



AN OUT BREAK OF PESTE DES PETITS RUMINANTS (PPR) IN GOATS IN DISTRICT CHITRAL, N.W.F.P., PAKISTAN

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ABSTRACT

An outbreak of Peste Des Petites Ruminants (PPR) was investigated in goat flocks in district Chitral, N.W.F.P., Pakistan in June 2006. History, postmortem findings and clinical signs of the disease being suggestive of Peste des Petits Ruminants. 23 serum samples and 09 ocular and nasal swabs from the diseased animals were tested for the presence of Peste des Petits Ruminants antibodies and antigen through competitive and immuno-capture ELISA, respectively. Out of 23 serum samples 09 were found positive for PPR antibodies. Out of 09 ocular and nasal swabs 03 were found positive for PPR antigen. PPR was confirmed for the first time in Chitral district of NWFP, in June 2006. following is a detailed description of the outbreak. History and general management practices, total exposure area and strategy aimed at bringing this important disease under control has been discussed in detail.

Keywords: goats, disease, plague, peste des petits ruminants, chitral.

INTRODUCTION

Peste Des Petits Ruminants (PPR) is an acute and highly contagious viral disease of small ruminants. This disease is characterized by high fever, oculonasal discharge, pneumonia, necrosis and ulceration of mucous membrane and inflammation of gastrointestinal tract, leading to severe diarrhea. PPR occurs in an epizootic form, it may have morbidity of 80-90% and mortality between 50 and 80 % (Lefevre and Diallo, 1990). The virus that causes PPR belongs to morbilli virus group of the paramyxoviridae family. It is closely related to rinderpest virus which makes the PPR an important disease of small ruminants and has created tremendous problem due to its apparent similarity to rinderpest (Lefevre and Diallo, 1990). 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 transmission of virus requires close contact between susceptible and infected animals in the febrile stage (Braide, 1981). The discharge from eyes, nose, mouth and the loose feces contain large amount of the virus. Fine infected droplets are released into the air from these secretions and excretions, particularly when infected animals cough and sneeze (Taylor., 1984., Bundza *et al.*, 1988). Animals in close contact inhale the droplets and are likely to become infected.

The disease was once thought to be 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). The disease is endemic in the Arabian peninsula (Taylor *et al.*, 1990), the middle East and in the Indian subcontinent (Shaila *et al.*, 1996). The Existence of PPR has been recognized in Pakistan since 1991 (Amjad *et al.*, 1996) as an epidemic in Punjab province (Athar *et al.*, 1995). In Pakistan, during the last few years, PPR

outbreaks have increased to an alarming level involving newer areas (Ali, 2004). In this paper a detail description of an out break of PPR is reported for the first time in district Chitral, NWFP, Pakistan.

MATERIALS AND METHODS

A report of disease outbreak in goats in Chitral was received to Veterinary Research Institute (V.R.I.), Peshawar. A team of experts from V.R.I. visited the area to investigate the disease. The affected areas and high mountainous pastures were visited, examined the animals and interviewed the farmers about the history of disease occurrence, its clinical signs and symptoms, morbidity and mortality.

The team also clinically examined the affected flocks. Postmortem were conducted on dead animals. Blood, nasal and ocular swabs were collected for laboratory examinations.

Twenty three blood samples were collected; serum separated into sterile tubes and kept on ice for transportation to the laboratory. In the laboratory, serum was centrifuged, transferred to screw capped serum tubes and stored at -20°C. Nine (09) each of ocular and nasal swabs from goats were also collected from the diseased animals for laboratory diagnosis. Blood and oculonasal swabs were cultured for bacteriological examination at Veterinary Research Institute Peshawar and incubated aerobically at 37°C for 24 hours. Competitive Enzyme Linked Immunosorbent Assay (cELISA) for detection of antibodies to PPR in Serum samples and immuno-capture Enzyme Linked Immunosorbent Assay (ic ELISA) for detection of antigens in Ocular and Nasal Swabs were used. The ELISA tests were performed at National Veterinary laboratories, Islamabad.

RESULTS AND DISCUSSION

Chitral is Pakistan's northern-most district, situated just across the border from Afghanistan. Its total area is 14850 km², altitude ranges from 1094m at Arandu



to 7726m at Trichmir. Land access beyond the valley is restricted to a few passes, all situated above 3500m. The combine livestock population of Chitral in 2006 census was estimated at 174,842 head of cattle, 181,146 sheep and 347,977 goats, while the domestic poultry numbered 423,749. In addition, an unknown number of animals belonging to Afghan refugees are also found in the area. House holds keep livestock in small herds of 04-10, depending on the household's capacity to store crop residues, fodder and forage hay to feed animals during the winter and spring months. Goats are kept for milk, meat hides and cheese.

The nomad during summer takes their animals to the highland. There they milk the goats and prepare butter, ghee, cheese and buttermilk, and as the winter season is started they come back to the lower lands.

The disease appeared in the goat flocks for the first time in Arandu in 2005. Arandu is located South-West of Chitral near the Afghanistan border. The disease was introduced by animal migration from Afghanistan. Later on the disease spread to a shorter area near Darosh. The outbreak was controlled with vaccination of animals against PPR in the area.

The present outbreak (June 2006) of the disease also originated from the south part of the district. About one and half month ago the disease first appeared in a flock migrated from the lower parts due to start of summer season and later on spread to other local flocks in contact to them.

The disease appeared in the following villages and pastures of the area and the number of flock affected with the disease were:

In **Golain valley**, Village Izghoor and Chakooli pasture the number of flocks affected were three (03) and one (01), respectively, In **Sheshikoh valley**, Langer mountain and Gorain Gole and Kuchar pastures having One (01) and three (03) flocks, respectively, were affected. In **Rambore village** only one flock was affected.

The flocks were mainly of goats. Each of the flock had a few sheep also. The clinical signs of the disease as well as high morbidity and mortality were mainly recorded in goats. Clinical signs recorded were high fever, nasal and ocular discharge, rapid and laboured breathing, mouth lesion and diarrhea. High mortality in young and high recovery rate in adults with antibiotics and Diclofanic sodium treatment were noted.

Clinical examination of the affected goats and sheep revealed severe diarrhoea, dyspnoea, and mucopurulent discharge from eyes and nose, necrotic ulcers in mouth, fever and depression. A total of sixteen hundred and eighty (1680) were exposed to the disease outbreak, sixty three percent (63%) morbidity and thirty two percent (32%) mortality were noted being higher in kids as compared to young and adult one as shown in (Table-1). The postmortem examination revealed dark red areas and congestion in different lobes of lungs with pneumonic changes, enlargement of spleen and lymph nodes and erosion of abomasums. Postmortem findings and Clinical examination are strongly suggestive of PPR.

On bacteriological examination of the samples no bacterial growth could be obtained from any of the samples. The serological and virological results shows eight (08) out of twenty-two (22) serum samples from goats to be positive for PPR antibodies and one (01) serum sample out of One (01) from sheep as shown in (Table-2). Two (02) out of each of nine (09) ocular and nasal swabs from goats were found positive for PPR antigen as shown in (Table-3).

It is known that PPR affects goats but sheep may also be affected (Ali, 2204).in this study, serum samples from one sheep grazing along with goats were tested and found positive for PPR. Results of cELISA and ic ELISA using specific monoclonal antibodies also confirmed the disease. PPR vaccination during the face of out break 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 NWFP. A homologous vaccine has been developed and tested in field trials. The use of this PPR vaccine is strongly recommended to avoid confusion with rinderpest during serological survey. It is now commercially available.



Purulent discharges from Nose & Eyes



Mouth Lesions



The discharges Crust attached to the Mouth & Nose



Conjunctivitis companied by lacrymation

Table-1. Age-wise morbidity and mortality rate recorded in the exposed Goat Flocks.

Age group	No. of animals	Morbidity (%age)	Mortality (%age)
Adult (over one year)	924	514 (56%)	286 (31%)
Young (4-12 months)	672	436 (64%)	194 (29%)
Suckers (Below 4 months)	84	58 (69%)	58 (69%)
Total	1680	1008 (63%)	538 (32%)

Table-2. Results of serum samples tested for PPR antibodies through cELISA.

Species	Number of samples tested	Positive	Negative
Goat	22	08	14
Sheep	01	01	0
Total	23	09	14

Table-3. Results of nasal and ocular swabs tested for PPR antigens through icELISA.

Sample	Number tested	Positive
Nasal swab	09	02
Ocular swab	09	02
Total	18	04

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