

## AN OUTBREAK OF PESTE DES PETITS RUMINANTS (PPR) IN A GOAT FLOCK IN OKARA, PAKISTAN

K. Ahmad, S. M. Jamal, Q. Ali and M. Hussain

*National Veterinary Laboratory, Park Road, Islamabad, Pakistan*

### ABSTRACT

An outbreak of Peste des Petits Ruminants (PPR) was investigated in a goat flock maintained at the Livestock Production and Research Institute (LPRI), Bahadurnagar, Okara, Pakistan. Clinical signs and postmortem findings led to the suspicion of outbreak of PPR. Thirty-five serum samples from affected, recovered and apparently normal animals were tested for the presence of PPR antibodies by competitive ELISA. There was no history of PPR vaccination, however, serum samples from all the recovered and apparently healthy goats were found positive for PPR antibodies. Thirteen of 15 affected goats also had anti-PPR antibodies. However, no PPR antibodies were detected in apparently healthy sheep (n=2) reared in the vicinity of the affected goat herd.

**Key words:** Peste des Petits Ruminants, outbreak, goats.

### INTRODUCTION

Peste des Petits Ruminants (PPR), also known as goat plague, is an important disease in Africa (Roeder *et al.*, 1994; Awa *et al.*, 2000) and Asia (Shaila *et al.*, 1996), where small ruminants form a considerable portion of livestock population. It mainly affects goats but involvement of sheep is not exceptional. The disease was once thought to be a fairly restricted problem in West Africa, but is now known to exist in most of the West, Central and East Africa, reaching eastwards through Western and South Asia (FAO, 1999). In Pakistan, during the last few years, PPR outbreaks have increased to an alarming level involving newer areas (Ali, 2004). In this paper, an outbreak of PPR is reported in a goat herd maintained at the Livestock Production Research Institute (LPRI), Bahadurnagar, Okara, Pakistan.

### MATERIALS AND METHODS

#### Outbreak description

In May 2004, a goat herd of about 350 animals was moved from LPRI, Bahadurnagar to Allahdad Livestock Farm, Jahanian (Punjab) but returned on 13PP<sup>th</sup> November the same year. Sporadic cases of the disease started in early February 2005, but mortality started from 21<sup>st</sup> February, 2005. The animals had not been previously vaccinated against PPR. The flock had no previous history of illness due to PPR. The herd was treated with antibiotics and sulpha drugs alongwith symptomatic treatment using Diarrhoban, oral

rehydration salts (Nimkol) and Diclofenac sodium (Diclophan sodium) just after the start of clinical signs but no significant response was observed. The herd was vaccinated against Enterotoxaemia, Contagious Caprine Pleuropneumonia (CCPP) and Foot and Mouth disease (FMD). The herd was also vaccinated against PPR (Pestevac, JOVAC, Jordan) after taking the sera samples.

#### Clinico-pathological examination

The affected herd was clinically examined and clinically picture was noted. Postmortum of the freshly dead animals was performed. Photographs of clinical signs and postmortem lesions were taken. Disease pattern and treatment history was recorded.

#### Sample collection and laboratory confirmation

A total of 35 serum samples were collected from the affected, recovered and apparently healthy goats, and apparently healthy sheep (15, 16, 2 and 2, respectively) for laboratory diagnosis and confirmation of PPR. The sampled sheep herd was housed near the affected goats. Competitive Enzyme Linked Immunosorbent Assay (cELISA) for detection of antibodies to PPR was carried out at the National Veterinary Laboratory Islamabad, as described by Anderson *et al.* (1991).

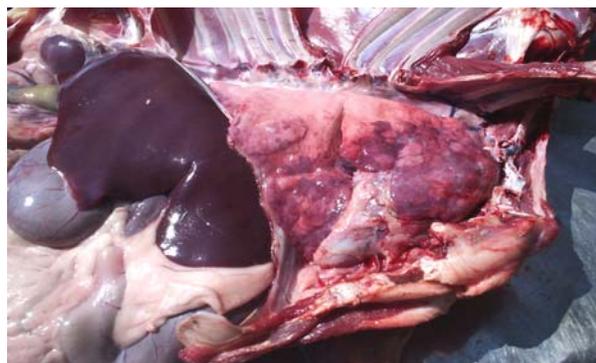
### RESULTS AND DISCUSSION

Clinical examination of the affected goats (n=15) revealed severe diarrhea, disturbed breathing,

mucopurulent discharge from eyes and nose (Fig. 1), caseous necrosis in mouth, fever and depression. The postmortem examination revealed dark red areas (congestion) in different lobes of lungs (Fig. 2) and in small and large intestines (Fig. 3). Clinical signs and post mortem findings led to the suspicion of outbreak of



**Fig.1: Mucopurulent discharge from eyes and nose in a goat affected with Peste des Petits Ruminants.**



**Fig. 2: Congestion in lungs in a goat affected with Peste des Petits Ruminants.**

PPR. The mortality pattern recorded is shown in Table 1. The morbidity and mortality rates were higher in sucklers than in adult animals.

Serum samples from affected, recovered and apparently normal animals were tested for the presence of PPR antibodies using cELISA. Serum samples from all the recovered and apparently healthy goats were found positive for PPR antibodies. Thirteen of 15 affected goats also had anti-PPR antibodies. However, no PPR antibodies were detected in apparently healthy sheep (n=2) reared in the vicinity of the affected goat herd (Table 2). Previous history and results of cELISA confirmed the outbreak to be PPR. It is known that PPR primarily affects goats but sheep may also be affected



**Fig. 3: Congested lining of small intestine in a goat affected with Peste des Petits Ruminants.**

**Table1: Age-specific mortality pattern in Peste des Petits Ruminants affected goat herd**

Age group	Total No. of animals	Mortality	
		February 2005	March (up to 12-3-2005)
Adult (over one year)	209	5	10
Young (4 to 12 month)	156	10	10
Sucklers (1-3 month)	25	16	7
Total	390	31	27

(Ali, 2004). In this study, serum samples from only 2 sheep grazing along with goats were tested and found negative for the presence of PPR antibodies. However, further investigations are needed in this regard.

The clinical signs of PPR closely resemble with those of rinderpest in large ruminants making differential diagnosis difficult. However, clinical examination and postmortem lesions were quite

**Table 2: Results of samples tested for Peste des Petits ruminants antibodies by competitive ELISA**

Sampled animals	Serum samples		
	Tested	Positive	PI values (range)
Affected goats	15	13	57-85
Recovered goats	16	16	61-88
Apparently healthy goats	02	02	76-87
Apparently healthy sheep	02	00	0-3

supportive of PPR virus infection. Results of cELISA using PPR specific monoclonal antibodies also confirmed the disease. PPR vaccination during the face of outbreak showed significant response to control the problem. The findings are useful towards planning appropriate control of the disease in subsistence farming of small ruminants in Pakistan.

### REFERENCES

- Ali, Q., 2004. National Policy for Control of Peste des Petits Ruminants in Pakistan. GCP/ PAK/ 088-EC, FAO, Islamabad.
- Anderson, J., J. A. McKay and R. N. Butcher, 1991. The use of monoclonal antibodies in competitive ELISA for the detection of antibodies to rinderpest and Peste des Petits Ruminants viruses. Panel Proc. IAEA-SM-318, Interna. Symp. Nuclear and Related Tech. Anim. Prod. Hlth., Vienna, Austria.
- Awa, D. N., A Njoya and N. A. C Tama, 2000. Economics and prophylaxis against Peste des Petits Ruminants and gastro-intestinal helminthosis in small ruminants in north Cameroon. Trop. Anim. Hlth. Prod., 32: 391-403
- FAO, 1999. Recognizing Peste des Petits Ruminants – A Field Manual. FAO Animal Health Manual No. 5. Food and Agriculture Organization of the United Nations, Rome. 1-27
- Roeder, P. L., G. Abraham G. Kenfe and T. Barrett, 1994. Peste des Petits Ruminants in Ethiopian goats. Trop. Anim. Hlth. Prod., 26: 69-73.
- Shaila M. S., D. Shamaki, M. Forsyth, A. Diallo, L. Goatley and P. Kitching, 1996. Geographic distribution and epidemiology of Peste des Petits Ruminants viruses. Virus Res., 43: 149-153.