

OCCURRENCE AND THERAPEUTIC RESPONSE OF PESTE DES PETITS RUMINANTS (PPR) IN GOATS AT THE SELECTED SOUTHERN PART OF BANGLADESH

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A *Peste des petits ruminant* (PPR) is an infectious and endemic disease of Black Bengal goats in Bangladesh. The aim of this study is to explore the prevalence of PPR in goat at the selected southern part of Bangladesh. An intensive survey was conducted by using pre-test questionnaire. A number of 91 goats were selected, among of them 69 (75.82%) goats were diagnosed as PPR. The highest occurrence of PPR was in Black Bengal (80.85%) and Jamunapari (72.72%). In this study, we found that the high prevalence of PPR was at 5-12 months of age. In this study there found high occurrence of PPR in female in Black Bengal, Jamunapari and cross breed were 84.21%, 79.16% and 71.42%, respectively. In case of Black Bengal the 63.15% affected goats were in between 0-6 months range. But in Jamunapari it was 45.83% in over 7-12 month's age. But in cross bred it was 28.57% in both 0-6 months and >12 months. In Black Bengal goat the highest temperature, heart rate, respiration and dehydration were recorded. Combined therapy (atropine, antihistaminic, antibiotic, fluid therapy) was more effective in the treatment of PPR. The findings of the present study would enrich understandings regarding the status and epidemiology of PPR in Bangladesh.

Key word: PPR, Black bangle goat, Jamunapari

Peste des petits ruminant is an acute, febrile and highly contagious viral disease of small ruminants caused by a non-segmented negative strand RNA virus. International

organizations of Animal Health (OIE) have isolated PPR as notifiable and economically important transboundary viral disease of small ruminants associated with high morbidity and mortality. PPR was first reported in the Ivory Coast of West Africa and later on found in other parts of the world including sub Saharan Africa, the Arabian Peninsula, the Middle East, and the parts of Asia (Balamurugan et al., 2012). Hegde et al., (2009) stated that PPR is one of the most widespread, infectious and contagious diseases which drastically affect different breeds of goats of Bangladesh. Black Bengal goat is more sensitive to PPR than that of other breed and the rate of incidences is the highest during the rainy season and in the dry agro-climatic zones. Virus shedding occurs in exhaled air, in secretions and excretions from the mouth, eye and nose, and in feces, semen, and urine (Maganga et al., 2013). Clinical pictures of PPR showed sudden onset of depression, high rise of temperature, mucopurulent discharges from the eyes and nose, sores in the mouth, difficult breathing and cough, foul smelling diarrhea (Rahman et al., 2011). In Bangladesh a live attenuated conventional PPR vaccine was developed by Bangladesh Livestock Research Institute (BLRI) and currently being used in the country. This vaccine is highly effective in control against PPR in goats (Rahman et al., 2011).

The virus efficiently spread by aerosol droplets or by contact with secretions or excretions of infected animals (saliva, feces, urine, vaginal, nasal or ocular discharges and probably only small amount of virus is

required to infect susceptible individuals and the disease characterized by mainly three symptoms like discharges (nasal, ocular, oral), diarrhea and death, hence it is called 3D disease (Radostits *et al.*, 2008).

Clinically, PPR resembles rinderpest and is characterized by the sudden onset of depression, fever, discharges from the eyes and nose, sores in the mouth, disturbed breathing and cough, foul-smelling diarrhoea (Wang and Bao, 2009). Like other members of the family Paramyxoviridae, PPR virus is an enveloped pleomorphic particle. The genome of PPRV is single stranded RNA, approximately 16kb long with negative polarity PPR virus, like other morbilliviruses, is lymphotropic and epitheliotropic (Taylor, 2001).

In unprotected animals the morbidity can be up to 100 % and mortality may be 20 to 90% and in severe outbreaks with 100% case fatality particularly in goats (Samad *et al.*, 2010). The outbreaks of PPR caused 74.13% morbidity and 54.83% mortality in Black Bengal goats in Mymensingh district of Bangladesh (Islam *et al.*, 2001). However there is no authentic data of breed wise PPR outbreak in the Southern part of Bangladesh. Therefore, this experiment has been designed to explore the occurrence and therapeutic response of PPR outbreak at the selected southern part of Bangladesh.

MATERIALS AND METHODS

This study has been conducted from 28 September to 20 November 2014. The study area was done at Upazilla Livestock Office, Patuakhali. In this study it was conducted on natural PPR infected goats of various breed, age and sex randomly over the period. A number of cases were recorded, adult goats were randomly selected, examined, treated and follow up was taken. History of the cases were taken from the owner and carefully recorded in each case individually.

Recording of signs and symptoms

Different exposed signs and symptoms were recorded carefully by close infection like erosion of oral mucosa, discharges from eyes, nose, mouth, rough coat, soiled hind quarter, anorexia, depression, temperatures were recorded by indirect palpation per rectum by thermometer of every case and

tabulated. Indirect auscultation was performed to hear the lung and tracheal sound to coincide with the symptoms of pneumonia. Skin fold test were performed to take the rough estimation of the degree of dehydration. Presumptive diagnosis was made on the basis of the anamnesis and observed clinical signs and symptoms.

Criteria for diagnosis of PPR

In this study, population groups were divided, depending upon the early stage and later stage of clinical signs and symptom. PPR consists of 5 phases of infection cycle as incubation period, prodermal phase, erosive phase, pneumonic phase, diarrhea and death. Infected animal of early stage showed sharp rise of temperature (104°F to 106°F), impaired appetite, depression, erected hair, serous nasal discharge, sneezing, congestive oral mucosa and later erosion in the lip, buccal mucosa, gum, dental pad, palate, tongue and nasal passage. Where as in later stage, the animal showed mucopurulent to purulent nasal discharge which may encrusted and matted over the mouth, Pneumonia, severe dyspnoea, diarrhoea with dark brown colored fluid faeces with necrotic debris streaked with blood. Temperature regresses with advancing dehydration and emaciation.

Follow up the treatment

As being viral disease, only supportive therapy was applied to the PPR infected goats. Antibiotic, sulphur drug, antihistaminic and fluid therapies were given to the study population. The therapy was-

- a. Sulphadimidine @ 0.2 gm body wt. (3ml per 5 kg body wt.) in the first dose and % of the initial dose in subsequent days, IM.
- b. Oxytetracycline @ 10mg per kg body wt. (1ml per 10kg body wt.) IM daily.
- c. Promethazine hydrochloride @ 10mg per kg body wt. (2ml per 10kg) IM daily.
- d. Atropine sulphate @ 1mg/kg body wt.
- e. Oral fluid therapy by Oarsaline.
- f. First group was treated with the atropine aided antibiotic and second group with antihistaminic aided

antibiotic. The third group was treated with combined therapy.

- g. Fluid therapies were same for the all group.

Experimental design

The prevalence of PPR in goat has been found out according to their breed, age and sex. The breed has been categorized as Black Bangle, Jamunapari and cross breed. According to their age, the goats were grouped as 0-6months, 7-12 months and > 12 months. The goats were differentiated as Male and female. The therapeutic response has been divided as (A) Atropine, antibiotic, fluid therapy, (B) Antihistaminic, antibiotic, fluid therapy, (C) Combined therapy (Atropine, antibiotic, antihistaminic and fluid therapy).

Statistical analysis

The collected data was entered in the Microsoft Excel 2010 and were coded, scored, compiled, tabulated and analyzed in accordance with the objective of the study by paret t- test using SPSS (version 16.0). The occurrence rate of PPR has been expressed in percentage (%).

RESULTS AND DISCUSSION

Input use pattern

In table 1, it is showed that the highest occurrence of PPR was in Black Bengal (80.85%) and Jamunapari (72.72%). According to Shaila *et al.*, (2006) Black Bengal goats are more susceptible (67.24%)

to PPR than Jamunapari breed (32.76%). But the study was showing little difference. The study was not fully agreed with them. But Black Bengal was showing more diseases susceptibility than Jamunapari goat. In this aspect the study was supporting their observation.

Susceptibility of PPR disease in age group is presented in table 2. It showed that the 0-6 months age group in Black Bengal, over 7-12 months in Jamunapari and, 7-12 months in Cross breed were more susceptible. In case of Black Bengal the 63.15% affected goats were in between 0-6 months range. But in Jamunapari it was 45.83% in over 7-12 month's age. But in cross bred it was 28.57% in both 0-6 months and >12 months. It was found more prevalence of PPR in goat under 1 year of age specially 4- 12 months of age and & 7-12 months of age. Our data was agreed with Abdollahpour *et al.* (2006) Islam *et al.* (2003).

In Black Bengal 84.21% animal were female which was affected with PPR. In jamunapari about 79.16% but in cross bred was female 71.42% which were lower than other breeds. It may due to the females were normally immunological status suppressed due to pregnancy or milking status (Chakrabarti, 2008). Samad, (2010) was found around 55% female goat affected with PPR. But this study shows higher value than Samad's observation.

The table 4 was indicates that high fever was

Table 1: Occurrence PPR in different breeds of goat

Breed	No.	Prevalence N (%)
Black Bangle	47	38 (80.85)
Jamunapari	33	24 (72.72)
Cross breed	11	7 (63.63)

Table 2: Occurrence of Diseases in different age group

Breed	0-6 month N (%)	7-12 month N (%)	>12month N (%)	Total
Black Bangle	24 (63.15)	11 (28.94)	3 (7.89)	38
Jamunapari	5 (20.83)	11 (45.83)	8 (33.33)	24
Cross breed	2 (28.57)	3 (42.85)	2 (28.57)	7
Total	31 (44.93)	25 (36.23)	13 (18.84)	69

Table 3: Occurrence of PPR according to sex

Breed	Female N (%)	Male N (%)	Total
Black Bengal	32 (84.21)	6 (15.79)	38
Jamunapari	19 (79.16)	5 (20.84)	24
Cross Breed	5 (71.42)	2 (28.58)	7
Total	56 (81.16)	13 (18.84)	69

Table 4: Temperature recorded in PPR affected goats

Breed	102.0-103 ⁰ F N (%)	104-105.9 ⁰ F N (%)	106 ⁰ F and over N (%)	Total
Black Bangle	15 (39.47)	23 (60.53)	0	38
Jamunapari	10 (41.66)	6 (25.00)	8 (33.33)	24
Cross breed	3 (42.85)	4 (57.15)	0	7
Total	28 (40.52)	33 (47.83)	8 (33.33)	69

Table 5: Efficacy of therapeutic response in PPR of goat in different therapeutic method

Therapy	Case treated (N)	Cured cases N (%)
A	27	19 (70.37)
B	22	15 (68.18)
C	20	16 (80.8)

comparatively higher in Jamunapari than Black Bengal and cross bred. A wide range of variation in fever was found in PPR according to severity. In Severe condition high temperature were recorded. Comparatively in Jamunapari acute sever form of PPR was found in higher degree. According to Radostits et al. (2008) in PPR there found 104⁰C - 105⁰C and over in initial stage. This study also agrees with them and others (Abubaka et al., 2008).

The treatment and therapeutic responses were studied in table 5. This matches some previous studies. In antihistaminic antibiotic the Successful percentage was 68.18% which matches the result of Islam et al. (2001). In combined therapy the cured percentage was 83.8% which is similar to the findings of Islam *et al.* (2001). It was found that combined therapy with atropine and antihistamine aided antibiotic supported by fluid therapy is so much effective to minimize mortality.

CONCLUSION

It might concluded that Black Bengal Goat was more susceptible compared to Jamunapari goat. According to age groups, 1.5-2 years goats were highly infected than others. Here male was more resistant than female to PPR infection. Although against virus, there is no specific treatment, combined therapy containing antibiotic, antihistamines as well as fluid therapy noticed line of treatment in PPR infection of goat.

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