

Epidemiology & Public Health 2020: Study on the Prevalence of Peste des Petits Ruminants in Camels of Thar Desert of Pakistan Using Elisa and Conventional Pcr Methods

Kanwar Kumar Mahi*

¹Department of Epidemiology & Public Health, Sindh Agriculture University, Sindh, Pakistan

*Corresponding author: Mahi KK, Department of Epidemiology & Public Health, Sindh Agriculture University, Sindh, Pakistan; Tel No: 3362466561 ; E-Mail: kanwar.kumar3@gmail.com

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Abstract

Otitis Peste des petits ruminants (PPR) are contagious, acute disease of sheep and goat, resulting from a virus called morbillivirus that belongs to family Paramyxoviridae. In small ruminants, PPR is known to cause 100% mortality in severe epidemic cases. Transmission occurs through direct involving of secretions or excretions from infected animals to healthy animals in near proximity. Clinically, PPR is showing through means of sudden onset in depression, pyrexia, lacrimation, stomatitis, dyspnea, coughing, foul smelling, diarrhea and demise. After gone through literature it was found that little work has been carried out in Pakistan on PPR surveillance particularly on camels. The dirt of the Thar Desert stays dry for a great part of the year and is inclined to wind disintegration. In Pakistan, ecto-parasites are one of the significant wellbeing dangers in domesticated animals prompting gigantic monetary misfortunes, for example, brought down efficiency and mortality.

Introduction

Creation of the creatures is influenced and furthermore they transmit significant protozoan infections like babesiosis, theileriosis and Anaplasmosis Dirie and Abdurahman (2003). Ticks are significant parasites of both residential and wild creatures. Their harmful impacts incorporate transmission of tick-borne maladies, tick stress, metabolic weakening, tick toxicosis and auxiliary diseases Fahmy et al (2004). The effect of ticks and tick-borne sicknesses (TTBDs) on the vocation of asset poor cultivating networks has been positioned high Perry et al (2002). Ticks are among the most significant vectors of maladies influencing the two people and creatures around the world. High speed winds blow soil from the desert, saving some on neighboring fruitful terrains, and causing moving sand rises inside the desert. Sand ridges are settled by raising smaller scale windbreak boundaries with clean material and resulting afforestation of the rewarded hills with seedlings of bushes, for example, phog, senna, castor oil plant and trees, for example, gum acacia, Prosopis juliflora and lebbek tree. The 649 km (403 mi) long Indira Gandhi Canal carries new water to the Thar

Desert. It was considered to end spreading of the desert to rich zones. Therefore, current study was planned to investigate the prevalence of PPR in camels of Thar desert viz. Tharparkar and Umerkot districts of Sindh province of Pakistan using serological (ELISA) and molecular techniques (PCR). In this study we selected camel breeds found in Thar desert viz., Dhatti and Larri to investigate the prevalence of peste des petits ruminants (PPR). The serum samples were collected from three age groups: Group A (1-5 year), Group B (6-10 year) and Group C (>10 year) that were belong to both sexes. The samples were tested for detection of antibodies by using competitive enzyme linked immunosorbent assay (cELISA). The nasal swabs and fecal material samples were also collected from clinically suspected camels to confirm PPR virus by reverse transcriptase polymerase chain reaction (RT-PCR), immunocapture enzyme linked immunosorbent assay (Ic-ELISA) and HA (Haemagglutination) test. A total of 200 serum samples were examined by cELISA, out of which 17 (8.5%) were found positive. The higher prevalence ($p < 0.01$) of PPR was seen in district Tharparkar (10.9%) as compared to district Umerkot (5.5%). In Tharparkar district, a numerically high prevalence ($p > 0.05$) was found in Dhatti breed (11.3%) as compared to Larri breed (10.5%). Whereas in Umerkot, statistically high prevalence ($p < 0.05$) was recorded in Dhatti breed (6.8%) than Larri breed (3.1%). The higher prevalence of PPR (8.8%) was seen in male camels as compared to shed-camels (8.2%) There was statistically nonsignificant difference among male and female camels. Furthermore, it was observed that adult animals (6-10 years of age) had lowest susceptibility to PPRV infection. In both age groups young i.e., Group A (9.3%) and older i.e., Group C (10.3%) animals exhibited a higher prevalence rate ($p < 0.05$) of PPR as compared to adult animals Group B, 6.3%. Camels can be assaulted by a wide range of ticks. Ticks for the most part be discovered connected to the legs, head and the underbelly. On the off chance that injuries are left untreated they will get contaminated with the slimy parasites of various flies which feed on the blood and meat. Tick invasion are regular in camel, They bring about Swellings and little injuries in the skin from the chomps, The tick benefits from blood and contaminations bring about loss of blood, weight reduction and debilitating of the creature, Ticks can spread different ailments, Poisons from certain ticks influence the sensory system and muscles and the creature can't

move (loss of motion) which can prompt passing. The camel unexpectedly gives indications of loss of motion and its internal heat level will drop Mukasa (1981). Keeping in see the significance of camel, the current examination was directed to assess tick invasion in the camel populace of Thar Desert (locale Mithi), and checkout the commonness of most conspicuous tick. In this study RT-PCR, Ic-ELISA techniques and HA tests were used to affirm the PPR virus. A total of 73 nasal swabs and fecal material samples tested by HA test, out of which 6 samples were positive for PPR antigen and prevalence rate was detected 8.2%. The examination was completed to record the pervasiveness of tick invasion in the camel populace of four regions of Thar desert (Mithi, Nanisar ,Pabuhar and Lundhar). The general frequency of the tick pervasion was recorded as 83% (83/100). The most noteworthy invasion rate was recorded in zone of Nanisar 88% (22/25) trailed by Pabuhar, Mithi and Lundhar with the pervasion rate as 86.95% (20/23), 84.37% (27/32) and 70% (14/20) separately. Most elevated invasion rate was recorded in female 83.33% (50/60) when contrasted with male 82.5% (33/40). Predominance pace of tick invasion was high in youthful camels (under 7 years age gathering) 85.29% when contrasted with age bunch 7years or more (81.81%). Seriousness of invasion was recorded as 12%, half and 20% as low, medium and high pervasion individually. Likewise, 24 nasal swabs and fecal material samples tested by Ic-ELISA, out of which 2 samples were positive for PPR antigen, showed prevalence rate of 8.3%. A total of 14 nasal swabs and fecal material samples were tested for RT-PCR, from the seropositive camels, out of which 2 clinical samples were positive and showed approximately 372bp amplicon on agar gel electrophoresis.

Result

The result revealed highest (14.2%) prevalence rate through RT-PCR technique in this study. In conclusion, the present study

confirmed that PPR is present in camel's breeds of Thar Desert (in Tharparkar and Umerkot districts). The prevalence rate was high in older and young camels than adults. Moreover, the male camels were more susceptible to PPR infection and RT-PCR technique seem to be more sensitive than Ic-ELISA.

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