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Case Report

Clinical Investigation of Peste des Petits Ruminants Outbreak in Sheep and Goats at Islamabad, Pakistan

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ABSTRACT

Clinical and laboratory investigations were carried out during an outbreak of Peste des Petits Ruminants (PPR) in sheep and goats in Islamabad Capital Territory (ICT), Pakistan. The overall morbidity in goats (27.95%) was higher as compared to sheep (10%). Goats experienced severe clinical disease while mild form of disease was observed in sheep. Eleven swab samples (ocular/nasal) from live animals and eight tissue samples (lung, liver, spleen, lymph nodes) from dead animals were collected and analyzed by RT–PCR in the laboratory. All tissue samples while 5 of 11 swab samples were positive for PPR. History of the flock revealed that mix grazing and introduction of new animals might be important factors in introduction of disease in the flock.

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Peste des Petits Ruminants (PPR) is a highly contagious viral disease of domestic and wild small ruminants caused by PPR virus of family Paramyxoviridae (Gibbs et al., 1979). The disease is considered of great economic importance due to high morbidity and mortality (Kwiatek et al., 2007). Initially the disease was restricted to Western Africa however, today the disease has been reported from different parts of the world including China and South East Asia (Banyard et al., 2010). In Pakistan, PPR was reported for the first time in 1991 (Athar et al., 1995). In this paper, a PPR outbreak in goats and sheep flock is reported near Islamabad.

Table 1: Morbidity and mortality rates in goat flock

Age group (Months)	Group size	Morbidity	Mortality
Kids (‹4 months)	12	10 (83.3)	4 (33.3)
Young(4–12 months)	45	02 (4.4)	01(2.2)
Adult (›12 months)	36	14 (38.8)	01(2.7)
Total	93	26 (27.9)	6 (6.4)

Values in parenthesis shows percentages

The farm where outbreak occurred contained 93 goats and 180 Bulkhi sheep. Epidemiological observations such as flock size, age, sex, vaccination history and possible history of virus transmission were recorded on prescribed proforma. The age of the animals in the flock was ranged from ‹4 months to › 12 months (Table 1 and 2). In goat flock, morbidity and mortality rate was 27.9% and 6.4% respectively whereas in sheep flock morbidity and mortality rate was 10% and 2.2% respectively (Table 1 and 2). There was no history of vaccination against PPR in the flock. History of the flock revealed that introduction of new animals initiated the outbreak of PPR in the flock.

Table 2: Morbidity and mortality rates in sheep flock

Age group (Months)	Group Size	Morbidity	Mortality
Lambs (‹4 months)	27	03 (11.1)	0
Young (4–12 months)	67	10(14.9)	01(1.4)
Adult (›12 months)	86	05 (5.8)	03(3.4)
Total	180	18 (10)	4 (2.2)

Values in parenthesis shows percentages

Clinical and postmortem examination of the affected sheep and goat flocks were conducted. The affected animals were depressed and exhibited high fever (105–107 °F), severe conjunctivitis, congestion of third eye lids, ocular and nasal discharges (Figure 1) and severe diarrhoea. The carcasses of the dead animals were dehydrated with sunken eyes. The cardiac lobes of the lungs of dead animals were congested. Haemorrhages were observed on liver, abomasal mucosa (Figure 2) and large intestinal mucosa. Mesenteric lymph nodes were inflamed (Figure 3). In sheep flock the clinical sign were mild compared to goat flock. The dead carcasses were properly disposed off to stop the further transmission of PPR virus.

After detailed clinical and postmortem examination appropriate samples were collected from live and dead animals which included11 nasal/ocular swabs and 8 tissues

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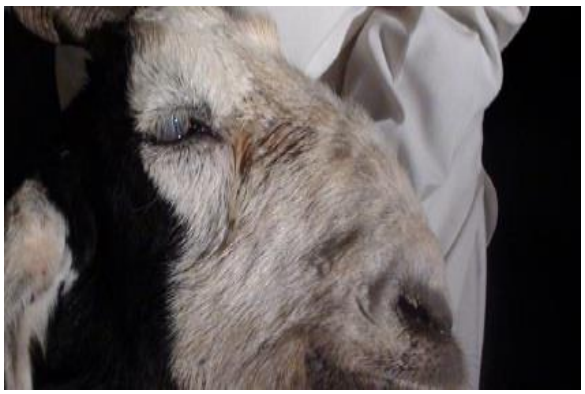

Figure 1: Nasal and ocular discharges

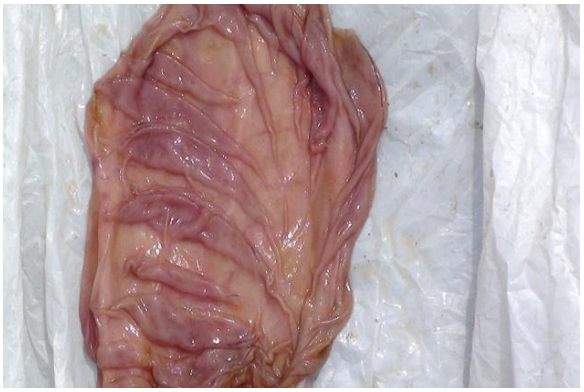

Figure 2: Haemorrhages on abomasal mucosa

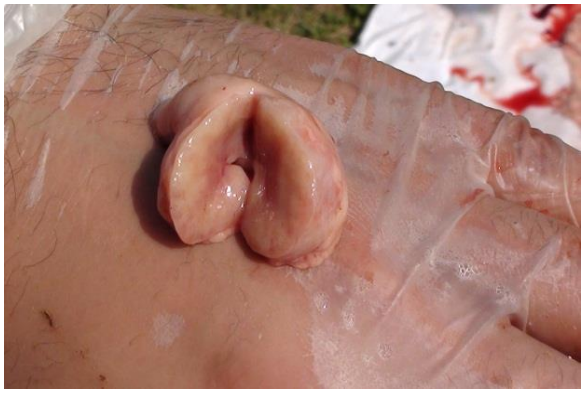

Figure 3: Inflammed mesenteric lymph node

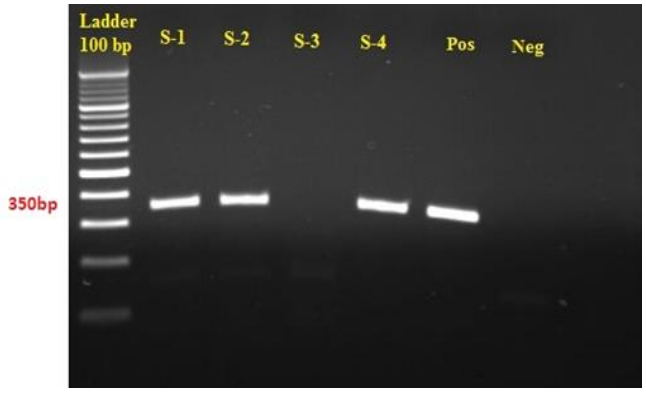

Figure 4: Gel electrophoresis picture showing PPR positive results with band size of 350pb

samples (lung, liver, spleen, lymph node) for laboratory confirmation. Samples were shipped in cold condition to Animal Health Research Laboratories (AHRL), Animal Sciences Institute, National Agricultural Research Centre, Islamabad Pakistan. The samples were analysed for PPR viral antigen using RT–PCR following Couacy–Hymann et al. (2002). All tissue samples and 5 of 11 swab samples were found positive by RT–PCR (Figure 4).

The morbidity and mortality rates were higher in goat flock compared to sheep flock. These findings are in complete concurrence with Diallo (2006) who reported that morbidity and mortality rates due to PPR may vary from 0 to 90% depending on the local husbandry practices, breed, age and other factors. Similar findings are also documented by Abu–Elzein et al. (1990). On the basis of clinical picture PPR can be easily diagnosed (Tariq et al., 2014). In present study PPR was also confirmed on the basis of clinical sings. It was also observed in this study that animals in particular age groups (10–18 months) in the flock were relatively more affected with PPR virus infection compared to other age groups. In contrast to our study other studies reported that animals of all ages are equally susceptible to PPR virus infection (Abubakar et al., 2011; Lefevre and Diallo, 1990;Zahur et al., 2009). In this study it was observed that sheep experienced mild form of PPR. A study conducted in Ethiopia reported the similar findings. The sheep were found to be relatively resistant to PPR virus infection during an outbreak within a mixed flock, where only goat showed clinical disease (Roeder et al., 1994). However, other authors reported that sheep and goats were affected with equally overwhelming consequences with high morbidity and mortality (Shaila et al., 1989; Taylor et al., 2002). There may exist a host adaptation which plays an important role in the appearance of clinical signs.

In conclusion introduction of new animals in to the flock proved to be an important factor in the persistence and transmission of PPR virus. It was also revealed that implementation of proper zoo sanitary and biosecurity measures along with quality vaccination can break the transmission cycle of PPR virus.

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REFERENCES

Abu-Elzein E , Hassanien M, Al-Afaleq A, Abd-Elhadi M, Housawi F (1990). Isolation of peste des petits ruminants from goats in Saudi Arabia. Vet Rec. 127, 309 – 310.

Abubakar M, Ashiq S, Zahoor AB, Arshed MJ, Banyard AC (2011). Diagnosis and control strategies for peste des petits ruminants virus: Global and Pakistan perspectives. Pak Vet J. 31, 267 – 274.

Athar M, Muhammad G, Azim F, Shakoor A (1995). An outbreak of peste des petits ruminants-like disease among goats in Punjab (Pakistan). Pak Vet J. 15, 140 – 140.

Banyard, A.C., Parida, S., Batten, C., Oura, C., Kwiatek, O., Libeau, G., 2010. Global distribution of peste des petits ruminants virus and prospects for improved diagnosis and control. Journal of general virology 91, 2885 – 2897.

ISSN 2308–2798

Couacy-Hymann E, Roger F, Hurard C, Guillou J, Libeau G, Diallo A (2002). Rapid and sensitive detection of peste des petits ruminants virus by a polymerase chain reaction assay. J Virol Methods.100, 17 – 25.

Diallo A (2006). Control of peste des petits ruminants and poverty alleviation. J Vet Med B, Series B 53, 11 – 13.

Gibbs E, Taylor W, Lawman M, Bryant J (1979). Classification of peste des petits ruminants virus as the fourth member of the genus Morbillivirus. Intervirology 11, 268 – 274.

Kwiatek O, Minet C, Grillet C, Hurard C, Carlsson E, Karimov B, Albina E, Diallo A, Libeau G (2007). Peste des petits ruminants (PPR) outbreak in Tajikistan. J Comp Pathol. 136, 111 – 119.

Lefevre PC, Diallo A (1990). Peste des petits ruminants. Rev. Sci. Tech. Off. Int. Epiz. 9, 951 – 965.

Roeder RL, G Abraham, G Kenfe, and T Barrett (1994). Peste des petits ruminants in Ethiopian goats. Trop. Anim. Hlth. Pro. 26: 69 – 73.

Shaila M, Purushothaman V, Bhavasar D, Venugopal K, Venkatesan R (1989). Peste des petits ruminants of sheep in India. Vet Rec. 125, 602-602.

Tariq A, Shahzad A, Kausar R, Fiaz UA and Jan SS (2014). An easy Approach towards Diagnosis of *Peste Des Petit Ruminant (PPR)* through Clinical Examination. *Res. j. vet. pract.* 2 (1S): 1 – 3.

Taylor W, Diallo A, Gopalakrishna S, Sreeramalu P, Wilsmore A, Nanda Y, Libeau G, Rajasekhar M, Mukhopadhyay A (2002). Peste des petits ruminants has been widely present in southern India since, if not before, the late 1980s. Prev Vet Med. 52, 305 – 312.

Zahur AB, Ullah A, Irshad H, Farooq MS, Hussain M, and Jahangir M (2009). Epidemiological investigations of a peste des petits ruminants (PPR) outbreak in Afghan sheep in Pakistan. Pak Vet J. 29(4), 174 – 178.

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