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Equid Alphaherpes Virus 1 Associated Unusual Dermatoses in A Horse- A Case Report

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ABSTRACT: Equid aplphaherpes virus 1 (Equine herpesvirus 1) is a equine viral pathogen which usually cause respiratory disease, abortion and sporadic neurological affections. The case report presents PCR confirmation of Equine herpesvirus 1 infection from a clinical case showing generalized dermatoses. The affected animal had multiple circular nodules with varying degree of ruptured ulcerated areas. Generalized dermatoses in the absence of respiratory signs are not a usual feature of Equine herpesvirus infection. This scientific brief provides first ever clinical case report of Equid alphaherpes virus from Jharkhand, India.

Keywords: Equid Alphaherpesvirus 1, Dermatoses.

INTRODUCTION

Equid Alphaherpes virus type 1 (EHV-1) is a highly contagious viral disease of equine which belong to Herpesviridae family and is generally associated with respiratory, abortion (Goehring *et al.*, 2010) and neurological affections in horses (Pusterla *et al.*, 2021). The virus may undergo latency and reactivate to produce lytic infection at any time. This study investigates two equine cases presenting with distinct clinical symptoms and diagnostic findings. The first case involves a 5-year-old male horse exhibiting cutaneous lesions localized to the thigh, groin, and flank areas. The second case pertains to a 6-year-old female horse presenting with respiratory distress and blood-tinged nasal discharge. Samples collected for diagnostic evaluation included nasal swabs, pus, whole blood, serum, and aspirated fluid, following established guidelines for glanders diagnosis. Molecular diagnostic testing revealed contrasting results: polymerase chain reaction (PCR) identified equine herpesvirus (EHV) in the serum sample of the male horse but not in the female. Conversely, enzyme-linked immunosorbent assay (ELISA) detected EHV in the female horse's sample but not in the male. The clinical outcomes also differed: the female horse succumbed to the condition within a few days, while the male horse exhibited recovery. These cases underscore the variability in clinical presentation, diagnostic findings, and outcomes associated with equine herpesvirus infections, necessitating further investigation into the pathogen's behavior and host response

MATERIALS AND METHODS

Case Presentation. Two equine cases were investigated in this study: a 5-year-old male horse with cutaneous lesions on the thigh, groin, and flank areas (Fig. 1-3), and a 6-year-old female horse with respiratory distress and blood-tinged nasal discharge (Fig. 4&5). Both animals had been previously treated by a local practitioner with Flunixin meglumine at a dose of 1.1 mg/kg body weight intravenously for two days, and Ceftiofur at a dose rate of 6.6 mg/kg body weight intramuscularly.

Sample Collection. Samples were collected (Fig. 6) from both animals following standard guidelines for diagnosing glanders and included: Nasal swabs, Pus from lesions, Whole blood, Serum, Aspirated fluid from pus. All samples were stored and transported under refrigerated conditions to the National Research Centre on Equines (NRCE), Hisar, for diagnostic evaluation.

Diagnostic Testing. Diagnostic procedures performed at NRCE included the following:

Polymerase Chain Reaction (PCR): Serum samples were tested to detect equine herpesvirus (EHV) DNA.

Results: The male horse tested positive for EHV, while the female horse tested negative.

Enzyme-Linked Immunosorbent Assay (ELISA): Serum samples were analyzed for EHV-specific antibodies.

Results: The female horse tested positive for EHV antibodies, while the male horse tested negative.

Clinical Outcomes. The female horse succumbed to the condition within a few days of presentation, while

the male horse showed recovery following supportive care.

Statistical Analysis. Diagnostic results were compared to evaluate the variability between molecular (PCR) and serological (ELISA) findings. The possible effects of prior antimicrobial and anti-inflammatory treatments on test results were also considered.

This study highlights the importance of using a combination of molecular and serological diagnostics to identify equine herpesvirus infections, especially in cases with complex clinical presentations and prior medical interventions.

Fig. 1

Fig. 2

Fig. 3

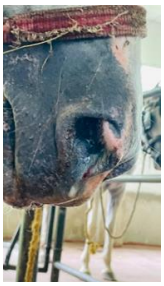

Fig. 4

Fig. 5

Fig. 6

DISCUSSION

The present case report highlights two equine cases with distinct clinical presentations and diagnostic outcomes for equine herpesvirus (EHV). The 5-year-old male horse showed cutaneous lesions localized to the thigh, groin, and flank areas, while the 6-year-old female horse presented with respiratory distress and blood-tinged nasal discharge. Diagnostic evaluation revealed discrepancies between PCR and ELISA results, emphasizing the complexity of diagnosing EHV infections.

The male horse was positive for EHV by PCR but negative by ELISA. PCR detects viral DNA, indicating an active infection or viral shedding, even in the absence of a robust antibody response (Sutton *et al.,* 2020; Hodder *et al*., 2007; Elia *et al.,* 2006). The absence of EHV-specific antibodies in this case may be attributed to the early stage of infection, transient viremia, or immunosuppressive effects of prior treatments with flunixin meglumine and ceftiofur. These treatments may have modulated the immune response, impacting antibody production and serological detectability.

Conversely, the female horse tested negative for EHV by PCR but positive by ELISA. The detection of antibodies suggests past exposure to the virus or a resolved infection. The negative PCR result may reflect a low viral load in the sampled tissues or a late stage of infection when active viral replication had subsided. However, the blood-tinged nasal discharge and respiratory distress indicated significant disease progression, culminating in the horse's death. This outcome may also underscore the impact of secondary infections or complications exacerbating the clinical course.

The observed discrepancies between PCR and ELISA results highlight the diagnostic challenges in equine herpesvirus infections. PCR is a highly sensitive method for detecting active infections, while ELISA is useful for identifying prior exposure or immune responses. These findings emphasize the need for complementary diagnostic approaches to achieve a comprehensive understanding of disease status, particularly in cases with prior medical interventions.

The contrasting outcomes in these cases—recovery in the male horse and fatality in the female horse—underscore the variability in host response to EHV infection. Factors such as the stage of infection, immune status, and therapeutic interventions likely influenced the clinical progression. The female horse's severe respiratory involvement (Paillot *et al.,* 2013; Pusterla *et al.,* 2008) and subsequent death suggest a more aggressive disease course, potentially compounded by factors like stress, co-infections, or delayed diagnosis.

This case report highlights the importance of early diagnosis and integrated diagnostic techniques for managing equine herpesvirus infections. It also emphasizes the need for continued research into the impact of prior treatments on diagnostic outcomes and disease progression, ultimately improving equine health management practices.

CONCLUSIONS

The case report marks the first ever confirmation of Equid alphaherpesvirus 1 (Equine herpesvirus 1) infection associated with generalized dermatoses in

Jharkhand, India, highlighting an atypical presentation of the virus in the absence of respiratory symptoms. The findings emphasize the need for increased awareness of such unusual clinical manifestation among veterinarians and researches. This study also underscores the importance of molecular diagnostic tools like PCR in identifying and confirming viral infections. Further research is required to understand the pathogenesis, epidemiology and clinical diversity of the virus, paving the way for improved diagnostic, preventive and therapeutic strategies to manage Equine herpesvirus 1 effectively.

FUTURE SCOPE

Further studies can be conducted to understand the prevalence and distribution of Equid Alphherpesvirus 1 in equine populations across different regions of India, including Jharkhand. This will help in assessing its impact on the equine industry.

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Conflict of Interest. None.

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