A RETROSPECTIVE STUDY OF EQUINE COLIC RISK FACTORS IN TABRIZ AREA IN IRAN

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ABSTRACT

A retrospective study was conducted on 10 horse farms to identify risk factors for equine colic for 1 year in Tabriz area in Iran. The association between colic and farm or individual horse risk factors related to management, housing, pasture, use, nutrition, health and events was first examined by univariate statistical analysis. Individually significant variables were used in a stepwise multivariable forward logistic regression to select explanatory factors ($P < 0.05$). Analysis was conducted at 2 levels: farm and individual horse with farm specified as a random effects variable. No farm-level variables were significant. Significant horse-level variables included: age, odds ratio (OR) = 3.1 for horses age 2–10 years compared to < 2 years; history of previous colic, OR = 2.9 relative to no colic; changes in concentrate feeding during the year (1 per year, OR = 3.3, more than 1, OR = 1.8) relative to no changes; more than 1 change in hay feeding during the year, OR = 2.4 relative to no changes; feeding high levels of concentrate (> 2.5 kg/day dry matter, OR = 5.2 > 5 kg/day dry matter, OR = 7.1) relative to feeding no concentrate; and vaccination with anthrax vaccine during the study, OR = 1.2 relative to no vaccination. Feeding a whole grain with or without other concentrate components reduced risk, OR = 0.6, relative to feeding no whole grain. Results of the study suggest that diet and changes in diet and aging are important risks for colic in a population of horses on farms.

INTRODUCTION

Colic is a term used to describe pain in the abdomen. However, there are many causes of colic some of which may be mild whilst others can be life threatening. In the early stages of colic it is not possible to tell the severity and so all cases should be treated seriously. Often the cause of colic is not be known but can include irregularities in feeding, sudden change of diet, indigestion, gas build up, too much concentrate feet or unsoaked sugar beet, eating of a substance which expands when dampened, intestinal accident, blockage, lack of water, stress, too much food and/or water after exercise, contractions, and inflammation. The risk of colic occurring is increased with high carbohydrate diets and inadequate access to hay or grass. Stabled horses are more prone to colic than grass kept horses. Recurring colic can be due to a number of more serious causes such as tumours, ulcers, and problems with one of the abdominal organs and should be investigated by a vet (9,11,and 14).

Symptoms of colic include restlessness, kicking at the belly, pawing the ground or rolling in an effort to disperse the pain, lying down more than usual, frequently standing outstretched as if to urinate, turning the head towards the flank and curling of the upper lip. A horse with colic will have a high temperature, its pulse and respiration rate will increase and it may also sweat and be off its feed. Veterinary advice should be sought immediately. Food should be removed and

nibbling at bedding should be prevented until the veterinarian arrives. The horse should be walked as this will distract from the pain and will also help prevent rolling. If it is not possible to prevent the horse from rolling the horse should be placed in an area where it can inflict little damage to itself and cannot become cast (4,7,and 8).

A regular feeding schedule, constant access to clean water, adequate forage, consistent exercise routine and the avoidance of sudden changes in diet will all reduce the risk of colic occurring(12,13).

MATERIALS AND METHODS

A retrospective study was conducted on 10 horse farms to identify risk factors for equine colic for 5 years in Tabriz area in Iran. A. The study achieved on the 260 horses of four breeds (133 Arabian, 86 crossbred, 16 Thoroughbreds, 25 Kurd) to estimate the incidence rate of equine colic and its correlation to causes or risk factors. The horses were divided by sex and age groups (young [<2 years], middle [2–10 years], old [>10 years]), with a mean of 5.1 years and median of 4 years. A questionnaire (including location of farm, breed, sex, age of animals, prevention programs, and types of feedstuffs) was filled out for each farm. The association between colic and farm or individual horse risk factors related to management, housing, pasture, use, nutrition, health and events was first examined by univariate statistical analysis. The criteria for diagnosis of colic included observation, clinical examination, and possible laboratory examination.

RESULTS

The number and combination of horses under study are showed in table 1.

Table 1. Number and combination of horses on farms

Farm	No. of horse	Combination
1	24	A:12, CB:7, T:2, K:3
2	81	A:39, CB:24, T:7, K:11
3	37	A:18, CB:15, K:4
4	16	A:7, CB:6, T:3
5	28	A:12, CB:9, T:3, K:4
6	13	A:6, CB:7
7	11	A:7, CB:4
8	12	A:8, CB:4
9	17	A:12, CB:5
10	21	A:12, CB:5, T:1, K:3

A = Arabian horse; CB = Crossbred horse; T = Thoroughbred horse; K = Kurd horse.

The severity of abdominal pain, length of pain, response to analgesics, abdominal sounds, and signs of shock were the most important signs for diagnosis. These signs along with other signs were recorded. The number of cases based on breed, sex, and age show in table 2. The mean incidence density rate of colic during 5 years was 8.85% (23/260) (including11 Arabs, 9

Crossbreds, 2 Thoroughbreds, 1 Kurd). Horses with colic were four 1–year-olds, two 2–year-olds, five 4–year-olds, seven 6–year-olds, two 8–year-olds, and three 12–year-olds).

Table2. The number of cases based on breed, sex, and age

Breed	No. of the horses with colic	sex
Arab	11 (11/133) (8.27%)	9 male and 2 female
Crossbred	9 (9/86) (10.46%)	7 male and 2 male
Thoroughbred	2 (2/16) (12.5%)	1 male and 1 female
Kurd	1 (1/25) (4%)	1 male

The highest and the lowest incidence of colic were in Thoroughbred and Kurd horses, respectively. There was significant difference between sexes (P <0 .01). The relationship between the incidence of colic and age of horse were significant (P <0 .05). The highest and the lowest incidence of colic were in 6–year-olds and 2–year-olds horses, respectively.

Nearly 78.65% of horses with colic were treated by routine procedures, including lubricants, nonsteroidal anti-inflammatory drugs (flunixin meglumine or ketoprufen), walking, and changing to a better diet if necessary. Three horses were referred to surgery.

DISCUSSION

The incidence rate of colic in the current study was 9.12% horses in 5 years. The incidence rate of colic in 14 show horse herds is reported to be 26% (1). This value also is reported to be 6.7% and 4.2% in other studies (5). Although the number of horses and the time of study are low in comparison with some other studies, this study encompassed nearly all registered horses in the city. The association between colic and farm or individual horse risk factors related to management, housing, pasture, use, nutrition, health and events was first examined by univariate statistical analysis. Individually significant variables were used in a stepwise multivariable forward logistic regression to select explanatory factors ($P < 0.05$). Analysis was conducted at 2 levels: farm and individual horse with farm specified as a random effects variable. No farm-level variables were significant. Significant horse-level variables included: age, odds ratio (OR) = 3.1 for horses age 2–10 years compared to < 2 years; history of previous colic, OR = 2.9 relative to no colic; changes in concentrate feeding during the year (1 per year, OR = 3.3, more than 1, OR = 1.8) relative to no changes; more than 1 change in hay feeding during the year, OR = 2.4 relative to no changes; feeding high levels of concentrate (> 2.5 kg/day dry matter, OR = 5.2 > 5 kg/day dry matter, OR = 7.1) relative to feeding no concentrate; and vaccination with anthrax vaccine during the study, OR = 1.2 relative to no vaccination. Feeding a whole grain with or without other concentrate components reduced risk, OR = 0.6, relative to feeding no whole grain. Results of the study suggest that diet and changes in diet and aging are important risks for colic in a population of horses on farms.

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