

Prevalence of Fascioliasis in cattle at Dumuria Upazila of Khulna district

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Abstract

The study was conducted at Dumuria upazilla in Khulna district during 28 September 2014 to 20 January 2015. The present study was conducted to investigate the prevalence of fascioliasis based on fecal examination and clinical signs. Total number of 135 cattle was affected with fascioliasis out of 234 cattle attended to the hospital. The present study reveals the rate of parasitic (fascioliasis) infestation was 57.69%. During fecal examination it was recorded that 1-2 years old (57.78%), 2-4 years old (28.87%), 4-6 years old (13.45%) were fasciola affected. It was found that about 68.06% fasciola affected animals were crossbred and 31.94% were indigenous. It also observed that 64.44% female and 35.56% male were fasciola affected due to sex. About 26.67% stall feeding animals and 73.33% grazing animals were fasciola affected on the basis of feeding.

Keywords: Fasciola, Cattle, Prevalence, Faeces Examination.

Introduction

Gastrointestinal parasitism is a world-wide problem for both small- and large-scale farmers and is a great threat to livestock industry (Saddiqi *et al.*, 2010). Fascioliasis is one of the most economically important disease of ruminants in Bangladesh. It is an important cause of loss in cattle production, decline in meat and milk production, adverse effects on fertility, death and liver condemnation in abattoir. Many control efforts have been made for this disease to date. However, over 10% of cattle have harbored Fasciola for the recent past 10 years in Bangladesh.

Livestock is an important sub-sector considered to be the backbone of agriculture plays an important role to promote human health and in poverty alleviation as well as economic development of Bangladesh.

It contributes about 2.41% of our national income and 16.23% of our total agricultural sector. The total population of livestock in Bangladesh is about 48.5 million and produces 0.68 million ton meat and 1.89 million metric ton milk (Economic Survey, 2008). Which generate 13% of foreign exchange and provides full time employment of about 20% of partial employment of about 50% of rural people (Ali, 1999). So, it enhance in socio-economic as well as national health condition of poor people. It is also the main source of animal protein and also the source of draft power, hide, meat, and milk. The animals are used for transportation, threshing and crushing the crops. In addition cattle by product e.g. Dung are used as fuel and manure, bone, horn and teeth for making comb.

Fascioliasis, caused by *Fasciolagigantica* is an economically important disease of ruminants in Bangladesh (Bhuyan, 1990; Amin and Samad, 1988; Islam and Samad, 1989). It is common in Africa, the Indian sub-continent, central and Southeast Asia and other subtropical and tropical areas of the world. Report showed that 12.92% goats and 21-22.40% cattle (Bhuyan, 1990). It causes condemnation of liver from slaughtered sheep and death to those untreated sheep (Radostitis *et al.*, 2007).

This study deals with the influence of age, sex, environmental factors, and pasture land on the occurrence of fascioliasis in cattle in late winter season Upazilla Veterinary Hospital, Dumuria, Khulna.

The present study was designed with the following objectives-

- To determine the prevalence of fascioliasis cattle of Upazila Veterinary Hospital, Dumuria, Khulna district.
- To determine the magnitude of infestation in different age, sex and season in cattle.

Materials and Methods

Selection of study area

This study was conducted for a period of approximately 4 months at Upazila Veterinary Hospital, Dumuria Khulna. Most of the patients of that time were come with malnutrition along with parasitic infestation. As the selected area was low laying the parasitic infestation was comparatively higher than other area.

Selection of study population and their source

The farmers from the villages surrounding the Upazila brought their cows to Upazila veterinary Hospital, Dumuria, Khulna for various treatment purposes. The suspected 135 animals showed characteristic clinical signs (poor body condition, weakness, rough hair coat anorexia, anemia, diarrhea, accumulation of fluid under the jaw (named bottle jaw) etc. which were taken as suspected cases. Fecal samples were collected from rectum just after defecation of that suspected animal and taken in polythene.

Background of the study

The people of this area were very much interested to rear cattle. The density of cattle population is very high. The study is done 28 September 2014 to 20 January 2015. It is low land area than other high land area that is susceptible for fascioliasis in livestock.

Method of Data collection

History collection

A questionnaire was developed for data collection from the farmers along with other necessary records. The farmers with their cows were individually interviewed. Physical examination was done for each attending. Simultaneously faecal examination was performed to examine in the cattle.

The following data were collected based on questionnaire survey-

- 1) Breed, 2) Age of the cow, 3) Pasturing, 4) Sex, 5) Feeding, 6) Watering, 7) Area, 8) Diagnostic and therapeutic protocol used

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Collection of data

Rainfall and season is the most important for snail (*Lymnaea auricularia*) development which act as intermediate host of fasciola species. Temperature is also important for growth and development of Fasciola and snail, younger animals were more susceptible than adult. Crossbreed cattle were highly susceptible than indigenous. Animals those were grazing in pasture especially low land area commonly affected by Fasciola.

Clinical data

- ❖ Accumulation of fluid under jaw (Bottle jaw)
- ❖ Inappetance
- ❖ Depression
- ❖ Weakness
- ❖ Loss of body weight
- ❖ Diarrhoea
- ❖ Pale mucous membrane.
- ❖ Rough hair coat

Clinical examination

General clinical examination

- ❖ Slightly increased temperature: 51 in number
- ❖ Subnormal temperature: 45 in number
- ❖ Normal temperature: 39 in number
- ❖ Pulse rate : Increased
- ❖ Respiratory rate: Increased

Special clinical examination

- ❖ Conjunctival mucous membrane: Yellowish
- ❖ Palpation: Enlargement of liver
- ❖ Percussion: Painful liver

Collection of sample for examination

Fecal samples were collected from 234 suspected cattle of Dumuria Upazilla in Khulna district were examined. 10 gram of fecal samples were collected from the rectum of cattle just after defecation by hand that were kept in a polythene bags and were examined by Direct smear method (Rahman *et al.*, 1991, 1996).
Fecal sample: From rectum Amount: 10 gm

Examination Technique

To diagnose fascioliasis, the fecal samples were examined under microscope after processing of sample by direct smear method.

Direct smear method

Principle

A loop of fecal sample was taken on a glass slide thoroughly diluted with few drop of water, covered with cover slip and examined under microscope using both low and high power magnification for the presence and identification of fasciola egg. (Rahman *et al.* 1996)

Materials and equipments

- ❖ sample
- ❖ water
- ❖ Microscope
- ❖ Slide
- ❖ Tooth Peck
- ❖ Cover slip

Procedure

- ❖ Taking trace amount of feces in the slide.
- ❖ A drop of water placed attached with the faeces.
- ❖ Then preparing a thin smear.
- ❖ The preparing slide fixed under microscope.
- ❖ Then observed the eggs in the focus

Observation of the treated animal

When contact with the respective owner after 8 days of treatment given, It was observed that about 95% animals were recovered and their physical examination were good and on fecal examination no eggs were found under microscope. Other animals were treated again for recovery. Mainly physical examinations were done for observation after treatment in Upazila Veterinary Hospital, Dumuria, Khulna.



Fig 1. Bottle jaw caused by *Fasciolagig antica*

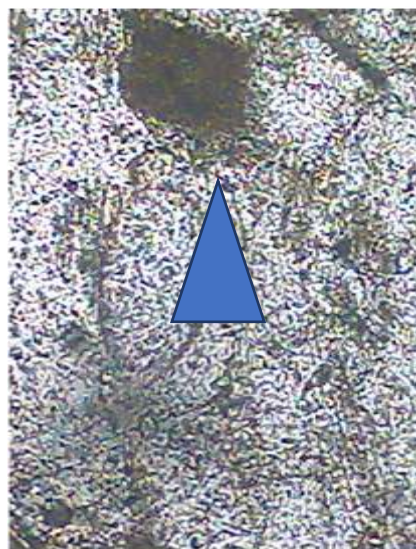


Fig 2. Microscopic examination of Faeces



Fig 3: Ova of *Fasciolagigantica*

Results and Discussion

This study was conducted on fascioliasis in cattle maintained by Upazila Veterinary Hospital, Dumuria, Khulna. For this study, a total number of 234 cattle were selected. Among them 135 cases were identified as a clinical fascioliasis after fecal examination under microscope. To study the incidence of fascioliasis in cattle, records from 28 September 2014 to 20 January 2015 of the Upazila Veterinary Hospital were compiled and analysed. The overall incidence of fascioliasis during this period was found to be 57.69% out of 234 affected cattle.

Table-1. Clinical Fascioliasis associated with breed

Breeds	Number of cattle recorded	Number of cattle affected with fascioliasis	Percentage (%)
Indigenous	93	39	31.94
Cross-bred	141	96	68.06
Total	234	135	57.69

From the Table-1 it shows that the incidence of fascioliasis among different breeds of cattle. Among the local (Indigenous) and cross breeds, the highest incidence was recorded in cross breeds (68.06%), followed by indigenous breeds (31.94%). It is evident from these data the breed is one of the important factor for the occurrence of fascioliasis in cattle.

Cross breed animals are highly susceptible (68.06%) than local (31.94%) animals. It is supported by Haque *et al.* (1987) who reported that the mortality rate of cross breed calves is more than that of indigenous calves due to fascioliasis. Most of the farmers of our country cannot fulfill the nutrient requirements of cross breed animal.

Table 2. Clinical Fascioliasis associated with age

Age group	Number of cattle recorded	Number of cattle affected with fascioliasis	Percentage (%)
1-2 years	123	78	57.78
2-4 years	72	39	28.87
4-6 years	39	18	13.45
Total	234	135	57.69

From the result of Table-2 it was found that the fascioliasis affected with cattle increases with early age. Here the 1-2 years age group cattle have more chance to become fascioliasis than that of 2-4 years and 4-6 years age group. Among them 135 cases were positive after fecal examination under microscope. The result reveals that 57.77% cases were recorded at 1-2 years old, 28.87% cases were recorded at 2-4 years old and 13.45% cases were at 4-6 years old.

It is evident from these result that both (1-2) and (2-4) years old cases are highly susceptible to *Fasciolagigantica* infection but (4-6) years old cases are also may be susceptible. This finding is supported by the statement of Khandaker *et al.* 1998 who reported that, the prevalence of *Fasciolagigantica* was highest in cattle of more than 36 months of age and lowest in the age of less than 12 months.

Table3. Clinical Fascioliasis associated with feeding practices

Feeding practices	Number of cattle recorded	Number of cattle affected with fascioliasis	Percentage (%)
Stall feeding	96	36	26.67
Pasture grazing	138	99	73.33

From the result of Table-3, it shows that the cattle grazed on pasture are more susceptible (73.33%) than that of stall feeding cattle (26.67%) to fascioliasis this is due to the ingestion of eggs of *Fasciola sp.* remaining on the grass voided from the affected animals.

Table 4. Affected with Fascioliasis in cattle on the basis of different sex group

Sex group	Number of cattle recorded	Number of cattle affected with fascioliasis	Percentage (%)
Male	87	48	35.56
Female	147	87	64.44
Total	234	135	57.69

From the result of Table-4, it was found that there was difference in the rate of infection in between male and female cattle. In female it was higher (64.44%) than males (35.56%). This findings is supported by the findings of Hossain and Ali, (1998); Bedarkar *et al.* (2000) who reported that female cattle are highly susceptible than male.

The higher percentage of infection in the female cannot be explained exactly but it might be assumed that hormonal influence as well as stress leading to immune suppression may be associated with this phenomenon.

Conclusion

The overall prevalence of fascioliasis based on fecal sample examination 57.69%. The prevalence rate was high due to late rainy season and early winter and also high intermediate host (snail). The prevalence of fascioliasis was higher in female than the male animals, this may be due to females were weaker and immunologically more susceptible to fascioliasis than male ones. The parasites need intermediate host for completion of life cycle. In Bangladesh, prevalence of disease varies takes place depending upon the presence of intermediate host, number of susceptible animals and some other epidemiological factors. Special care should be taken to control the fascioliasis by adopting strategic measures in farm animals to prevent the loss of production.

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