorchis scotiae* are strongly damaged as a result of the passage of an acute stream of mixed invasion diseases called by them, many head animals are also damaged as a result of the passage of the According to our inspections, in this area, *F. gigantica* contains three species belonging to the intermediate masters of mollusks: *L. auricularia*, *L. bactriana*, and *L. subdisconcta*. *F.*, the intermediate boss of *hepatica*, *L. truncatula*, the intermediate master of *Ramphistomatide X.*, it was found that *candaxarica* meet and are sufficiently damaged by the parasite larvae. The range of liver and gastrointestinal trematodes is expanding along the middle reaches of the Zarafshan River. Their new foci are observed to intensify and expand [39].

Conclusion

According to the analyzed literature, trematodes indicate that they are widespread not only on the territory of our Republic but also in the countries of Central Asia, Russia, Europe, Asia, and Africa. Despite the fact that in the next 20–30 years, events aimed at preventing these trematodes will be held, it is noticeable that the extensiveness of the invasion and the intensity of the invasion of these diseases are significantly higher worldwide. We consider it expedient to further strengthen the measures aimed at preventing the disease by widely involving specialists in this field.

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