



Prevalence of PPR of Goat and Their Response to Antibiotic Treatment at Mirzaganj Upazila of Patuakhali District

M. S. Islam¹, M. S. I. Khan², H. A. Kader³, M. R. Begum⁴ and M. A. Asgar⁵

¹Department of Post-harvest Technology and Marketing, ²Department of Food Microbiology, ³Department of Human Nutrition and Dietetics, ⁴Department of Physiology, Biochemistry and Pharmacology; Patuakhali Science and Technology University

⁵Department of Agricultural Economics and Social Science, Chittagong Veterinary and Animal Sciences University.

Abstract

The study was conducted at Upazila Livestock Office from 1st January to 31th March, 2010 to observe the prevalence of PPR in goat at Mirzaganj upazila in Patuakhali District. A total of 183 goats were examined based on the clinical signs and gross pathological lesions of which 92 were PPR affected makes up 50.27%. After categorizing the animals according to their breed, age and vaccination history it was revealed that Black Bengal goats were more susceptible (54.93 %) than Jamunapari (31.38 %). The prevalence of PPR was maximum 63.33% at age category of 7-12 months, in compare with 44.68%, 41.87%, 45.45% at age category of ≤ 6 months, 13-18 months and ≥ 19 months respectively. Non-vaccinated goats were more susceptible (66.40%) to PPR infection than vaccinated goats (19.56%). Parental (I/M) Oxytetracycline was more effective (64%) than parental (I/M) Sulphadimidine (44%) along with symptomatic treatment. PPR causes higher mortality and heavy economic losses in every year which may be reduced substantially by proper vaccination and other managerial approaches.

Key words: Black bengal goat, Clinical signs, Jamunapari, Prevalence, PPR.

Introduction

Goat rearing is an integral part of farming system in Bangladesh and the population of goat is about 33.51 million (DLS, 2002) which put 3.96% contribution in GDP (Alam *et al.*, 1998). The animal is particularly useful for low-income farmers, landless labourers and distress women who cannot afford to rear cattle. Hence, goat is called "The cow of poor people" in Bangladesh. Goat rearing provides a significant level of supplying animal protein in the form of meat (20%), and one of the important areas of earning foreign exchange through the exportation of skin. But there are several diseases of goat especially PPR, which cause higher mortality and great economic losses. PPR is an exotic disease of goats in Bangladesh (Debnath, 1995; Islam *et al.*, 2001).

Sheep and Goats are the natural host of PPR virus whereas goats are more susceptible than sheep (Radostits *et al.*, 2000). PPR has been recognized to a highly contagious viral disease of small ruminants, particularly in goats in Bangladesh (Islam *et al.*, 2001). The disease clinically resembles Bovine rinderpest and is characterized by high fever, necrotic stomatitis, catarrhal inflammation of the ocular and nasal mucosae, pneumonia, diarrhoea and death (Fraser, 1986). In epidemic areas, morbidity rate has been estimated from 80% to 90% accompanied by mortality rate range from 50% to 80% (Debnath, 1995).

It is caused by paramyxovirus of morbillivirus genus and first described in 1942 in Cote De Ivoire. Also reported from the African continental, in the Arabian peninsula, certain countries of the Middle East and South Asia (Taylor *et al.*, 1990). In Bangladesh, the presence of rinderpest like disease in goats was first detected by FAO expert team during their visit in western districts of the country in 1993. Later, the causal agent of the disease was identified as PPR virus by World Reference laboratory (Barrette *et al.*, 1997). It is assumed that 75% of the districts in Bangladesh are affected with PPR in Bangladesh it is thought that the disease might have come from India (Debnath, 1995). Rainy season is more susceptible to occur the disease as compared with dry season (Samad, 1996). Transmission occur by close contact, inhalation of aerosol produced by sneezing and coughing of infected animals, direct contact with ocular, nasal, oral secretions, feces, fomites such as bedding, water and feed troughs (Ozkul, 2002).

PPR like other viral diseases of have no specific treatment for PPR, however mortality may be decreased by using drugs that control the bacterial complications (Taylor *et al.*, 1984). Also, combined drug therapy can save the animal in field condition (Richrd and Adams, 1996). The present study was conducted to determine the prevalence of PPR disease and the response of animals to the antibiotic treatment in the study area.

Materials and Methods

To determine prevalence of PPR in goat diseased animals was brought to the hospital for treatment were examined. Information on all types of diseases including breed, age, vaccination history, owners complain, body condition of the patients and given treatment were recorded for the study.

Population and tools used for data collection

The study was conducted on natural PPR infected goats of various age, sex and breed that were brought to the hospital over the study period. A total of 183 cases of goats were recorded of those PPR were detected in 92 cases.

Anamnesis

History of the cases was taken from the owner and carefully recorded in each case individually.

Clinical examination

The flowing clinical examinations were done carefully and the findings were recorded.

Close inspection

Close inspection were performed properly in order to observe the presenting signs such as a sharp rise of temperature of 104°F–106°F, oculonasal discharge, diarrhea and respiratory distress.

Temperature recorded

Per rectal temperature was recorded with the thermometer in every case.

Indirect auscultation

Respiratory distress was identified with the help of stethoscope and the lung and tracheal sound were observed and recorded.

Table 1. Prevalence in relation to breeds of goat

Name of the breed	No. of PPR cases	No. of other cases	Total cases	Prevalence (%)
Black Bengal	78	64	142	54.93
Jamunapari	13	28	41	31.78

The prevalence of PPR in relation to different age categories is present in Table 2. The prevalence of PPR was maximum 63.33% at age category 7-12 months, in compare with 44.68%, 41.87%, 45.45% at

Clinical signs of PPR

Sudden high fever (104°F–106°F), oculo-nasal discharge, difficult breathing, non haemorrhagic diarrhea, rough hair coat, characteristic foul smell from mouth, Anorexia, depression, severe dehydration and emaciation followed by hypothermia. Lining of mouth become pale and sometimes membrane become obscure due to cheesy material (Samad, 1996)

Follow up treatment

For observing the treatment efficacy the goats were divided into two groups. Combined therapy Diadin (Sulphadimidine-Na) + Dellerger (Promethazine Hcl) + Renalyte(ORS) and Renamycin-100 (Oxytetracycline) + Dellerger (Promethazine Hcl)+ Renalyte(ORS) was given in separate groups.

Results and Discussion

The study was conducted among the naturally infected PPR goats of various ages and sex that were brought to the hospital. A total of 183 animals examined where 92 goats were affected with PPR constituting 50.27%.

The Prevalence % of PPR in relation to breed of goats are summarized in Table 1. The Prevalence of PPR disease was higher in Black Bengal goat (54.93%) than in Jamunapari goat (31.78%). This result is similar to the report of Samad (2000) where Black Bengal goat are more (67.24%) susceptible to PPR than Jamunapari (32.76%).

age category \leq 6 months, 13-18 months and \geq 19 months respectively. It agrees with the study of Blood *et al.*, (1995) where prevalence was maximum within 7-8 months of age.

Table 2. Prevalence relative to different age categories

Age groups (Months)	No. of PPR cases	No. of other cases	Total no. of cases	Prevalence (%)
≤ 6	21	26	47	44.68
7-12	38	22	60	63.33
13-18	18	25	43	41.87
≥19	15	18	33	45.45

The Prevalence of PPR in relation to immune status is illustrated in Table 3. The prevalence of PPR is higher (66.40%) in non-vaccinated as compare with vaccinated (19.56%) animals. This result support the

earlier report of Gibbs *et al.*, (1979) where higher prevalence of PPR was found in the unvaccinated goat population.

Table 3. Prevalence in relation to immune status

Immune status	No. of PPR cases	No. of other cases	Total no cases	Prevalence (%)
Vaccinated	9	37	46	19.56
Non- vaccinated	83	53	125	66.40

The relative effects of drugs in treatment of PPR are presented in table 5. The percentage response of treatment towards parenteral (I/M) Oxytetracycline was higher (64%) than parenteral (I/M) Sulphadimidine (44%). This is similar to the report of

Taylor *et al.*, (1984) where mortality rates may be decreased by the use of drugs that control the bacterial complications especially oxytetracycline and Chlortetracycline are recommended to prevent secondary pulmonary infections.

Table 4. Response to treatment in relation to different drugs

Drug name (Trade + Generic)	Response to treatment		Total case	% of response to treatment
	Positive	Negative		
Diadin (Sulphadimidine-Na + Dellerger (Promethazine HCl) + Renalyte (ORS)	11	14	25	44
Renamycin-100 (Oxytetracycline) + Dellerger (Promethazine HCl) + Renalyte(ORS)	16	9	25	64

Conclusions

It is observed that Black Bengal goats were more susceptible to PPR than Jamunapari goats. Between 7-12 months of age was more risky for the infection and the infection of goats can be reduced markedly by proper vaccination program. It was observed that, Oxytetracycline (I/M) was more effective than Sulphadimidine (I/M) to reduce the mortality. PPR causes heavy economic losses in every year especially in rainy seasons and also decreases the productive performances of goat. So, Proper surveillance and regular vaccination program should be taken to eradicate the disease.

References

Alam, J. S.; Rahman, A.; Sayeed, M. A. 1998. A study on Livestock Credit in Rural Bangladesh. *Bangladesh Journal of Livestock Research*. 1:15-18.

Barrete, T.; Pronab, D.; Sreenivasa, B. P. and Corteyn, M. 1997. Recent epidemiology of peste des petits ruminants virus (PPRV). *Veterinary Microbiology*. 88: 125-130.

Blood, D. C.; Rodostis, O. M. and Gay, C. C., 1995. *Veterinary Medicine*. 8th Edn. Ballier Tindall, UK: 837.

Debnath, N. C. 1995. Peste des petits ruminants (PPR); an overview proceeding of the BSVER

- Symposium on Eradication of Rinderpest and Related Diseases. 2nd December, 1995, Dhaka; 9-13.
- Fraser, C. M. 1986. Peste des petits ruminants (PPR). The Merck Veterinary Manual. 6th edition, Merck and Co. Inc. U. S. A; 402-403.
- Gibbs, E. P. J.; Taylor, W. P.; Lawman, M. J. P. 1979. Classification of Peste des petits ruminants (PPR) virus as the fourth member of the genus Morbilivirus Intervirology. 15:35-41.
- Islam, M. R.; Shamsuddin, M.; Das, P. M. and Dewan, M. L. 2001. An outbreak of Peste des petits ruminants in Black Bengal goats in Mymensingh, Bangladesh. *The Bangladesh Veterinarian.*, 18(1): 14-19.
- Ozkul, A.; Ake, Y.; and Alkan, F. 2002. Prevalence, distribution, and host range of peste des petits ruminants virus, Turkey. *Emerg Infect Dis.*; 8(7): 708-712.
- Radostis, O. M.; Blood, D. C. and Gay, C. C. 2000. Veterinary Medicine. 9th edn, Bailliere and Tindall, London.
- Richard, A. B.; Adams, B. K. and Ambumani, S. P. 1996. Peste des petits ruminants in Tamilnadu goats. *Indian veterinary journal.*, 73:587-588.
- Samad, M. A. 1996. Poshu Palon O Chikitsavidya (Animal Husbandry and Medicine). Published by M. Bulbul, Bangladesh Agricultural University campus, Mymensingh, Bangladesh.
- Samad, M. A. 2000. Poshu Palon O Chikitsavidya (Animal Husbandry and Medicine). 2nd Edn., Published by M. Bulbul, Bangladesh Agricultural University campus, Mymensingh, Bangladesh.
- Taylor, W. P. 1984. The distribution and epidemiology of peste des petits ruminants. *Preventive Veterinary Medicine*, 2: 157-166.
- Taylor, W. P.; Al Busaidy, S. Barrett, T. 1990. The epidemiology of peste des petits ruminants in the Sultanate of Oman, *Veterinary Microbiology.*, 22 (4): 341-352.