

CLINICO-HAEMATO-BIOCHEMICAL CHARACTERIZATION OF PESTE DES PETITS RUMINANTS IN SIROHI GOATS AND ITS MANAGEMENT

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Abstract: Present investigation reports an outbreak of PPR in sirohi goats in southern part of Rajasthan state in India. The morbidity rate was found 80 %. The overall mortality rate was 18.38% in the treated animals. Significant differences in all the haematological and biochemical parameters were observed between PPR affected and healthy goats. There was significant decrease in the mean Hb concentration, PCV, TLC, granulocytes and platelet count in the sirohi goats affected with PPR. There was significant decrease in serum glucose in the PPR affected goats whereas AST was found significantly increased. There were no significant difference in ALT, total protein, total bilirubin and BUN in PPR affected and healthy goats.

Keywords: Sirohi goats, PPR, mortality, haemato-biochemical indices, treatment.

Introduction

The Sirohi goats are valuable germ- plasm because of its better production performance in the harsh climatic conditions. The major constraint in goat production is high mortality and morbidity rate due to few diseases including PPR. Peste des petits ruminants (PPR) is a disease ranked high as a major cause of death in goats (Aikhuomobhogbe and Orheruata, 2006).

PPR is an acute or subacute and highly contagious viral disease of small ruminants. Because of the respiratory signs, PPR can be confused with contagious caprine pleura-pneumonia (CCPP) or pasteurellosis. In many cases, Pasteurellosis is secondary infection of PPR, a consequence of immuno-suppression that is induced by the PPR virus (PPRV). PPRV is transmitted mainly by aerosols between animals living in close contact (Lefevre and Diallo, 1990) but it may also happen by feeding of contaminated feed or water and direct contact with infected animals or their secretions or excretions. Infected animals present clinical signs

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similar to those seen with Rinderpest in cattle although two diseases caused by distinct viral species.

PPR was first described in Cote d' Ivoire (Gargadennec and Lalanne, 1942) but it occurs in most African countries. It is more commonly seen in North Africa, the Middle East and Turkey. PPR was once thought to be only an African problem but recent outbreaks in Middle East and Indian subcontinent (Banik *et al.*, 2008; Banyard *et al.*, 2010) causing alarming losses of the animals. PPR was first reported in India in 1987 from an outbreak in Tamilnadu and since then the disease has been reported from all over the country.

The natural disease affects mainly goats and sheep. Morbidity and mortality rates of PPR vary in small ruminants but are usually very high. However morbidity and mortality may be much lower in milder outbreaks and the disease may be overlooked. The disease severely affects goats than sheep.

Looking towards the economic importance of the disease, an early diagnosis of the disease is needed to be made. Therefore to describe the disease better and to make an early and accurate diagnosis, the clinico-haematological indices in the PPR affected goats were studied.

Material and Methods

Animals: Present study was undertaken on 185 goats (90 adult female, 90 kids and 5 bucks) of Sirohi breed in the February 2014 and was being maintained at an organized farm. The disease was diagnosed as Peste des petits ruminants (PPR) on the basis of clinical observations, post mortem findings and laboratory confirmation. Data regarding location, breed, age, sex, purchase, feeding, management, etc. were also recorded.

Clinical examination: The goats under present investigation were subjected to detailed clinical examination and clinical signs observed were recorded.

Haemato-biochemical indices: Whole blood (4.5 ml) was collected from each animal in to a vacutainer containing Buff. Na. citrate (9NC) (Mfg by BD, USA) from the jugular vein for haematology. Simultaneously, 1.3 ml of blood was also collected in the serum tubes for separation of serum. Haematological parameters like haemoglobin (g/dl), PCV (%), TLC ($10^9/L$), TEC ($10^6/L$), granulocytes count and percentage, Lymphocytes/Monocytes ratio and Platelets count were estimated using Auto- Haematology Analyser –Idexx Vet Autoread (Mfg by IDEXX Laboratories, maine, USA). The biochemical parameters viz. serum inorganic calcium, serum albumin, total serum protein (TSP) and serum glucose, total bilirubin, ALT and AST were estimated using Auto-Biochemistry Analyser- Idexx VetTest (Mfg by IDEXX Laboratories, maine, USA).

Results and Discussion

Present investigation reports an outbreak of PPR in sirohi goats in southern part of Rajasthan state in India. The morbidity rate was found 80%. The overall mortality rate was 18.38% in the treated animals. The mortality rate in adult goats and kids was 6.31 and 32.22%, respectively. Morbidity and mortality rates of PPR vary in small ruminants and may range from 10 per cent to 80 per cent in sheep and 0 per cent to 90 per cent in goats (Aytekin *et al.*, 2011). Samad (2008) reported that the morbidity can be up to 100 per cent. Kids were mostly found affected. Most of the animals in the flock were newly purchased. These goats were being reared at an organized farm with proper housing. The animals were being maintained under semi-intensive system of management.

The affected goats showed the symptoms of fever, muco-purulent nasal discharge and in few cases fibrinous muco-purulent nasal discharge, dyspnoea, erosive or necrotic stomatitis with or without foul offensive breath, severe diarrhea or dysentery, severe dehydration (clinical dehydration score 1 to 3), dullness, depression (clinical depression score 1 to 3), abnormal lung sounds on auscultation of the lungs which include mainly crackles and wheezes, coughing, lacrimation or severe ocular discharge, conjunctivitis. In most of the cases, the mouth lesions include erythematous swelling of the buccal mucosa, erosions, ulceration or necrosis on the gums, tongue, palate and lips. These findings are in agreement with that of Aytekin *et al.* (2011). The mean temperature, heart rate and respiration rate were $104.5 \pm 2.37^{\circ}\text{F}$ (range 98.1°F to 105.4°F), 110.67 ± 3.37 per minute (range 65 to 120 per minute) and 38.29 ± 2.57 per minute (range 30 to 45 per minute), respectively.

Significant differences in all the haematological and biochemical parameters were observed between PPR affected and healthy goats. The mean Hb concentration (gm/dl), PCV (%), MCHC (gm/dl), TLC ($\times 10^9$ /L), granulocytes count ($\times 10^9$ /L), lymphocytes / monocytes (%) and platelets count ($\times 10^9$ /L) were 4.82 ± 0.16 , 10.73 ± 2.50 , 40.4 ± 0.23 , 2.87 ± 1.26 , 1.75 ± 0.63 , 11.19 ± 0.94 and 217.75 ± 37.43 , respectively in PPR affected goats. There was significant decrease in the mean Hb concentration, PCV, TLC, granulocytes and platelet count in the sirohi goats affected with PPR. Aytekin *et al.* (2011) and Sahinduran *et al.* (2012) also reported significant reduction in Hb, TEC, PCV and platelet count values. Yarim *et al.* (2006) and Kataria *et al.* (2007) also reported leucopenia in PPR affected animals. Maina *et al.* (2015) revealed a modest decrease in lymphocytes and slight increase in neutriphills and WBC in goats. The differences between these haematological parameters may be due to

different phase of disease, presence of secondary infection, degree of dehydration and nutritional status of the goats (Aytekin *et al.* (2011).

The serum glucose (mg/dl), AST (U/L), ALT (U/L), total protein (gm/dl), total bilirubin (mg/dl) and BUN (mg/dl) were 41.43 ± 1.18 , 268.18 ± 1.58 , 45.43 ± 1.28 , 6.3 ± 0.21 , 0.1 and 12 ± 1.09 , respectively in infected goats. There was significant decrease in serum glucose in the PPR affected goats whereas AST was found significantly increased. These findings are in agreement with Yarim *et al.* (2006) and Aytekin *et al.* (2011). There were no significant difference in ALT, total protein, total bilirubin and BUN in PPR affected and healthy goats.

Therapeutic management of the PPR was attempted in the affected goats. The line of treatment included fluid therapy daily depending upon degree of dehydration and loss of energy (Inj. 5% D.N.S. and Inj. Ringers lactate @ 25-50 ml / kg b wt i.v.), Antibiotic to check secondary bacterial infection (Inj. Ceftriaxone-Tazobactam; Intacef Tazo @ 5 mg /kg b wt i.v. daily for 5 days), Inj. Flunixin meglumine (Inj. Unizif @ 1.1 mg /kg.b wt i.v. daily for 3-5 days), Antihistaminic (Inj. Pheneramine maleate 1 ml i.v. daily for 3 days), Inj. B-complex (Inj. Tribivet @ 2 ml i.v. daily for 5 days), Inj. Ascorbic acid 5ml s.c. on alternate days 3-5 injection, Inj. Levamisole (Inj. Lemasole @ 1 ml s/c once) and Inj. Vitamin A, D and E (Inj. Vetade 1 ml i.m. once). During the course of treatment only 4 animals (3 kids and one adult goat) were died which were severely affected with the disease. The apparently healthy goats were also treated with Inj. Ascorbic acid, Inj. Levamisole and Inj. Vitamin A, D and E. The treatment was found effective to control the mortality in the flock.

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