

Epidemiological survey of equine influenza in horses in India

S.V. Mavadiya⁽¹⁾, S.K. Raval⁽¹⁾, S.A. Mehta⁽¹⁾, A.N. Kanani⁽²⁾, A.A. Vagh⁽¹⁾,
P.H. Tank⁽³⁾ & P.R. Patel⁽¹⁾

(1) Department of Veterinary Medicine, College of Veterinary Science & Animal Husbandry,
Assam Agricultural University, Anand-388 001, Gujarat, India

(2) Animal Disease Investigation Office, Department of Animal Husbandry, Ahmedabad, Gujarat, India

(3) Department of Surgery & Radiology, College of Veterinary Science & Animal Husbandry,
Assam Agricultural University, Anand-388 001, Gujarat, India

Summary

A highly contagious virus infection in horses, influenza is the single most important equine respiratory disease in the world. This paper presents details of a one-year study (1 June 2008 to 31 May 2009) to determine the prevalence of equine influenza in the horses of Gujarat State in India. The prevalence of equine influenza A/equi-2 was 12.02%, but none of the samples were positive for equine influenza A/equi-1. The prevalence of equine influenza (A/equi-2) was 15.38%, 11.94%, 10.18%, and 9.09% in horses of the Kathiyawari breed, a non-descript breed, the Marwari breed and the Indian Thoroughbred breed, respectively. The highest prevalence of influenza was observed in yearlings (17.48%) and prevalence was at its highest in the month of April (28.89%). The prevalence rate in males, females and geldings was 11.95%, 10.38% and 8.47%, respectively. The mortality rate and case fatality rate were 1.28% and 10.64%, respectively.

Keywords

Epidemiology – Equine influenza – Horse – India.

Introduction

Equine influenza is currently considered to be the most economically important respiratory disease of horses in many countries of the world. The causal agent of the disease is an influenza type A virus (family *Orthomyxoviridae*), which has been divided into subtypes based on the antigenic characteristics of the surface antigens, haemagglutinin (HA) and neuraminidase (NA). The first isolation of equine influenza virus, defined as A/equi-1 (H7N7), was from a horse in Prague, in the former Czechoslovakia, in 1956 (3). Subsequently, another subtype A/equi-2 Miami/63 (H3N8) was isolated, indicating a potential antigenic shift (1).

India has a total of 1.77 million equines: 0.70 million horses and ponies, 0.29 million mules and 0.78 million donkeys (9). In Gujarat, the horse population is 13,703: 9,377 Kathiyawari horses, 2,747 Marwari horses,

286 Thoroughbred horses and 1,293 non-descript breed horses (5).

Status of equine influenza in India

In India, a respiratory disease 'similar to influenza' in horses was first reported in 1964 from the Royal Western India Turf Club, Bombay (now Mumbai), where about 400 horses were affected. An outbreak of coughing ('Newmarket Cough') started in the last week of October 1964 and continued until December 1964 (8). Since then, major epidemics caused by strains of A/equine-2 influenza virus have been reported from India (10, 12). Serological studies carried out during and after the equine influenza epizootic of 1987 in different parts of India, including Haryana, Punjab, Jammu and Kashmir, Rajasthan, Gujarat,

prevalence rate reported by Wilson (13). Other studies reported that the highest prevalence rates were in horses of between five and six years of age, and that the disease quickly spread to all age groups (2, 10).

In terms of the sex of the animals, the highest prevalence rate was observed in males (11.95%) and the lowest in geldings (8.47%). A previous study reported that that disease spread quickly and soon involved both sexes (10). In March and April, 8.70% and 28.89% of samples tested positive for equine influenza, respectively, whereas in other months none of the samples were positive for the disease (Table III). Previously, in 1987, an epidemic of equine influenza was reported in northern and central India: in the Union Territory of Chandigarh at the tail end of February and early part of March, and in different places in the state of Punjab and other adjoining areas in the later part of March and April (7). Prior to that, in 1964, Manjrekar *et al.* reported an outbreak of coughing from the last week of October until December of that year (8).

In this study, the equine influenza mortality rate was 1.28%, which is in agreement with other findings (10, 17). The case fatality rate was 10.64%. The susceptibility of horses to the disease, the severity of the disease, the health status of the animals and the type of treatment given may be considerable factors in mortality.

Acknowledgements

The authors are grateful to the Director of Animal Husbandry, Gujarat State, for his kind support and for permission to submit the serum samples to ADIO laboratory in Ahmedabad. The authors would also like to thank the Director of the NRCE, Hissar, Haryana, for providing facilities and support for the submission and diagnosis of the disease.

■

Étude épidémiologique de la grippe équine en Inde

S.V. Mavadiya, S.K. Raval, S.A. Mehta, A.N. Kanani, A.A. Vagh, P.H. Tank & P.R. Patel

Résumé

La grippe équine, maladie très infectieuse présente dans de nombreux pays, provoque d'importantes affections respiratoires chez les chevaux affectés. Les auteurs présentent les résultats détaillés d'une étude conduite sur douze mois (du 1^{er} juin 2008 au 31 mai 2009) afin de déterminer la prévalence de la grippe équine chez les chevaux de l'état du Gujarat en Inde. La prévalence du sous-type A/equi-2 du virus de la grippe équine était de 12,02%. En revanche, le sous-type A/equi-1 du virus n'a été décelé dans aucun échantillon. La répartition par races équines de la prévalence du virus de la grippe équine (sous-type A/equi-2) était la suivante : chevaux Kathiawari, 15,38 % ; race non précisée, 11,94 % ; chevaux Marwari, 10,18 % ; chevaux pur-sang d'Inde, 9,09 %. Les taux les plus élevés ont été observés chez les yearlings (17,48 %) ; le mois d'avril correspondait à la période de plus forte prévalence (28,89 %). La prévalence s'élevait à 11,95 % chez les étalons, à 10,38 % chez les juments et à 8,47 % chez les hongres. Les taux de mortalité et de létalité étaient respectivement de 1,28 % et de 10,64 %.

Mots-clés

Cheval – Épidémiologie – Grippe équine – Inde.

■

Estudio epidemiológico de la gripe equina en caballos de la India

S.V. Mavadiya, S.K. Raval, S.A. Mehta, A.N. Kanani, A.A. Vagh, P.H. Tank & P.R. Patel

Resumen

La gripe, infección vírica extremadamente contagiosa en los caballos, provoca una patología respiratoria equina de importancia en muchos países. Los autores exponen en detalle un estudio de un año de duración (del 1º de junio de 2008 al 31 de mayo de 2009) encaminado a determinar la prevalencia de la enfermedad en los caballos del estado de Gujarat (India). La prevalencia de gripe equina por la cepa A/equi-2 fue de un 12,02%, aunque ninguna de las muestras resultó positiva para el virus A/equi-1. La prevalencia de gripe equina (A/equi-2) fue de un 15,38%, un 11,94%, un 10,18% y un 9,09% en caballos de raza *kathiyawari*, una raza no descrita, la raza marwari y los purasangres indios, respectivamente. La tasa más elevada se observó en potros de menos de un año (17,48%), con un pico en el mes de abril (28,89%). La prevalencia en machos, hembras y caballos capones fue de un 11,95%, un 10,38% y un 8,47%, respectivamente. Las tasas de mortalidad y de letalidad fueron de un 1,28% y un 10,64% respectivamente.

Palabras clave

Caballo – Epidemiología – Gripe equina – India.

References

1. Beveridge W.I. (1965). – Some topical comments on influenza in horses. *Vet. Rec.*, **77**, 42.
2. Borchers K., Daly J., Stiens G., Kreling K., Kreling I. & Ludwig H. (2005). – Characterisation of three equine influenza A H3N8 viruses from Germany (2000 and 2002): evidence for frozen evolution. *Vet. Microbiol.*, **107**, 13–21.
3. Bryans J.T. (1964). – Viral respiratory disease of horses. *In Proc. 101st Annual Meeting of the American Veterinarian Association*, 112.
4. Dwivedi S.K., Khurana S.K. & Qureshi S. (2004). – Animal disease monitoring and surveillance. National Research Center on Equines (NRCE), Annual Report, 2003–2004. NRCE, Hisar, India, 15 pp.
5. Gujarat Livestock Development Board (GLDB) (2007). – Report of the 18th Livestock Census of Gujarat, India (2007–2008). GLDB, Gandhinagar, 12 pp.
6. Gurkirpal S. (1992). – Equine influenza 1987, post-epidemic serological study in north India. *J. equine vet. Sci.*, **12**, 342–346.
7. Gurkirpal S. (1995). – Serological observations on an epidemic of equine influenza in India. *J. equine vet. Sci.*, **17** (7), 380–384.
8. Manjrekar S.L., Gorhe D.S. & Paranjape V.L. (1965). – Observation on the coughing outbreaks 'Newmarket Cough' in the race horses in Bombay. *Indian vet. J.*, **48**, 460–464.
9. National Research Centre on Equines (NRCE) (2006). – Annual Report 2005–2006. NRCE, Hisar, India.
10. Uppal P.K. & Yadav M.P. (1987). – Outbreak of equine influenza in India. *Vet. Rec.*, **121** (24), 569–570.
11. Uppal P.K. & Yadav M.P. (1988). – Sero-epidemiology on equine influenza in Madhya Pradesh. *Int. J. anim. Sci.*, **3**, 213–320.
12. Virmani N., Singh B.K., Gulati B.R. & Kumar S. (2008). – Equine influenza outbreak in India. *Vet. Rec.*, **163** (20), 607–608.
13. Wilson W.D. (1993). – Equine influenza. *Vet. Clin. N. Am. (equine Pract.)*, **9**, 257–282.

14. Yadav M.P. & Uppal P.K. (1990). – Studies on A/equi-2 virus isolated during the 1987 equine influenza epidemic in India. *Virus Info. Exch. Newsl., SE Asia & Western Pacific*, **7** (2), 63.
 15. Yadav M.P., Uppal P.K. & Ahmed S.N. (1990). – Humoral response in equine influenza after vaccination and natural infection. *Indian vet. J.*, **67**, 293–298.
 16. Yadav M.P., Uppal P.K. & Shaw A.A. (1987). – Sero-epidemiology of equine influenza in Jammu and Kashmir, India. *Virus Info. Exch. Newsl., SE Asia & Western Pacific*, **4** (3), 82.
 17. Yuanji G., Min W., Guo-Sheng Z., Wan-kun L., Yoshihiro K. & Robert G.W. (1995). – Seroepidemiological and molecular evidence for the presence of two H3N8 equine influenza viruses in China in 1993–1994. *J. gen. Virol.*, **76**, 2009–2014.
-

