

## Case Report

### An easy Approach towards Diagnosis of Peste des petits ruminants (PPR) through Clinical Examination

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#### ABSTRACT

This case study signifies the diagnosis of Peste des Petits Ruminants (PPR) in a buck of discrete breed on the basis of clinical signs and hematology. Case presented to department of Clinics Medicine and Surgery (CMS), University of Agriculture Faisalabad, Pakistan with chief complains of anorexia, watery diarrhea, ocular discharge and muco-purulent nasal discharge from last 4 days. Clinical examination revealed high fever, increase respiration, pulse rate and capillary refill time. Blood oozing lesions on gums and swollen lymph nodes were seen. Lymphopenia based on complete blood count (CBC) provided another clue to diagnose the disease as PPR on clinical basis. Treatment was done symptomatically for 7 days with amoxicillin, lactated ringer and somogel. Along with, a multivitamin powder was also advised to add in the feed to tone up the animal. Animal recovered completely on 10<sup>th</sup> day after visit.

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A morbillivirus of family *Paramyxoviridae* produces an important contagious disease in sheep and goat called peste des petits ruminants (PPR). It is also known as “Small ruminant plague” (Zahur *et al.*, 2011; Mahajan *et al.*, 2012). There is very close relationship between PPR virus and Rinderpest virus (Abubakar *et al.*, 2008; Rajak *et al.*, 2005). It results in production losses, abortion in pregnant animals and even death of the animals. This virus causes 100% morbidity and 90% mortality in animals (Intizar *et al.*, 2009). Animals of young age are found to be more susceptible to PPR and cause high mortality in kids and lambs (Zahur *et al.*, 2008).

Signs of the disease includes rise in temperature, diarrhea (Figure 1-2), ocular and muco-purulent nasal discharge (Figure 3-4), lesions on the gums from which blood is oozing out (Figure 5), pneumonia, coughing and sneezing and if remain untreated then cause the death of the animal (Mahajan *et al.*, 2012; Intizar *et al.*, 2009).



Figure 1 and 2: Watery diarrhea



Figure 3: Ocular discharge

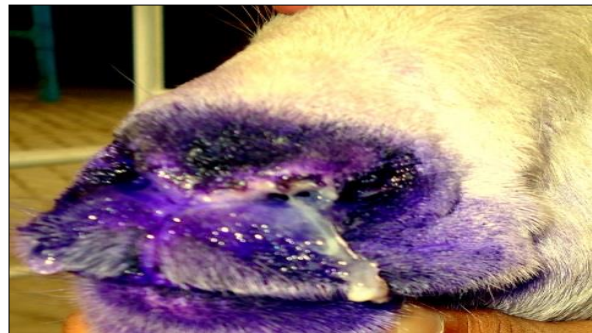


Figure 4: Muco-purulent nasal disch



Figure 5: Lesions on the gums from which blood is oozing out

CBC Report:

Parameters	Results	Reference values
Red blood cells count ( $10^{12}/l$ )	12.2	8–18
Packed cell volume %	29	22–38
Hemoglobin Conc. (g/dl)	12.5	8–12
Mean corpuscular volume (fl)	21.3	16–25
Mean corpuscular hemoglobin (pg)	10.9	5.2–8
Mean corpuscular hemoglobin concentration (g/dl)	39	30–36
White blood cells ( $10^9/l$ )	10.5	4–13
Neutrophils %	66	30–48
Lymphocytes %	29	50–70
Monocytes %	03	0–4
Eosinophilia %	02	1–8
Basophils %	Nil	0–1

Table 1: Complete blood count (CBC) before treatment

Table 2: Complete blood count (CBC) after treatment

Parameters	Results	Reference values
Red blood cells count ( $10^{12}/l$ )	14.5	8–18
Packed cell volume %	31	22–38
Hemoglobin Conc. (g/dl)	13.7	8–14
Mean corpuscular volume (fl)	20.6	16–25
Mean corpuscular hemoglobin (pg)	8.2	5.2–8
Mean corpuscular hemoglobin concentration (g/dl)	37	30–36
White blood cells ( $10^9/l$ )	10.5	4–13
Neutrophils %	41	30–48
Lymphocytes %	57	50–70
Monocytes %	01	0–4
Eosinophilia %	01	1–8
Basophils %	Nil	0–1

Approximately 2 year old buck of discrete breed weight about 27 kg visited the outdoor clinic at CMS. The main presenting complaint of animal was that the animal was suffering from diarrhea (Figure 1-2) and anorexia from last 4 days. Ocular and

nasal discharge could be seen as in Figure 3 and 4 respectively. Vaccination history against any disease was not found but deworming was done with Oxfendazole about 20 days before. by investigation from owner it was found the recently 3 more animals were bought and introduced into the previous flock of 8 animals and from 2 days later 7 out of 11 were showing the similar signs and symptoms.

Clinical examination of the animal showed very high fever 104.4°F, Respiration rate about 38/min, pulse rate was 112/min and CRT was more than 3 means animal was dehydrated. Lesions from which blood was oozing out could be seen on the gums (Figure 5). Nasal discharge was muco-purulent in nature. Lymph nodes were also palpable. Because of diarrhea the hind quarter was soiled with feces. Feces were checked for parasitic ova but result was negative. Complete blood count (CBC) revealed lymphopenia (Table. 1) as an indicator of PPR virus infection (Rajak *et al.*, 2005). On the basis of history, clinical signs and complete blood count (CBC) the disease was diagnosed as PPR.

Symptomatic and supportive treatment was done because there is no specific treatment (<http://osp.mans.edu.eg/elsawalhy/Inf-Dis/PPR.htm>). Animal was infused with ringer lactate @ 20ml/kg b.w, Metronidazole @ 10mg/kg b.w, Amoxicillin @ 3mg/kg b.w to check the dehydration and diarrhea and secondary infection respectively for 7 days. As take home medicine somogel (Lignocaine INN 0.6%) was recommended 3 times a day for its soothing affect and advice the owner to offer feed to animal just after applying this gel. Oral rehydration solution (ORS) and a multivitamin powder (Bendoz powder) were also recommended for 15 days to rehydrate the animal and to maintain the body condition so that animal could recover as early as possible. Animal started showing recovery signs from 5<sup>th</sup> day and recovered from disease on 10<sup>th</sup> day of initial treatment.

PPR is a World Animal Health Organization (OIE) listed disease of sheep and goat caused by morbillivirus. It was first identified in Pakistan in 1991 and remain endemic since then in Central Asia, Pakistan, India, Iran, Iraq and in different parts of Africa. In recent years, this disease has known to cause big economic losses (Zahur *et al* 2011; Abubakar *et al.*, 2008). As reported by Zahur *et al.*, (2008), the occurrence of disease in different provinces of Pakistan like Punjab, Sindh and Balochistan is 70.93%, 47.98% and 76.74%, respectively. But specifically the prevalence of PPRV is 69.64% in respected area of investigation (Faisalabad).

Close contact is the way of transmission of this virus. The virus come out in every secretion and excretion of infected animal and infects the healthy animals near to it (Abubakar *et al.*, 2008). Transfer of sheep and goats from one place to another and PPR outbreaks are linked closely. Disease stays for 15 days and mostly animal dies in 10–12 days. Morbidity in this disease is 90 % and mortality is 50 – 80 % but mortality may be reach up to 100% (Zahur *et al.*, 2011; Mahajan *et al.*, 2012). In one report by Abubakar *et al.*, (2008) 28–45% abortion rate is seen in pregnant animals in Pakistan.

On clinical examination the animal was found to have high rise in body temperature, diarrhea (Figure 1-2), and ocular discharge (Figure 3), nasal discharge which was muco-purulent

(Figure 4), lesion on gums in oral cavity (Figure 5) and dyspnea as seen by the Mahajan in 2012. In complete blood count (CBC), Lymphopenia is seen. Lymphopenia is seen in case of PPR virus infection, which is known to cause immune-suppression and show strong affinity towards the lymphoid tissue and epithelial cell (Rajak *et al.*, 2005).

On clinical basis, we can diagnose the disease as PPR but for further confirmation we can also perform other tests like ELISA, CFT and HA etc. For diagnosis of viral disease, ELISA and CFT are difficult to perform and somewhat expensive. Instead of these a less expensive test is done known as Hemagglutination test (HA). The best thing about HA is that it is effective and easy to perform to diagnose viral diseases in developing countries like Pakistan (Ezeibe *et al.*, 2004). After confirming the disease we treated the disease symptomatically because still there is no specific treatment available for this disease.

As disease is endemic, so the effective vaccination is the best way to control this disease rapidly.

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