

EQUINE DISEASES: A RETROSPECTIVE PREVALENCE STUDY IN FARM CONDITIONS IN BANGLADESH

^{1*}Suchandan Sikder, ²AM Ekhlatur Rahman, ³Umme Kulsum Rima, ⁴Md Abdul Alim, ⁴Subhagata Das, ¹Bhajan Chandra Das and ¹Md Rayhan Faruque

¹Dept of Medicine and Surgery,

²Royal Veterinary and Farm Core, Bangladesh Army;

³Department of Medicine, Surgery and Obstetrics, Hajee Mohammad Danesh Science & Technology University

⁴Dept of Pathology and Parasitology, Faculty of Veterinary Medicine, Chittagong Veterinary and Animal Sciences University;

*Corresponding author: schandan_vet@yahoo.com

A retrospective study was conducted to identify equine clinical diseases and their prevalence in farm conditions in Bangladesh from January'04 to December'10. Veterinary Hospital of RVFD, Equitation School, Dhaka and Riding School of BMA, Chittagong were the area of study. A total of 1026 cases of 41 different diseases and disorders were recorded. Significantly higher ($p < 0.05$) prevalence was found in Pakistani thoroughbred (45.03%), male horses (93.66%) and in summer season (71.73%) compared to Bangladeshi crossbred (20.76%), female horses (6.34%) and winter season (28.27%). Higher prevalence rate was also recorded in horses of above 4 year age (97.56%). It was also observed that horses were highly vulnerable to integumentary systemic disorders (40.25%) and wound (25.53%) among different systems involvement and disorders. The study will provide an idea about the prevailed equine diseases to the practitioners and researchers. It will also support the planning and implementation of equine disease control and eradication program. There are scopes for extensive study on the diseases.

Keywords: Equine disease, retrospective study, prevalence, Bangladesh.

From ancient time horses have been considered as a dependable and trustworthy friend of human being for their vigor, speed and vitalizing qualities. With the demand of human civilization their uses have made diffused. Now-a-days they are used in the field of agriculture, communication, sports, ceremonial parade, guards and escorts etc. as described by McBane (16).

Indigenous horses are reared under traditional husbandry practice in some districts of Bangladesh. They do not maintain any record of pedigree or diseases. But army is maintaining horses in ideal farm conditions keeping all records.

Limited reports are available on overview of equine diseases. Al-Khafaji and Al-Saad (1) worked on gastrointestinal diseases on draught horse in Iraq and found prevalence of anorexia 41.7%, diarrhea 16.7%, constipation 13.3%, colic 20% and alopecia 3.3%. Vainio et al, (21) reported inappetance 50%, colic 35% in USA. In India, 6.02-23.80% abortion rate was recorded by Varshney et al. (23).

But in Bangladesh, there is scarcity of reports on equine diseases. With this view in mind, the present study was undertaken to identify the clinical equine diseases and their prevalence in farm condition.

MATERIAL AND METHODS

Study area, population

Veterinary Hospital of Remount Veterinary and Farm Depot (RVFD), Equitation School, Savar, Dhaka and Riding School of Bangladesh Military Academy (BMA), Bhatiary, Chittagong were the areas of study. Pakistani Thoroughbred, Indian Thoroughbred and Bangladeshi Crossbred (cross of Pakistani and Indian Thoroughbreds) horses reared in the farms were the study population.

Management of the animals

The animals were managed under scientific husbandry and provided with balanced diet prescribed for army animal ration scales. The horses were vaccinated for tetanus and anthrax annually. Regular deworming was done at three month interval. Regular riding of adult horses were done every day and untrained horses were kept free in paddock daily for at least 8-12 hours for exercise.

All the diseased horses came under treatment were registered in the patient register book. Date, sex, body weight, breed, initial complain and clinical findings were recorded accordingly. Age of the animals was determined from individual history card where date of birth and other information had been endorsed. The recorded cases of different diseases of horses from January'04 to December'10 were collected for the study.

Diagnosis of the diseases

Clinical propaedeutics

The case history of sick horses (present and past) was carefully recorded which had given a guideline for further examination of animals. General, modified and special clinical examinations were conducted as described by Kelly (12) on each animal to diagnose individual disease.

Laboratory examinations

Materials considered significant for diagnosis were collected. Urine and blood samples were examined at the Veterinary Hospital as routine test. Fecal samples

were collected to identify the gastrointestinal parasitic diseases at Unit Veterinary Hospital. Direct smear, floatation, sedimentation and floatation centrifugation methods were done for this purpose as described by Konnersman (13). For identification and isolation of microorganisms samples were sent to Central Diseases Investigation laboratory (CDIL), Dhaka. Skin scrapings were examined as done by Kurade et al. (14) for diagnosis of mange and fungal diseases in Veterinary Hospital.

Postmortem examination

Horses died at the farms or hospitals were subjected to postmortem examination. Samples for pathological or histopathological examinations were submitted to the CDIL, Bangladesh Livestock Research Institute (BLRI), Dhaka, Department of Pathology, Faculty of Veterinary Science, Bangladesh Agricultural University (BAU) and Department of Pathology and Parasitology, Faculty of Veterinary Medicine, Chittagong Veterinary and Animal Science University (CVASU) for diagnosis of the diseases.

Data analysis

Data from the questionnaires, register books and laboratory results were stored in personal computer, using Microsoft Excel spreadsheet program 2007. Descriptive statistical analyses of various outcomes and variables were done using Intercooled STATA 9.0 (Stata Corporation 2008) at 95% level of significance. Proportional analysis and logistic regression was used to interpret the data.

RESULTS AND DISCUSSION

A total of 1026 cases of 41 diseases or disorders of horses were recorded. Significantly higher prevalence ($p < 0.05$) was found in Pakistani thoroughbred, male horses and during summer compared to Indian thoroughbred, Bangladeshi crossbred, female horses and winter season (Table 01). Summer and winter seasons were considered from March to August and September to February

correspondingly. In addition, higher rate of disease prevalence found in the horses of above 4 year of age. Furthermore, it was observed that horses were highly vulnerable to wound and integumentary systemic disorders compared to other diseases or systems though the result is not statistically significant ($p>0.05$) (Table 01 and 02).

Table 01: Prevalence of diseases of horse against different parameters

Variables		No. of cases attended (n=1026)	Prevalence (%)	p-value
Breed	Pakistani thoroughbred	462	45.03	<0.05
	Indian thoroughbred	351	34.21	
	Bangladeshi crossbred	213	20.76	
Sex	Male	961	93.66	>0.05
	Female	65	6.34	
Season	Summer	736	71.73	>0.05
	Winter	290	28.27	
Age	>6 month	7	0.68	>0.05
	6 month-1 year	5	0.49	
	1 – 4 year	13	1.27	
	>4 year	1001	97.56	
Body systems involvement	Digestive	252	24.56	>0.05
	Musculo-skeletal	223	21.74	
	Integumentary	413	40.25	
	Respiratory	21	2.05	
	Urogenital	15	1.46	
	Eye and ear	52	5.07	
	Miscellaneous	50	4.87	

The present study revealed that Thoroughbreds of horse were more vulnerable to diseases than Bangladeshi crossbred which might be due to natural resistance of crossbred at native environment. Additionally, Freeman and Spencer (5) and Fjordbakk et al. (4) reported that Thoroughbreds were at greater risk than Standard breeds.

Higher rate of disease prevalence in male horse was approved by Freeman and Spencer (5) who found male horses 63 times more risk than female horses.

Table 02: Prevalence of different diseases or disorders ($p>0.05$)

Body system involved	Diseases or disorders	No. of cases attended	Prevalence (%)
Digestive system	Enteritis/Diarrhoea	151	14.71
	Colic	66	6.43
	Anorexia	27	2.63
	Intestinal obstruction	03	0.29
	Constipation	03	0.29
	Tympany	01	0.09
	Strongylosis	01	0.09
Musculo-skeletal system	Sprain/lameness	113	11.21
	Arthritis	42	4.12
	Quittor	24	2.33
	Thrush	20	1.94
	Capped elbow	11	1.07
	Weak loin	10	0.97
	Laminitis	02	0.19
	Sand crack	01	0.09
Integumentary system	Wound	262	25.53
	Dermatitis	80	7.79
	Allergy	61	5.94
	Dermatomycoses	06	0.58
	Papillomatosis	02	0.19
	Subcutaneous cyst	01	0.09
	Alopecia	01	0.09
	Epistaxis	11	1.07
Respiratory system	Bronchopneumonia	07	0.68
	Rhinitis	03	0.29
	Posthitis	06	0.58
Urogenital system	Urinary tract infection	05	0.48
	Abortion	01	0.09
	Dystocia	01	0.09
	Cystic ovary	01	0.09
	Orchitis	01	0.09
	Conjunctivitis	44	4.28
Eye and ear	Otitis	07	0.68
	Cataract	01	0.09
Miscellaneous	Fever	24	2.33
	Abscess	12	1.16
	Hyperthermia	10	0.97
	Melanoma	01	0.09
	Myiasis	01	0.09
	Cerebral Haemorrhage	01	0.09
	Edema of abdomen	01	0.09

Large number of male horse used for riding and exercise might be the reason behind though the result was contrary to the findings of Philip et al. (19) and Slater et al. (20).

Increased prevalence of diseases during winter was in consistent with the report of Lyons et al. (15) who studied in USA. However, Halldorsdittir and Larsen (8) reported higher disease prevalence at summer in Norway. Sudden change of weather from long lasting summer to short winter might predispose the horses to disease.

Older aged horses were found more vulnerable to diseases which were similar to the findings of Cullen and Grahn (2) and Slater et al. (20). But Haupt et al. (10) and Golland et al. (7) reported inverse age prevalence of diseases. Increased susceptibility to many diseases associated with older age and large number of horse of this group might be the justification.

Integumentary system was reported more prone to diseases. Whereas, Oikawa and Kusunose (18) and Halldorsdittir and Larsen (8) found respiratory system, Varshney and Uppal (22) found digestive and musculo-skeletal system involvement more prevailed. Prevalence of musculo-skeletal, digestive and respiratory systemic disorders was found moderately lower than the findings of Galvin and Corley (6) who reported 29.4%, 14.9% and 27.8% respectively in Ireland. Regular riding and exercise might be the cause of increased integumentary systemic disorder.

Wound was recorded as highest prevalence among the diseases whereas Vainio et al. (21) and Al-Khafaji and Al-Saad (1) found inappetance and anorexia correspondingly. Prevalence of diarrhea recorded as second highest prevailed disease in this study was in line with the findings of Al-Khafaji and Al-Saad (1) who found 16.7%. Furthermore, rate of colic was found lower than the findings of Vainio et al. (21) and Al-Khafaji and Al-Saad (1) who recorded 35% and 20% respectively. Rate of intestinal obstruction found incredibly

lower than the findings of Milli and Hazinoglu (17) who recorded 80.7% in Turkey. Ring worm infestation rate was recorded moderately lower than the result of Dom et al. (3) but slightly higher than the outcome of Ishikawa et al. (11). Abortion rate of mare found also reasonably lower than the findings of Varshney et al. (23). Diagnostic technique applied, climate and managerial variations might be the reasons behind variation in the disease prevalence.

It can be concluded that diseases related to injury to animal were more prevailed though various supplementary diseases also reported. So, it's recommended to provide more attention to daily management.

REFERENCES

1. Al-Khafaji, N.J. and Al-Saad, K.M. (1996) Common gastrointestinal parasites in draught horses in Mosul Iraq. *Iraqi J of Vet Sci* 9(1), 57-60.
2. Cullen, C.L. and Grahn, B.H. (1999) Equine glaucoma: a retrospective study of 13 cases presented at the Western College of Veterinary Medicine from 1992 to 1999. *Can Vet J* 41(6), 470-480.
3. Dom, P., Devriese, L., Heasebrouck, F., Desmidt, M., Herdt, P.D. and De, H.P. (1995) Prevalence of pathogenic bacteria and dermatophytes in skin disorders in Belgian horses. *Vlaams Diergeneeskundig Tijdschrift* 64(1), 15-18.
4. Fjordbakk, C.T., Arroyo, L.G. and Hewson, J. (2005) Retrospective study of the clinical features of limb cellulitis in 63 horses. *Vet Rec* 162, 233-236.
5. Freeman, D.E. and Spencer, P.A. (1991) Evaluation of age, breed, and gender as risk factors for umbilical hernia in horse of a

- hospital population. *Am J of Vet Res* 52(4), 637-639.
6. Galvin, N.P. and Corley, K.T.T. (2008) Causes of disease and death from birth to 12 months of age in the Thoroughbred horse in Ireland. *Irish Vet J* 63, 37-43.
 7. Golland, L.C., Hodgson, D.R., Davis, R.E., Rawlinson, R.J., Collins, M.B., McClintock, S.A. and Hutchins, D.R. (1995) Retropharyngeal lymph node infection in horses; 46 cases (1977-1992). *Aus Vet J* 72(5), 161-164.
 8. Halldorsdottir, S. and Larsen, H.J. (1991) An epidemiological study of summer eczema in Icelandic horses in Norway. *Eq Vet J* 23(4), 296-299.
 9. Halldorsdottir, S., Lazary, S., Gummarsson, E. and Larsen, H.J. (1991) Distribution of leukocyte antigens in Icelandic horse affected with summer eczema compared to non-affected horses. *Eq Vet J* 23(4), 300-303.
 10. Haupt, J.L., McAndrews, A.G., Chaney, K.P., Labbe, K.A. and Holcombe, S.J. (2006) Surgical treatment of colic in the miniature horse: a retrospective study of 57 cases (1993-2006). *Eq Vet J* 40(4), 364-367.
 11. Ishikawa, M.M., Lucas, R., Larsson, C.E., Gambale, W. and Fernandes, W.R. (1996) Isolation and identification of fungi from the skin of healthy horses and horses with ringworm. *Brazilian J of Vet Res and Anim Sci* 33(3), 170-175.
 12. Kelly, W.R. (1984) Laboratory Diagnosis. In: *Veterinary Clinical Diagnosis*. 3rd Edi, Bailliere-Tindal Ltd. London, UK 151-153
 13. Konnersman, M. (2005) Fecal testing techniques for finding goat internal parasite eggs and larvae. *Dairy Goat J* 83(5), 39-41.
 14. Kurade, S.M., Amladi, S.A. and Miskeen, A.K. (2006) Skin scraping and a potassium hydroxide mount. *Ind J of Dermatology, Venerology and Leprology* 72(3), 238-241.
 15. Lyons, E.T., Tolliver, S.C., Drudge, J.H., Granstrom, D.E., Stamper, S. and Collins, S.S. (1991) Transmission of some internal parasites in horse born in 1989 on a farm in Central Kentucky. *J of the Helminthological Soc of Washington* 58(2), 213-219.
 16. McBane (1992) Use of Horse. In: *A Natural Approach to Horse Management*. 4th Edi, Methuen Publisher, London 226-228
 17. Milli, U.H. and Hazirolu, R. (1995) Intestinal obstruction in horses: a review of 109 cases. *Veteriner, Fakultesi Dergisi, Ankara Universities* 42(2), 147-152.
 18. Oikawa, M.A. and Kusunose, R. (1995) Some epidemiological aspects of equine respiratory disease associated with transport. *J of Eq Sci* 6(1), 25-29.
 19. Philip, J.J., David, A.W., Kevin, G.K., Kristan L.P., Lorie, A.M., John, M.K., Rebecca, L.F. and Jimmy, C.L. (1998) Retrospective study of cecocolic intussusception (cecal inversion) in nine horses (1982-1998). *J of Eq Vet Sci* 19(3), 190-195.
 20. Slater, M.R., Hood, D.M. and Carter, G.K. (1995) Descriptive

-
- epidemiological study of equine laminitis. *Eq Vet J* 27(5), 364-367.
21. Vainio, K., Sykes, B.W. and Blikslager, A.T. (2009) Primary gastric impaction in horses: A retrospective study of 20 cases (2005–2008). *Eq Vet Edu* 23 (4), 186-190.
22. Varshney, J.P. and Uppal, P.K. (1995) Diseases frequency in Thoroughbred- retrospective study. *Centaur-Mylapore* 11(3), 60-62.
23. Varshney, J.P., Uppal, P.K. and Ahmed, N. (1994) Some observations on reproductive problems in Thoroughbreds at an organized stud farm in India. *Centaur Mylapore* 11(2), 38-42.