

The influence of climatic conditions in equine colic in Albania

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Abstract:

Details of 72 colic episodes, collected prospectively, were analyzed for a period of 1-year. The metrological data for this period: the amount of rainfall, the days of hoarfrost, the frost days, the wind speed, and the temperatures were taken from the metrological service (Lapraka, Tirana). These data were compared with the number of colic cases shown per month. The monthly percentage of colic cases was 3.6% Mar, 5.76% Apr, 7.2% May, 2.88% June, 2.88% July, 2.88% Aug, 7.92% Sept, 7.2% Oct, 3.6% Nov, 2.16% Dec, 2.88 Jan, 2.88% Feb. Frequency of colic during the months of Spring (Apr and May) and Autumn (Sept and Oct) was higher than the other seasons. Also, the study showed an increased incidence of colic during months with more days of dew. This is probably related to the fact that in Albania the breeding of horses is mainly done in natural conditions. The study showed that that there is no specific link between the occurrence of colic and days with hoarfrost. The degree of correlation between monthly frequency of colic and weather will be calculated using Pearson's correlation coefficient (r).

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Key words: colic, horses, risk factors, incidence, climatic condition.

INTRODUCTION

Colic is defined as abdominal pain of digestive tract. Colic is one of the most difficult diseases to study with epidemiologic methods due to the large number of diseases cause colic (abdominal pain) as a clinical sign. Epidemiological studies allow us to test the hypothesis of a relationship between exposure to a risk factor and the development of a disease. Determining the incidence of colic can help determine if the rate of colic on farms or in stables is excessive. Out of 100 horses in the general population 4-10 cases of colic is expected during one year (Tinker et al., 1997; Kaneene et al., 1997). Most of abdominal pain, 80-85% of cases, can be considered as simple colic because through the clinical control is not possible to determine a specific diagnosis and most horses respond to medical treatment or resolve spontaneously. Obstructing or strangulating colic that require surgical intervention, represent only 2-4% of colic cases, although some predisposing factors in certain populations can increase this level (White 1990). In the normal horse farm population, equine mortality from all types of colic was 0.7 deaths per 100 horses per year with a rate of colic case fatality of 6.7% (Tinker et al., 1997a). The objectives of this study were to **1)** estimate the types of colic encountered in general practice in Tirana region; **2)** identify risk factors associated with these colic types; **3)** record the seasonal incidence of colic and establish whether this was correlated with changes in weather and **4)** specifically, to identify any risk factors of simple spasmodic/undiagnosed colic.

MATERIAL AND METHODS

During the period from March 2015 and onwards written records of every colic case are filled in by veterinarians

practicing in the rural areas of Tirana district. Age, race and sex of animals, historical details such as changes in management and food diet, recent drug administration, previous colic episodes, and findings on clinical examination and treatment methods have been all recorded. Each case was followed to its eventual outcome as far as possible, and post mortem examinations performed when necessary. From the metrological service we took the monthly data for the amount of rainfall, days with hoarfrost, frost days, wind speed and average temperature. These data were compared with the number of colic cases for each month. The degree of correlation between monthly frequency of colic and weather will be calculated using Pearson's correlation coefficient (r).

RESULTS AND DISCUSSION

During the period from March 2015 and onwards, the records of 72 colic episodes, collected prospectively were analysed.

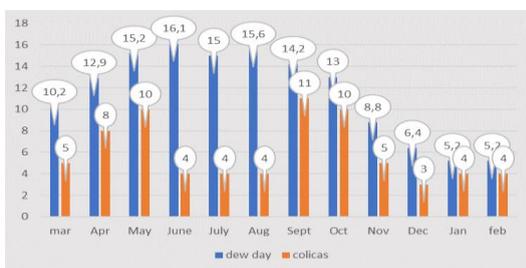
Table 1. Meteorological data / Colic cases

month	t°C	r(mm)	B(m/s)	d/d	f/d	colic
Mar	11,7	115	6,7	10,2	5	5
Apr	14	105	7,6	12,9	0,7	8
May	19,7	104	8	15,2	0	10
June	22,7	67	6,3	16,1	0	4
July	28,7	42	4	15	0	4
Aug	26,8	49	4,9	15,6	0	4
Sept	23,9	78	6,3	14,2	0	11
Oct	18,2	116	6,3	13	1,1	10
Nov	14,2	174	14,8	8,8	4,6	5
Dec	9,1	148	2,7	6,4	10	3
Jan	6,5	143	6,3	5,2	11,2	4
Feb	13,5	132	8	5,2	7,7	4

This study showed different frequency of colic episodes based on the months of the year. Careful interpretation of Table 1 shows the monthly percentage of colic cases was 3.6% Mar, 5.76% Apr, 7.2% May, 2.88% June, 2.88% July, 2.88% Aug, 7.92% Sept,

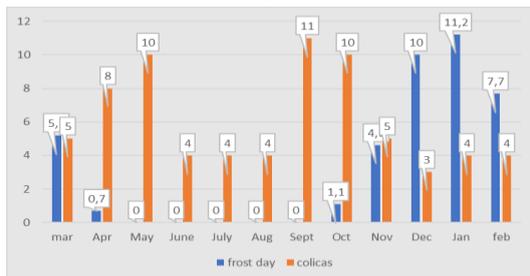
7.2% Oct, 3.6% Nov, 2.16% Dec, 2.88 Jan, 2.88% Feb an increased frequency of colic during the months of Spring (Apr and May) and Autumn (Sept and Oct). In the surveillance conducted so far we have not yet determined statistically whether or not there is such a correlation between weather and the incidence of colic. The study showed an increase in colic cases during months with more dew days and during months where climatic conditions such as temperature, wind, rainfall etc. are moderate but fluctuating. Their variations probably have an impact on increasing the number of colic cases, but not very important. Perhaps this is related to the fact that Albania has a Mediterranean climate.

Graph 2. Average of dew days and cases of colic



Graph 2 shows average of dew days and cases of colic; Mar10.2 dew day 5 cases colic, Apr 12.9 dew day 8 cases colic, May15.2 dew day 10 cases colic, June 16.1 dew day 4 cases colic, July 15 dew day 4 cases colic, Aug15.6 dew day 4 cases colic, Sept 14.2 dew day 11 cases colic, Oct 13 dew day 10 cases colic, Nov 8.8 dew day 5 cases colic, Dec 6.4 dew day 3 cases colic, Jan 5.2 dew day 4 cases colic, Feb 5.2 dew day 4 cases colic. Graph 2 shows an increase in colic cases during months with dew days. This is related to the fact that horse feeding in Albania is mainly done in natural conditions.

Graph 3. Day with frost/colic cases



Graph 3 shows the number of days with frost and frequency of colic cases; Mar 5 frost day 5 cases colic, Apr 0.7 frost day 8 cases colic, May 0 frost day 10 cases colic, June 0 frost day 4 cases colic, July 0 frost day 4 cases colic, Aug 0 frost day 4 cases colic, Sept 0 frost day 11 cases colic, Oct 1.1 frost day 10 cases colic, Nov 4 frost day 5 cases colic, Dec 10 frost day 3 cases colic, Jan 11.2 frost day 4 cases colic, Feb 7.7 frost day 4 cases colic. The data shows that there is no specific link between the occurrence of colic and days with frost. This can be explained by the fact that on days with frost horses are kept in stalls and do not feed on pasture. Colic is the most devastating disease in the horse population and one of the most frequent problems encountered by a large animal veterinarian.

This study showed different frequency of colic episodes based on the months of the year, explained by the Mediterranean climate of Albania. Some authors have suggested, or proved, a correlation between weather and the incidence of colic (Barth 1982; Rollins and Clement 1979). However, in this study conducted so far, we have not yet defined statistically whether or not there is such a correlation. Veterinarians and owners frequently associate weather changes with increased frequency of colic, but many studies have been unable to find statistical evidence of increased risk. Early reports from Europe suggested weather changes were associated with the highest incidence of colic specifically changes to cold and damp conditions or to warm and wet during

advancing weather fronts (Barth 1980). A study in Texas found an increased risk of colic associated with weather changes as recalled by owners of horses with colic (Cohen *et al.* 1999b). Cold weather, which affects water intake, has been linked to increased impaction colic. When examined as a direct exposure factor in a Virginia-Maryland study, weather did not appear to be related to colic (Tinker *et al.* 1997b). Careful interpretation of Table 1 shows an increased frequency of colic during the months of spring and autumn. This may be due to the change of grass quality or management practices at these times of year rather than the change of weather conditions. The calculation of a correlation coefficient using mean monthly temperature and mean monthly rainfall will be an attempt to give greater significance to temperature and rain during warm weather when grass is growing.

CONCLUSION

This study showed different frequency of colic episodes during the months of Spring and Autumn. This study showed an increased incidence of colic during months with more days of dew. This is probably related to the fact that in Albania the breeding of horses is mainly done in natural conditions. The study showed that there is no specific link between the occurrence of colic and days with hoarfrost.

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