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Assessing the Prevalence's of Fascioliasis in Goats in the Central Areas of Khost Province Afghanistan

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ABSTRACT

Fascioliasis is an important parasitic disease of domestic animals, which causes weakness, loss of appetite, reduced production and death of animals in domestic animals, which causes more financial losses to farmers. this study aims to investigate and determine the prevalence's of fascioliasis in goats in the central areas of Khost province. the data were analyzed using SPSS with chi square test. A total 100 goats were investigated and the positive prevalence rate of the fascioliasis was 38%. In this study, the age and sex of the animals were also considered. the prevalence rate based on age was 40% in young goat and 37.1% in adult goats. According to sex, the prevalence of fascioliasis in male goats was 42.8% and in female goats was 35.3%. the positive incidence of the fascioliasis was higher in male animals than in female goats based on sex. and based on age the positive incidence was higher in young goats than in adult goats. also, the prevalence of fascioliasis in young male was 50%, but in young female goats the prevalence of fascioliasis was 35%. 40% in adult male and 35.5% in adult female goats detected.

Keywords- fascioliasis, goats, prevalence, Khost, Afghanistan.

I. INTRODUCTION

Understanding the prevalence of goat fascioliasis is crucial for veterinarians, farmers, and policymakers to develop effective strategies for prevention, control, and the welfare of goat populations. Through proper management, early detection, and treatment, the impact of this parasitic disease can be minimized, enhancing the health and productivity of goats in both small-scale and commercial farming systems. goats are a major source of human food, accounting for half of the meat production in some countries. goats form a very important part of the livestock industry, which is very important in the country's economy. also, they are reared by more people to produce more meat, milk and skins. goats are mostly kept by poor people and unemployed women (Shykat et al, 2022). goat skin, wool and hair are used in the raw material industry (Hazratqulov and Taylakov, 2023).

Fascioliasis is a zoonotic disease transmitted by food and water between humans, domestic and wild animals, which is caused by two main species of liver flukes, F. hepatica and F. gigantica. It is seen in five continents of the world except Antarctica (Sah and Sah, 2019).

Fascioliasis is great economic and health importance in food-producing animals. fascioliasis is widely available in hot and semi-hot countries, which are present in fifty countries of the world, especially in Asian, African and American countries. High prevalence of fascioliasis are seen in poor countries where animals have close contact with humans. Bangladesh is an endemic area of fascioliasis, the prevalence of fascioliasis has been reported to be 10-32% in live goats and 3.8-22% in slaughtered goats. also, in neighboring countries such as India, the incidence is 2.35-15% and in Pakistan, the incidence is 4.08-28.75%. F. hepatica is more common in warm and tropical regions of the world and F. gigantic a, which are important species of fasciola and cause

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fascioliasis. F. hepatica infects the liver and bile ducts of ruminate and other mammals, and its intermediate host is called Lymnieadae snails. An estimated 180 million people worldwide are at risk of zoonotic diseases. loss of animal production due to fascioliasis in the world reaches 200 million dollars (Shykat et al,. 2022).

Fascioliasis is commonly found in sheep, goats and cattle, and has been reported from 81 countries around the world because fascioliasis is a very important and economic disease in goats, due to which there is a significant reduction in the production of goats, because the animal becomes weak due to lack of appetite and as a result the life of the animal is threatened. therefore, this disease is a debatable topic, which should be investigated and the risks of this disease can be reduced in the future (Lan et al, 2023).

Fascioliasis causes decreasing in the quality and quantity of production in goats and as a ensu it causes the deterioration of the farmers and the economy of the country as a whole, it is necessary to eliminate the causes of this disease. to eliminate the factors and reduce the risks, research and investigation should be done. Based on this, I conducted a research on the prevalence's of fascioliasis in goat in the central areas of Khost province, so that the farmers of the country can be safe from the dangers and economic losses of this disease in the future. goat fascioliasis, also known as liver fluke infection, is a prevalent parasitic disease affecting goats globally. fascioliasis is caused by a group of trematodes belonging to the genus Fasciola, primarily Fasciola hepatica and Fasciola gigantica. fascioliasis have a complex life cycle involving both snail intermediaries and mammalian hosts, including goats (Mas-Coma, S., Valero, M. A., & Bargues, M. D. 2009). the prevalence of goat fascioliasis has different significantly across geographical regions, first influenced by environmental factors such as climate, temperature, and humidity. Areas with high rainfall and suitable intermediate host snail populations tend to have a higher prevalence of the disease (World Health Organization1995).

Goat fascioliasis have sustainable economic notion as it leads to decreased productivity and reproductive performance in infected animals. the liver flukes cause damage to the liver and bile ducts, eventuate in decreased feed efficiency, weight loss, anemia, and even death in severe cases. The resultant liver pathology also impacts the quality of goat meat and milk, affecting profitability in the livestock industry. prevention and control of goat fascioliasis mainly involve implementing strategic parasite management practices. these interventions include regular deworming, pasture management, and water management to limit exposure to snail-infested areas. Additionally, proper sanitation, good hygiene practices, and minimizing contact with contaminated water sources can help reduce the risk of infection (Esteban, J. G., González, C., Bargues, M. D., & Angles, R. 2002).

The diagnosis of goat fascioliasis is typically confirmed through fecal examination, serological tests, or post-mortem examination. Once diagnosed, appropriate treatment options should be implemented promptly to prevent further spread of the disease and alleviate the clinical signs.

II. METHODOLOGY

Time of the study

This study started on June 15, 2023 and ended on September 16, 2023.

Research area

This study has been conducted to investigate and assess the prevalence of fascioliasis in goat in the central areas of Khost province.

Size of the sample

In this study, goats from different areas of the center of Khost province were investigated, out of 100 goats which of 35 were male and 65 were female. also, based on age, 30 young goats have less than one year (<1 year), and 70 adult's goats age was more than one year (>1 year), were considered.

Collection of the samples

The samples of waste material were collected from the goats during the removal of waste material in view of all the parameters and were transferred to the laboratory of the Faculty of Veterinary Sciences for examination in specially labeled bottles.

Method of diagnosis

The sedimentation Method was used to examine the samples, in this way, first I dissolved 3 grams of the waste material sample in 20 ml of water, and then I filtered it several times through a sieve. I put it in a tube and put it in a centrifuge for 3-5 minutes, after that I poured the water from the head of the mixture and after solving it with a pipette, I put a few drops on a clean slide and covered it with a cover slide. Under a 40x10 power microscope I checked for the presence of parasite eggs. In positive samples, parasite eggs were yellowish brown to brown in color and oval in shape with an operculum at one end.

Data Collection:

As a result of the examination, the samples that contained parasite eggs were recorded as positive cases of fascioliasis and the samples that did not contain parasite eggs were recorded as negative cases of the disease. the obtained data were recorded in a table by noting the characteristics of each animal. also, the data table was arranged in such a way that the animal's age, sex, owner's name, location, and positive and negative events were written in special places to avoid mistakes. we have used the observation method to collect data, and we have transferred the samples to Sheikh Zayed University for diagnosis.

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Data analysis

All the data were analyzed using one-way analysis of variance from completely randomized design. (ANOVA-SPSS) as described by Sen décor and Cochran (1967).

III. RESULT

1. Prevalence based on sex:

As a result, it was found that the prevalence of fascioliasis in male goats was higher than in female goat, and the prevalence of fascioliasis in male goats was 42.85%. and in female goat was 35.38%.

Table 1: Shows Deference's based on sex, the prevalence of fascioliasis in goats of the central areas of Khost province.

Sex	No. of samples	No. of positive cases	Prevalence (%)	P-value
Male	35	15	42.85	P< 0.05
Female	65	23	35.38	P< 0.05
Total	100	38	78	P< 0.05

2. Prevalence based on age:

As a result of this study, the age of the goats was considered, the positive incidence of the fascioliasis was higher in young goat than in adult goat, so the prevalence of fascioliasis in young goat was 40% and in adult goat the prevalence of the fascioliasis was 37.1%.

Table 2: Shows Deference's based on age, the prevalence of fascioliasis in goats of the central areas of Khost province.

Sex	No. of samples	No. of positive cases	Prevalence (%)	P-value
Young	30	12	40	P< 0.05
Adult	70	26	37.14	P< 0.05
Total	100	38	77.14	

3. Prevalence based on youngest:

As a result of this study, the prevalence of fascioliasis in young male goat was 50% and in young female goats was 35%, so the prevalence was higher in young male goats than in young female goats.

Table 3: Shows Differences based on young goats, the prevalence of fascioliasis in the central areas of Khost province.

Sex	age	No. of samples	No. of positive cases	Prevalence (%)	P-value
Male	young	40	20	50	P< 0.05
Female	young	60	10	35	P< 0.05
Total		100	30	85	

4. Prevalence based on sex Matured:

As a result of this study, the prevalence of fascioliasis in Matured male goat was 35% and the prevalence of matured female goats was 30%.

Table 4: Shows Differences based on sex Matured and non- Matured goats, the prevalence of fascioliasis in the central areas of Khost province.

Sex	age	No. of samples	No. of positive cases	Prevalence (%)	P-value
Male	Mature	50	15	35	P< 0.05
Female	Matured	50	10	30	P< 0.05
Total		100	25	65	

IV. DISCUSSION

Fascioliasis or liver flukes are of great importance from the economic aspect of health in food-producing animals. this disease is widespread in hot and sub-tropical countries, which causes infirmity, stunting, loss of appetite and, as a result, low productivity and death in animals. this study was conducted during three months to investigate the prevalence of fascioliasis in goats in the central areas of Khost province. All 100 goats were selected in this study. In this study, the age and sex of the goats were taken into assess, the rate of positive cases of fascioliasis in male goats was 42.8%, and 35.3% in female goats, 40% in young goats and 40% in adult goats. the incidence rate was 37.1%. Also in young male goats it was 50% and in young goat's animals it was 35% and in Matured male goats the incidence of disease was 50% and in Matured female the prevalence of fascioliasis was 35.55%.

One of the study which was conducted in 2015 by Yadav and his colleagues in Mahattori and Dhanusha districts of Nepal, used the Sedimentation method to test fecal of the goat, resulted in positive cases of the fascioliasis in male goats 31.9% and 68.1% in female goats. 49.2% in young goats and 43.2% in adult animals. this study is consistent with our study in terms of the method, in this study, the positive incidence of the fascioliasis was higher in young goats than in adult goats, which is similar to our study, but the positive prevalence was based on sex. the prevalence was higher in female goats than in males, which is contrary to our research, because in our research area, male goats are transferred to different areas for fertilization and no special attention is paid to their protection (Yadav et al., 2015).

A study conducted in 2011 by Al Mamun and his colleagues in Kishoregang district, Bangladesh, where

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1284 goats were studied and samples were examined by direct smear and Simple sedimentation method was used. the positive incidence of the fascioliasis was 32%. according to based on age, positive incidence was 30.63% in goats older than 2 years and 35.39% in goats less than 2 years old. this study is consistent with our study in terms of method and incidence based on age (Al Mamun et al, 2011).

A study that was conducted by Islam and his colleagues in Dera Ismail Khan, Pakistan in 2012, where 400 goats were investigated and for the examination of waste materials, Fresh Smear Examination, Sedimentation and Egg Counting Technique methods were used, result showed that the rate of positive cases of the fascioliasis was 12.50%. in this study, the number of positive cases of the fascioliasis was much less than in our study, because in our study area, there are intermediate hosts for parasites in animal pastures and sanitation is not done properly. (Islam et al, 2014).

A study that was conducted in the Kashan region of Iran, in this study totally, 251325 animals were investigated, including 151924 goats, 88939 sheep, and 10462 cattle. Liver necropsy of slaughtered animals was performed, resulting in a total positive incidence rate of 2.90%, as well as 2.76% positive fascioliasis prevalence in goats. 3.28% positive fascioliasis incidence in sheep and positive fascioliasis incidence in cattle was 3.68%. this study is not compatible with our study in terms of method and the incidence of disease, because the use of anti-snail drugs in pastures and low humidity (Khoramian) et al, 2014.

From March 2017 to February 2018, another study was performed in five districts of Nepal during twelve months. 200 goats were randomly selected from each district based on sex, a total of 1000 fecal samples were taken, which used the Sedimentation method to examine the fecal, and the positive incidence of the disease was 16.5% in young goats and in adult goats was 39.6%. this study is consistent with our research in terms of method, because adult goats are more often moved to pastures for grazing and young animals stay at home (Sah and Shah, 2019).

In our research, we have only taken samples from animals in one season (summer), as well as the absence of 24-hour electricity in the laboratory of the Faculty of Veterinary Sciences, the lack of (PCR) and other possibilities for the accurate diagnosis of fascioliasis. In some areas of Khost province, the lack of transport, economic problems, and not bringing samples to the laboratory in an appropriate way, these are all things that hindered our research to some extent.

V. CONCLUSION

Our research, which was conducted in 100 goats in the central areas of Khost province, in order to determine the prevalence of fascioliasis in goats, it was found that fasciliasis is widely investigated in goats in the central areas of Khost province. have Similarly, in this study, the age and sex of the goats were taken into consideration, and the positive incidence of fasciliasis was higher in male animals than in female animals based on sex, and the prevalence of the fascioliasis was higher in young goats based on age more than adults.Overall, understanding the prevalence of goat fascioliasis is crucial for veterinarians, farmers, and policymakers to develop effective strategies for prevention, control, and the welfare of goat populations. through proper management, early detection, and treatment, the impact of this parasitic disease can be minimized, enhancing the health and productivity of goats in both small-scale and commercial farming systems.

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Conflict of Interest

No any conflict of interest between the authors.

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