

## Study on prevalence and risk factors associated with colic in horses

Jitendra Kant Nagar and S.K. Sharma<sup>1</sup>

Department of Veterinary Medicine, College of Veterinary & Animal Science, Vallabhnagar, Udaipur (Rajasthan)  
313 601 (Rajasthan University of Veterinary and Animal Sciences)

### Abstract

In the present investigation, prevalence and risk factors associated with colic were studied in horses. The overall prevalence of colic in horses was found to be 11.42 percent. Higher prevalence of colic was observed in Kathiawari breed (66.66 percent) than Marwari breed (33.34 percent). Highest prevalence of colic was observed in horses between 5 to 10 years of age (58.33 percent), followed by horses below 5 years of age (33.33 percent) and above 10 years of age (8.33 percent). Prevalence of colic was found higher in males (66.66 percent) than female horses (33.33 per cent). Out of the total horses, 75 percent had spasmodic colic whereas 25 percent were having impaction. Maximum cases (50% percent) of colic in horses were reported during June- July months in the year 2017. The case fatality rate was found to be 16.66 per cent. Risk factors associated with colic mainly included recent diet change, excessive concentrate feeding, feeding of poor quality feed, parasitic infestation, improper exercise and age etc.

**Keywords:** Prevalence, Risk factors, Colic, Horses

Horses are important animal species domesticated by man. These are the most valuable animals. In India, horses are reared by socially and economically higher as well as lower strata of the society. The utility of horses is for riding, racing, sports, security and also in social customs e.g. marriages, religious processions etc. Total equine population in the world is around 6 crore. India possesses around 2 percent of total equine population of the world, i.e. 11.4 lacs. In Rajasthan, equine population is around 1.23 lacs. Rajasthan state has more than 10 per cent of the total equine population of India (Livestock census, 2012).

Horses are sensitive to various illness. Colic is an important disease of horses. Out of the 72 major health problems in equine, colic is one of the most common disease (Singh *et al.*, 2010). Colic has been reported as commonest equine disease in India by several workers. Equine colic is a significant problem and the most common cause of death. It is a multifactorial and complex disorder. It ranges from a harmless temporary large intestine impaction to severe strangulation or colitis together with multi-organ failure as a consequence of circulatory collapse (Singh *et al.*, 2010).

The etiological factors to this clinical syndrome are several that classifies the causes of colic as obstructive

and strangulation, non-strangulation infective and inflammatory such as peritonitis and enteritis (Radostits *et al.*, 2007). Colic appears to be induced by various predisposing factors mainly environment factors and also possibly a genetic predisposition.

Looking towards the importance of colic in horses, the present investigation was undertaken to find out the prevalence and risk factors associated with colic in horses in southern part of Rajasthan.

### Materials and Methods

In the present investigation, total 105 horses of different breed (Kathiawari and Marwari), age and sex were screened to find out the prevalence of colic for a period of six months i.e. June 2017 to November 2017 in southern part of Rajasthan.

A detailed history sheet was prepared to record the history of each horse affected with colic, particularly in respect to breed, age, sex, deworming, diet, water intake, duration of ownership, previous illness, if any etc. Total number of horses reared by the owners' alongwith information with respect to environment, diet, water, season and management practices was also recorded from the owner. Colic was identified on the basis of observative clinical signs of abdominal pain.

The statistical analysis of the data was done using statistical method described by Snedecor and Cochran (1994).

<sup>1</sup>Corresponding author: drshivsharmavet@rediffmail.com

## Results and Discussion

In the present investigation, prevalence, causes and risk factors associated with colic in horses were assessed. Colic was diagnosed on the basis of history, clinical and physical examination.

In the present investigation, out of total 105 horses reared by different owners, 12 horses were diagnosed with colic during June 2017 to November 2017. The overall prevalence of colic in horses was found to be 11.42 per cent during the report period. These findings are in agreement with that of Mehdi and Mohammed (2006). Traub-Dargatz *et al.* (2001) and Radostits *et al.* (2009) reported 3.5 - 26 and 2 - 30 per cent prevalence of colic in horses, respectively. Out of these 12 cases of colic, spasmodic and impactive colic was observed in 9 (75 per cent) and 3 (25 per cent) cases, respectively. Similar findings were reported by Hudson *et al.* (2001) and Sameeh *et al.* (2005).

Lower prevalence of colic has also been reported by Varshney and Uppal (1995) (6.47 per cent), Azizunnesa *et al.* (2008) (7.19 per cent) and Hillyer *et al.* (2002) (8.6 per cent). High prevalence of colic in present study might be due to poor body condition, limited access to water, poor parasite control and poor management practices. Nutritional status and management practices affect the incidence of colic in horses (Enbavelan *et al.*, 2015). The incidence of colic in horses is dependent upon location and management practices.

In present investigation, higher occurrence of colic was observed in Kathiawari breed (66.66 per cent) followed by Marwari breed (33.34 per cent) (Table 1) which is in agreement with findings of Enbavelan *et al.* (2015).

Higher occurrence of colic was observed in horses between 5 to 10 years of age (58.33 per cent), followed by horses below 5 years of age (33.33 percent) and above 10 years of age (8.33 per cent) (Table 1). Similar findings were also reported by Enbavelan *et al.* (2015). Geriatric horses are predisposed to impactive colic due to poor dentition and altered intestinal motility (Brounts and Kooreman, 2004).

In the present study, the occurrence of colic was found higher in males (66.66 per cent) than female horses (33.33 per cent) (Table 1). Archer *et al.* (2008) also reported higher incidence of colic in male horses. They concluded that male horses were at an increased

risk for entrapment of small intestine in the epiploic foramen.

Maximum cases (50% percent) of colic in horses were reported during June- July months, followed by August- September and October- November. It might be due to inclement weather conditions (Table 1).

There were total 12 medical cases of colic in the present investigation. The medical cases of colic were observed in horses of 2 years to 20 years age. Out of 12 positive cases of colic, 2 horses died. These two horses were affected with impactive colic. Thus the case fatality rate of colic in present investigation was found 16.66 percent. Similar findings were reported by Hillyer *et al.* (2002) and Traub-Dargatz *et al.* (2001). The case fatality rate of spasmodic and impactive colic was zero (0/9) and 66.66 per cent (2/3) respectively. The post-mortem of these two cases revealed intestinal obstruction. The post-mortem findings indicated intestinal obstruction due to impaction with hard faeces. The mucous and serosal surface of intestine was severely haemorrhagic.

The most common causes of colic in horses were impaction (large colon impaction) and spasmodic colic. Out of the total horses presented for medical

Table 1 Distribution of the predisposing factors in horses with different types of colic

Sr. No.	Variable and category		Affected horses (N=12)
1.	Breed	Kathiawari	8
		Marwari	4
2.	Age	<5 years	4
		5-10 years	7
		>10 years	1
3.	Sex	Male	8
		Female	4
4.	Season	June- July	6
		August-September.	4
		October- November	2
5.	Concentrate diet	Yes	8
		No	4
6.	Deworming	Yes	5
		No	7
7.	Previous History of colic	Yes	2
		No	10

reasons, 25 per cent had impaction and 75 per cent showed spasmodic colic. Similar findings were also reported by Abutarbush *et al.* (2005). The spasmodic colic was predominantly observed in the age group of 5-10 years. Similarly, impaction in large intestine was the common cause of colic in horses above 10 years of age. Similar findings were also reported by Voigt *et al.* (2009).

Spasmodic colic was found associated with enteritis, parasitism. Parasites viz. *Strongylus vulgaris* and *Oxyuris equi* were observed in 16.66 per cent and 41.66 per cent cases, respectively.

In spasmodic colic, the exact cause of colic could not be identified but it might have been associated with improper exercise, poor condition, environment, improper feeding management, parasitism etc. Certain feed types and feeding practices have been identified as cause of colic (Archer *et al.*, 2006). Excessive quantity of roughages and diet with imbalance of roughage and concentrate, overfeeding, underfeeding and feeding on the ground has previously been implicated (Tinker *et al.*, 1997). Traub-Dargatz *et al.* (2001) reported no association of colic with type of dried forage or frequency of feeding forages. There is a need for further investigation into the relation of specific nutrients such as fibre and measurement of these nutrients in the feed in relation to colic (Cohen, 1997). In many studies higher concentrate intakes were associated with increased risk of colic (Tinker *et al.*, 1997).

In present investigation large colon impaction were observed in two cases. Cohen *et al.* (1999) reported increased risk of colic in horses with improper exercise. Water deprivation may also be associated with increased risk of large colon impaction (White, 1997). The association between colic and transport is inconsistent. Transportation has also been implicated as risk of colic (Hillyer *et al.*, 2002, and Buchanan, 2003).

In the present investigation, cases of only true colic i.e. gastrointestinal colic were observed. None of the case of false colic was observed.

Risk factors associated with colic in the present investigation included living indoor (12), followed by parasitic infestation (7), poor body condition (5), improper exercise (4), excessive concentrate feeding (3), feeding of poor quality feed (3), lack of drinking water (3), recent diet change (2) and older age (1). More

Table 2. Causes associated with colic in horses

Sr. No.	Cause of colic	No.
1	Recent diet change	2
2	Excessive concentrate feeding	3
3	Feeding of poor quality feed	3
4	Parasitic infestation	7
5	Improper exercise	4
6	Older age	1
7	Poor body condition	5
8	Lack of drinking water	3
9	Living indoor	12

than one risk factor was found associated with colic in the present investigation (Table 2).

In the present investigation, horses were kept indoors and mostly no pasture were provided year long. Housing system appeared to influence the risk of colic. Horses maintained on pasture are less subjected to colic than horses living indoors (Cohen *et al.*, 2006).

### Conclusions

The overall prevalence of colic in horses was found to be 11.42 percent. Out of 12 cases of colic, spasmodic and impactive colic was observed in 75 percent and 25 percent cases, respectively. Highest prevalence of colic was observed in Kathiawari breed (66.66 percent) than Marwari breed (33.34 percent). Highest prevalence was observed in horses between 5 to 10 years of age (58.33 per cent), followed by horses below 5 years of age (33.33 percent) and above 10 years of age (8.33 per cent). Prevalence was higher in males (66.66 per cent) than female horses (33.33 per cent). Maximum cases (50% percent) of colic in horses were reported during June- July months. The case fatality rate was found to be 16.66 per cent.

Risk factors associated with colic mainly included dietary disturbances, parasitic infestation, improper exercise and age etc. More than one risk factor was found associated with colic in the present investigation. High prevalence of colic in present study might be due to poor body condition, limited access to water, poor parasite control and poor management practices. It is concluded that colic was the most prevalent disease in young and adult horses. Poor management conditions are most common predisposing factors of colic in horses.

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