Available online at www.pelagiaresearchlibrary.com

Pelagia Research Library

European Journal of Experimental Biology, 2012, 2 (5):1792-1795

ISSN: 2248 –9215
CODEN (USA): EJEBAU

Study of Weight-Loss Syndrome in the Horses

Mohammad Mashayekhi[1*], Adib Hashemi[2], Ali Hassanpour[1]

[1]*Department of Clinical Science, Tabriz Branch, Islamic Azad University, Tabriz, Iran*
[2]*Faculty of Veterinary Medicine, Tabriz Branch, Islamic Azad University, Tabriz, Iran*

ABSTRACT

Weight loss is a common presenting complaint in horses of all ages. Although the investigation of these horses can be frustrating, a logical approach, based on the mechanisms of weight loss and the most likely differential diagnoses can yield a diagnosis in many cases. The objective of present study was to study of causes of Weight Loss in the Horses of Tabriz area, Iran. In present study, 50 mature horses were selected which were suffered from weight losing. Then blood samples and other management factors were assayed. Data showed that 15 of horses were suffered from pneumonic diseases, 28 of them had parasitic complications and 7 of them were suffered from malnutrition.

Keywords: Weight Loss, parasite, pneumonia, malnutrition, horse.

INTRODUCTION

Weight loss should occur gradually over the course of several months. A horse may safely lose about 50 lbs or one BCS each month. Rapid weight loss, especially in obese ponies, may put the animal at a high risk of developing hyperlipidemia [1]. Hyperlipidemia is a condition where the body perceives itself to be starving, leading to the release of large quantities of stored fat into the bloodstream. This condition may quickly lead to impaired liver function and death. Signs of hyperlipidemia include drowsiness, depression, muscle twitching, incoordination, colic, and diarrhea [1,3]. Another drawback to intensive weight loss strategies is the increased likelihood of developing stereotypical behaviors, such as weaving, wood-chewing, bedding ingestion, and coprophagy. Allowing horses to interact with field companions, the provision of stimulatory toys, and the use of a regular exercise program may reduce the likelihood of stereotypies like weaving, pacing, and cribbing on fences [2,4]. Because proper weight loss may take several months, body weight and BCS changes should be monitored every 2-4 weeks. Monitoring too often (i.e., weekly) can cause the horse owner to become discouraged because visible changes may not be readily obvious. As with all weight loss programs, patience and consistency are key. Once the horse has reached its ideal body weight or BCS, maintaining that level of fitness is critical. Constant attention to the quality and quantity of feed offered as well as the body weight and BCS of the horse will allow horse owners to make informed decisions as to the amount of feed offered to the horse [2]. Adjustments to the ration can be made based on the changing requirements of the horse during the different seasons or training schedules. Some fluctuation of body weight is normal in the adult horse. A change of 20-30 pounds of body weight (± 0.5 BCS) should not be regarded as a problem unless the horse has continued to increase or decrease its body weight the next time body weight is monitored. The objective of present study was to study of causes of Weight Loss in the Horses of Tabriz area, Iran.

MATERIALS AND METHODS

In present study, 50 mature horses were selected which were suffered from weight losing. These horses were belonged to the Tabriz suburb farms. In this period, we were taking history from horses by asking some questions from the owner then we were recording the gender, age, previous history of illness, during of illness, previous vaccinations, used anti-parasitic medicines and body condition score. Then, general examination was done. After that, we assayed the animals' diet and samples were obtained (100 g) for measurement of it protein and energy balance. Later on, blood samples were taken from jugular vein for preparing the slid and Giemsa staining. In this term, cells were assayed morphologically. Finally, parasitology experiments were done. Data were recorded and analysed by SPSS software.

RESULTS

Data showed that, 15 horses were suffered from chronic respiratory disease. Their cytology is given in table 1.

Table 1: average and total number of cells obtained from pneumonic horses compared with normal values (15 horses).

Cell	Lymphocyte	Neutrophil	Monocyte	Eosinophil	Basophil	Band cell
Total No.	410	1027	25	28	3	15
Mean (%)	27.33	68.46	1.66	1.86	0.20	1.00
SE	2.02	2.10	0.21	0.19	0.10	0.84
P-value	0.000	0.000	0.007	0.077	0.082	0.038

In diet analysis revealed that intake protein and energy from diet were 10.24% and 2925.35 cal/g respectively, which is in standard values for a horse with light exercise. So, there was no insufficiency in diet. Although, 7 horses were suffered from malnutrition it was due to insufficient food intake. In 28 of them we seen eosinophilia so data matched with parasitology experiments and revealed that there had parasite larva or egg in the stool. Observed parasites were trichuris, trichocephalus and gasterophilus (table 2).

Table 2: average and total number of cells obtained from parasitic horses compared with normal values (28 horses).

Cell	Lymphocyte	Neutrophil	Monocyte	Eosinophil	Basophil	Band cell
Total No.	1060	1414	69	159	3	90
Mean (%)	37.85	50.50	2.46	5.67	0.10	3.21
SE	2.22	1.84	0.16	0.27	0.08	0.46
P-value	0.443	0.019	0.000	0.000	0.003	0.000

In comparison of data obtained from pneumonic parasitic horses it has been revealed that there is significant difference from amount of eosinophil cytology. Also, it observed from amount of neutrophils and lymphocytes (table 3).

Table 3: comparative assessment of cytology obtained from horses with insufficient diet (7 horses).

Cell	Lymphocyte	Neutrophil	Monocyte	Eosinophil	Basophil	Band cell
Total No.	393	280	17	14	2	0
Mean (%)	56.14	40.00	2.42	2.00	0.28	0.00

Also, revealed that minimum body condition score was belonged to horses with gastrointestinal parasites (table 4).

Table 4: mean, max and min of BCS of ill horses

body condition score / complication	Mean	Max	Min
Parasitic diseases	3	3.5	2.5
Chronic pneumonia	3.5	4.5	3
Malnutrition	3.5	4	3

DISCUSSION AND CONCLUSION

Weight loss results from an imbalance between caloric intake and expenditure of energy. Factors that affect either or both intake and outflow will change the balance and affects a horse's weight [5]. If there is more energy

expenditure than caloric intake, then a horse will lose weight. Let's first discuss expenditure of energy. How much energy a horse expends depends first upon the amount of energy needed for maintenance. This depends on body weight and metabolic rate. Different breeds and individuals have varying basic nutritional needs for maintenance. The amount of feed necessary for maintenance of a typical "hotblood" like an Arabian or Thoroughbred tends to be greater (per unit body weight) than that for a typical "coldblood" like a draft or pony breed. Beyond energy for maintenance is that needed for additional body functions including:

- Late term pregnant and lactating mares, which require maintenance plus the additional energy needed for growth of the fetus or the production of milk.
- Horses in work, which expends additional energy in proportion to how much work they do.
- Growing foals, which require the energy for maintenance plus the energy needed for growth [4,6,7].

Weight loss results from the breakdown and conversion to energy of complex sugars, muscle, and fat from the body. This breakdown is intricately controlled by a complex system of chemical messengers responding to the body's perceived needs. Expenditure of energy must be balanced by energy intake in the form of nutrition, or signals are sent to start to break down the body's stores of complex sugars, muscle, and fat to account for the difference in needed energy, resulting in loss of these tissues and weight loss [6,8,9].

Nutritional intake is how much nutrition is brought into the circulation from the intestine, and this relates to what is taken into the body from the diet. There are several steps that are critical for a horse to achieve necessary nutritional intake. A horse must have access to and ingest an adequate amount of high quality feed of the appropriate type. He must be able to process this by proper grinding of feed by the teeth. Poor dental function results in poorly processed feed, which is not well digested and absorbed in the intestine. A healthy gut assimilates the needed nutrients into the bloodstream [6].

Healthy body systems and metabolism results in the nutrients in the bloodstream being processed, with the necessary energy used and the remainder put into body stores in the form of complex sugars, muscle and fat. Anything that decreases nutritional intake, with all else being equal, will result in weight loss. Therefore, the most common reasons for weight loss in horses are:

- Inadequate feed intake or feed quality mismatched to nutritional needs.
- Inadequate processing of feed resulting from dental problems.
- Parasite infestation. Parasites compete for nutrition and cause damage to the intestinal tract, which decreases absorption of nutrients.
- Aside from dental abnormalities, older horses simply have more difficulty assimilating nutrients from their intestinal tract. For that reason, they require more easily digestible and absorbable feeds [10,11].
- Disease and chronic pain. Sick animals lose weight because energy is needed to heal or fight infection; this is often made worse because they tend not to eat as much.

Animals that are in chronic pain also lose weight. Tumors are a common cause of weight loss in older horses. Many tumors secrete substances that directly cause weight loss by breaking down body stores of energy.
Finally, can conclude that weight loss in horses is a syndrome and several factors are associated.

REFERENCES

[1] Franks PW, Jablonski KA, Delahanty L, Hanson RL, Kahn SE, Altshuler D, Knowler WC, Florez JC, *Diabetologia*, **2007**, 50, 2451-2460.
[2] Goyenechea E, Dolores Parra M, Alfredo Martínez J, *Br J Nutr*, **2006**, 96, 965-972.
[3] Hivert MF, Jablonski KA, Perreault L, Saxena R, McAteer JB, Franks PW, Hamman RF, Kahn SE, Haffner S, DIAGRAM Consortium, Meigs JB, Altshuler D, Knowler WC, Florez JC, *Diabetes*, **2011**, 60, 1340-1348.
[4] Holm S, *Scand J Statist*, **1979**, 6, 65-70.
[5] Jablonski KA, McAteer JB, de Bakker PI, Franks PW, Pollin TI, Hanson RL, Saxena R, Fowler S, Shuldiner AR, Knowler WC, Altshuler D, Florez JC, *Diabetes*, **2010**, 59, 2672-2681.
[6] Knowler WC, Barrett-Connor E, Fowler SE, Hamman RF, Lachin JM, Walker EA, Nathan DM, *N Engl J Med*, **2002**, 346, 393-403.

[7] Li S, Zhao JH, Luan J, Ekelund U, Luben RN, Khaw KT, Wareham NJ, Loos RJ, *PLoS Med*, **2010**, 7(8), e1000332.
[8] Nicklas BJ, van Rossum EF, Berman DM, Ryan AS,Dennis KE, Shuldiner AR, *Diabetes*, **2001**, 50, 2172-2176.
[9] Rubin RR, Fujimoto WY, Marrero DG, Brenneman T, Charleston JB, Edelstein SL, Fisher EB, Jordan R, Knowler WC, Lichterman LC, Prince M, Rowe PM, *Control Clin Trials*, **2002**, 23, 157-171.
[10] Vogels N, Mariman EC, Bouwman FG, Kester AD, Diepvens K, Westerterp-Plantenga MS, *Am J Clin Nutr*, **2005**, 82, 740-746.
[11] Willer CJ, Speliotes EK, Loos RJ, et al., *Nat Genet*, **2009**, 41, 25-34.